

BIOLOGICAL SCIENCES

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The Department of Biological Sciences

Biology explores the structure, function, and evolution of diverse living systems. It addresses some of the most important issues of our time—genetic engineering, stem cell research, obesity, cancer, and the effects of global warming. Majoring in Biology prepares students to pursue a career in research, teaching, or the allied health sciences. It is also relevant to careers as diverse as environmental policy, law, public health, creative writing, and textbook development.

Mission

The mission of the Biology major is to provide students with a broad education in biology. To this end, students are offered a range of lecture courses that span the molecular, physiological, and ecological levels of organization. Students also complete laboratory courses that help them learn how to design and test hypotheses, use modern scientific equipment, and interpret data. Finally, students learn scientific communication skills by critiquing research articles, writing laboratory reports and research papers, and participating in oral presentations and debates. The department encourages students to become involved in a research project under the guidance of a faculty member at Barnard or elsewhere in New York City.

Student Learning Outcomes

Students graduating with a major in Biology should be able to attain the following outcomes:

- Demonstrate an appreciation of the many different life forms on planet Earth.
- Have the ability to discuss a biological phenomenon from many different levels of organization (e.g., discuss HIV from the perspective of structure to host immune response to evolutionary and epidemiological issues).
- Describe the basic features of Mendelian genetics and the central dogma of molecular biology; understand the basic physiological processes of at least one organism; and demonstrate an understanding of population-level processes.
- Make an oral presentation on either an original research project or a published primary research paper.
- Generate a testable hypothesis and develop and execute a controlled experimental design.
- Write an original scientific paper and/or a review article.

Research

Students are strongly encouraged to engage in research at Barnard. One or both year-long courses, BIOL BC3591 / BIOL BC3592 Guided Research

& Seminar and BIOL BC3593 / BIOL BC3594 SENIOR THESIS RESEARCH # SEMINAR, may be used to fulfill major requirements. The variable-credit semester-long course, BIOL BC3597 GUIDED RESEARCH, may be used for degree credit.

In addition to conducting research during the academic year, students are encouraged to pursue summer research internships. Barnard faculty engage many students in paid research projects during the summer through the [Summer Research Institute \(SRI\)](#) at Barnard. The departmental office also has information about summer internships outside of Barnard. In addition, the department awards funds on a competitive basis to support summer research not otherwise funded by internships.

Introductory Course Selection

The Biology Department offers several options at the introductory level. Students should select courses on the basis of their preparation and background in biology.

Students who took advanced biology in high school should enroll in the 1500-level sequence. This sequence can be started either in the fall [Introduction to Organismal & Evolutionary Biology: BIOL BC1500 (Lecture) and BIOL BC1501 (Lab)] or the spring [Introduction to Cellular & Molecular Biology: BIOL BC1502 (Lecture) and BIOL BC1503 (Lab)]. This sequence fulfills the science lecture and laboratory portion of the General Education Requirement (GER), as well as the premedical requirement in biology. Please note that the Foundations distributional requirements for the sciences includes two science lecture courses, one of which must include a laboratory, but both do not necessarily need to be taken from the same scientific discipline.

Students with little or no experience in biology should enroll in the 1000-level sequence, which provides an appropriate introduction to important concepts in the field. BIOL BC1002 Global Health and Ecology includes a laboratory component (BIOL BC1012) and BIOL BC1001 REVOLUTIONARY CONCEPTS IN BIOL consists only of a lecture component. Taken together, these courses fulfill the science General Education Requirement. Students who wish to move on to the 1500-level sequence may do so upon completion of one or both of these courses.

Students must complete the entire 1500-level sequence (BIOL BC1500, BIOL BC1501, BIOL BC1502, and BIOL BC1503) for the biology major or minor and for premedical requirements.

AP Course Credit

Students who passed the Advanced Placement examination in biology with a grade of 4 or 5 receive 3 points of credit toward their degree. However, AP credit neither helps fulfill the science GER nor exempts a student from any introductory course.

Faculty

Chair: Hilary Callahan

Associate Chair: John Glendinning

Professor Emeritus: Philip Ammirato

Professors: Hilary Callahan, John Glendinning, Jennifer Mansfield (sabbatical), and Brian Morton (sabbatical)

Associate Professors: Elizabeth Bauer and Jonathan Snow

Assistant Professors: Allison Lopatkin, JJ Miranda, and Alison Pischedda

Senior Lecturer and Introductory Lab Director: Jessica Goldstein

Lecturers: Jordan Balaban and Rishita Shah

Term Lecturers: Gabrielle Corradino and Stephen Sturley

Adjunct Lecturer: Claudia Cosentino

Staff

Senior Laboratory Manager: Basil Perkins
Introductory Lab Senior Associate Director: Henry Truong
Introductory Lab Associate Director: Abigail Gutierrez
Laboratory Specialists: Olivia Anastasio, Colin Flanagan, and Jesse Graves
Laboratory Assistants: Mehrose Ahmad, Ava Brent, Tiffany Flores, Avigayil Lev
Department Administrator: Sylvia Niemann

Requirements for the Major

To declare a major in biology, submit a [major declaration form](#) via Slate.

There are five ways to complete a biology major. These are called "tracks:"

- 1. General Biology
- 2. Cellular and Molecular Biology
- 3. Physiological and Organismal Biology
- 4. Ecological and Evolutionary Biology
- 5. Computational Biology.

All tracks within the major must fulfill common foundational and senior capstone requirements. Tracks 2-4 concentrate on a specific level of biological organization. Please refer to the [biology major checklists](#) to see a list of requirements for each version of the biology major.

Introductory Biology Sequence

Every biology major must complete ALL of the following introductory biology and genetics courses.

Introductory Biology Fall Offerings:

BIOL BC1500	INTRO ORGANISMAL/EVOL BIOL	3.5
BIOL BC1510	BIOL BC1500 DISCUSSION SECTION (This is a co-requisite for BIOL BC1500.)	
BIOL BC1501	INTRO LAB/ORGANISMAL#EVOL BIO	2
BIOL BC1511	BIOL BC1501 RECITATION (This is a co-requisite for BIOL BC1501. It is asynchronous.)	

Introductory Biology Spring Offerings:

BIOL BC1502	INTRO CELL AND MOLECULAR BIOL	3.5
BIOL BC1512	BIOL BC1502 DISCUSSION SECTION (This is a co-requisite for BIOL BC1502.)	
BIOL BC1503	INTRO LAB CELLULAR#MOLEC BIO	2
BIOL BC1513	BIOL BC 1503 RECITATION (This is a co-requisite for BIOL BC1503. It is asynchronous.)	

Genetics Requirement (Offered Fall & Spring)

BIOL BC2100	MOLECULAR # MENDELIAN GENETICS	3
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It is recommended, but not required, that Genetics be taken immediately after completing the 1500-level introductory sequence. Though it is a pre-requisite for many upper-level courses, it is not required for all. For example, sophomores interested in pursuing the Organismal & Physiological or Ecology & Evolutionary tracks are encouraged to take BIOL BC2280 Animal Behavior, BIOL BC2840 Plant Evolution and Diversity, or BIOL BC3360 Physiology even if they have not yet taken genetics.

Five Upper-Level Lecture Courses

Students must complete five upper-level lecture courses. Requirements for each track are listed below:

- **General Biology (GB):** Five upper-level lecture courses with at least one course from each of the three categories (C&M, P&O, and E&E).
- **Cell & Molecular Biology (C&M):** Four upper-level lecture courses from the C&M category + one from another category (P&O or E&E)
- **Physiology & Organismal Biology (P&O):** Four upper-level lecture courses from the P&O category + one from another category (C&M or E&E)
- **Ecology & Evolutionary Biology (E&E):** Four courses from the E&E category + one from another category (C&M or P&O)
- **Computational Biology (CB):** Four computing courses from the CB-COMP category + one course from the CB-BIOL category

Please Note:

- 1. Although some courses are listed in multiple categories, a student can only use a course toward one of the categories.
- 2. If a student completes courses that make them eligible for more than one of the five major tracks, then they may select which track is reflected on their transcript. (A student can list only one track on their transcript.)

Here is a list of courses related to each track/category:

Cellular & Molecular Biology (C&M)

BIOL BC2278	Evolution	3
BIOL BC2490	CODING IN BIOLOGY	3
BIOL BC3304	Topics in Molecular Genetics	3
BIOL BC3308	INTRODUCTION TO MICROBIAL GENOMICS	3
BIOL BC3310	CELL BIOLOGY	3
BIOL BC3320	MICROBIOLOGY	3
BIOL BC3352	DEVELOPMENT	3
BIOL BC3362	MOLECULAR # CELLULAR NEUROSCIENCE	3
CHEM BC3282	BIOLOGICAL CHEMISTRY	3
BIOL UN3004	NEUROBIO I:CELLULAR # MOLECU	4
BIOL UN3034	Biotechnology	3
BIOL UN3073	CELLULAR/MOLECULAR IMMUNOLOGY	3
BIOL UN3310	Virology	3

Physiology & Organismal Biology (P&O)

BIOL BC2262	Vertebrate Biology (Physiology & Organismal Biology)	3
BIOL BC2280	ANIMAL BEHAVIOR	3
BIOL BC2286	Statistics and Research Design	3
BIOL BC3320	MICROBIOLOGY	3
BIOL BC3352	DEVELOPMENT (OR BIOL UN3022 Developmental Biology)	3
BIOL BC3360	PHYSIOLOGY (OR BIOL UN3006 General Physiology)	3
BIOL UN3005	NEUROBIO II: DEVPT # SYSTEMS	4
EEEB UN3011	BEHAVIOR BIOL-LIVING PRIMATES (EEEB UN1011 is NOT equivalent.)	3
EEEB UN3208	EXPLORATIONS IN PRIM ANATOMY	3
EEEB W4112		3

Ecology & Evolutionary Biology (E&E)

BIOL BC2240	PLANT EVOLUTION # DIVERSITY	3
BIOL BC2262	Vertebrate Biology	3
BIOL BC2272	ECOLOGY	3
BIOL BC2278	Evolution	3
BIOL BC2280	ANIMAL BEHAVIOR	3
BIOL BC2286	Statistics and Research Design	3
BIOL BC2851	Plants and Profits: The Global Power of Botany	4
BIOL BC3320	MICROBIOLOGY	3
BIOL BC3380	Applied Ecology and Evolution	3
EEEB UN3005	INTRO-STAT-ECOLOGY # EVOL BIOL	3
EEEB UN3087	CONSERVATION BIOLOGY	3
EEEB UN3220	THE EVOL OF HUM GROWTH # DEVPT	3
EEEB W4110	Coastal and Estuarine Ecology	4
EEEB GU4111	Ecosystem Ecology and Global Change	3

Computational Biology - Computing (CB-COMP)

BIOL BC2490	CODING IN BIOLOGY	3
BIOL BC2500	MATLAB FOR SCIENTISTS	3
BIOL BC2841	LAB-PLANT EVOLUTION # DIVERSITY	3
BIOL BC2851	Plants and Profits: The Global Power of Botany	4
BIOL BC3308	INTRODUCTION TO MICROBIAL GENOMICS	3
BIOL BC3590	SR SEM IN BIOLOGY (See note at bottom of list*)	4
EESC BC3050	BIG DATA WITH PYTHON	3
EESC GU4050	GLOBAL ASSMT-REMOTE SENSING	3
COMS W3134	Data Structures in Java	3
CBMF W4761	COMPUTATIONAL GENOMICS	3

*Different topics for this course are taught each semester. Only Bacteria by Design will fulfill this requirement. This class may count as either an upper-level elective course OR the senior capstone experience.

Computational Biology - Biology (CB-BIOL)

BIOL BC3304	Topics in Molecular Genetics	3
BIOL BC3310	CELL BIOLOGY	3
BIOL BC3320	MICROBIOLOGY	3
BIOL BC3352	DEVELOPMENT	3
BIOL BC3360	PHYSIOLOGY	3
BIOL BC3362	MOLECULAR # CELLULAR NEUROSCIENCE	3
BIOL BC3380	Applied Ecology and Evolution	3

Ask an advisor about new or less frequently taught 3000-level courses at Barnard or Columbia, or about transfer or study-abroad credit.

Three Upper-Level Laboratory Courses

Students pursuing the Computational Biology track are required to take only ONE upper-level lab from the following list.

Upper-Level Lab Courses for the Computational Biology Track

BIOL BC3303	LAB IN MOLECULAR BIOLOGY	3
BIOL BC3305	PROJECT LAB IN MOLECULAR GENETICS	3
BIOL BC3306	PROJECT LAB MOLECULAR GENETCS	3
BIOL BC3311	LABORATORY IN CELL BIOLOGY	3
BIOL BC3321	LABORATORY IN MICROBIOLOGY	3

BIOL BC3361	LABORATORY IN PHYSIOLOGY	3
BIOL BC3363	LAB IN MOLEC # CELL NEUROSCI	3

Students pursuing the GB, C&M, P&O, or E&E track are required to take THREE upper-level lab courses (beyond the 1500 level). These students may take ANY upper-level Barnard Biology lab courses for which they meet the pre- or co-requisites.

Commonly Offered Upper-Level Lab Courses for the General, Cellular & Molecular, Physiology & Organismal, and Ecology & Evolutionary Biology Tracks

BIOL BC2281	LABORATORY IN ANIMAL BEHAVIOR
BIOL BC2490	CODING IN BIOLOGY (*)
BIOL BC2500	MATLAB FOR SCIENTISTS (**)
BIOL BC2801	Laboratory in Genetics
BIOL BC2841	LAB-PLANT EVOLUTION # DIVERSITY
BIOL BC2873	Laboratory in Ecology
BIOL BC3303	LAB IN MOLECULAR BIOLOGY
BIOL BC3305	PROJECT LAB IN MOLECULAR GENETICS (Yearlong course with BIOL BC3306)
BIOL BC3306	PROJECT LAB MOLECULAR GENETCS (Yearlong course with BIOL BC3305)
BIOL BC3311	LABORATORY IN CELL BIOLOGY
BIOL BC3321	LABORATORY IN MICROBIOLOGY
BIOL BC3354	LABORATORY IN EMBRYOLOGY
BIOL BC3361	LABORATORY IN PHYSIOLOGY
BIOL BC3363	LAB IN MOLEC # CELL NEUROSCI
BIOL BC3591	GUIDED RESEARCH # SEMINAR (Yearlong course with BIOL BC3592)
BIOL BC3592	GUIDED RESEARCH # SEMINAR (Yearlong course with BIOL BC3591)

*Coding in Biology can count either as an upper-level lab for the GB, C&M, P&O, and E&E tracks, or as an upper-level elective in the C&M or CB-COMP categories.

**MATLAB for Scientists can count either as an upper-level lab for the GB, C&M, P&O, and E&E tracks, or as an upper-level elective in the C&M, P&O, E&E, and CB-COMP categories, but cannot fulfill a breadth requirement.

Please Note:

- Often, a lab course requires that a student have taken a prerequisite lecture offered in the opposite semester. Sometimes, the lecture may be offered as a co-requisite in the same semester.
- Students may take laboratory courses at Columbia (or other institutions) to satisfy the lab requirement, with permission from the Associate Chair.
- Research Option:** The year-long Guided Research & Seminar course (BIOL BC3591 followed by BIOL BC3592) can be used to fulfill up to two upper-level labs in all tracks except for Computational Biology. This course is only available as a fall to spring sequence. In Guided Research and Seminar, students complete an original research project in a lab, and both write a scientific paper and give a poster presentation of their work at the Annual Barnard Biology Research Symposium. **Note:** Seniors may not enroll in Guided Research and Seminar if they are enrolled in Senior Thesis Research and Seminar. For more information, visit the biology department's [Undergraduate Research](#) page.

Senior Capstone Experience

All Biology majors must complete the Senior Capstone Experience with either of the following two options:

1. One semester of BIOL BC3590 SR SEM IN BIOLOGY

In Senior Seminar, students participate in a seminar focusing on primary literature, and both compose and give a presentation on a senior thesis in the format of a literature review. Topics vary from semester to semester. To fulfill the Computational Biology track senior capstone requirement, students must enroll in Professor Lopatkin's Bacteria by Design topic.

Spring 2023 Topic: Bacteria by Design:

In this course, students will explore in-depth the field of synthetic biology with a focus on engineered bacteria. Topics include fundamental design principles, environmental and clinical applications, as well as ethical implications.

OR

2. The yearlong Senior Thesis Research and Seminar (BIOL BC3593&BIOL BC3594)

In Senior Thesis Research and Seminar, students complete an original research project in a lab, and both write a scientific paper and orally present their work at the Barnard Biology Research Symposium. This course is only available as a fall to spring sequence. For more information, visit our Undergraduate Research page.

Please Note: Seniors enrolled in Guided Research and Seminar to fulfill two upper-level labs for their major cannot take Senior Thesis Research and Seminar at the same time. Instead, they must complete their senior capstone experience with BIOL BC3590 Senior Seminar.

Chemistry Requirement (GB, C&M, P&O, and E&E)

Majors in the GB, C&M, P&O, and E&E tracks must complete at least one semester of General Chemistry (with laboratory) and at least one semester of Organic Chemistry (with laboratory). To see which courses will be offered this semester, we encourage students to visit the [CU Directory of Classes](#) for Chemistry at Barnard and at Columbia. Equivalent courses at Columbia may be taken in lieu of the Barnard Chemistry courses. This is an important topic to discuss early with your advisor.

- **General Chemistry** lecture (CHEM BC2001) and lab (CHEM BC2012) (offered in the fall only)
- **Organic Chemistry** lecture (CHEM BC3230) and lab (CHEM BC3328)

Introductory Computing/Statistics Requirement (Computational Biology Track)

Instead of completing the chemistry requirement, students on the computational biology track complete:

One of the following introductory computing courses to learn a coding language

COMS W1004	Introduction to Computer Science and Programming in Java
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COMS BC1016	Introduction to Computational Thinking and Data Science
ENGI E1006	INTRO TO COMP FOR ENG/APP SCI (taught in Python)

AND

One of the following introductory statistics courses

STAT UN1010	Statistical Thinking For Data Science
STAT UN1101	INTRODUCTION TO STATISTICS
STAT UN1201	CALC-BASED INTRO TO STATISTICS
STAT UN2102	Applied Statistical Computing
NSBV BC2002	STATISTICS AND EXPERIMENTAL DESIGN
EEEB UN3005	INTRO-STAT-ECOLOGY # EVOL BIOL

Requirements for the Minor

To declare a minor in biology, submit a [minor declaration form](#) via Slate.

Introductory biology lecture and lab courses (One year)

Introductory Biology Fall Offerings:

BIOL BC1500	INTRO ORGANISMAL/EVOL BIOL	3.5
BIOL BC1510	BIOL BC1500 DISCUSSION SECTION (This is a co-requisite for BIOL BC1500.)	
BIOL BC1501	INTRO LAB/ORGANISMAL#EVOL BIO	2
BIOL BC1511	BIOL BC1501 RECITATION (This is a co-requisite for BIOL BC1501. It is asynchronous.)	

Introductory Biology Spring Offerings:

BIOL BC1502	INTRO CELL AND MOLECULAR BIOL	3.5
BIOL BC1512	BIOL BC1502 DISCUSSION SECTION (This is a co-requisite for BIOL BC1502.)	
BIOL BC1503	INTRO LAB CELLULAR#MOLEC BIO	2
BIOL BC1513	BIOL BC 1503 RECITATION (This is a co-requisite for BIOL BC1503. It is asynchronous.)	

Three biology lecture courses

Any lecture course at the 2100-level or higher counts.

Two biology laboratory courses

Any upper-level lab counts toward fulfilling this requirement.

The yearlong course, Guided Research & Seminar (BIOL BC3591 and BIOL BC3592), fulfills the requirement.

Note: Chemistry, environmental science, physics, and psychology majors need to take only one advanced laboratory instead of two. Check with your major advisor in order to determine whether a guided research course is a suitable selection for your major's requirements.

HSPP BC1001 Research Apprenticeship Seminar. 3 points.

This year-long course is 3 pts (1.5/semester)**Not offered during 2023-2024 academic year.**

Prerequisites: This course is open to 16 first-year students who are also enrolled in an introductory lab science sequence; applications will be made available via the first-year class blog through the Dean of Studies Office.

The course will meet in a seminar format, and will discuss how research problems are defined, how scientists immerse themselves in the existing literature on a topic, how researchers craft experimental protocols and collect data, and how data can be used to test hypotheses. Students will also consider science stories in the *New York Times* and lead formal debates about ethical and social issues. Occasionally, the seminar period will be devoted to tours of faculty science labs to learn about the research that Barnard professors conduct and the research opportunities available on campus.

Additionally, students will participate in a month-long laboratory rotation each semester. During the rotation period, each student will spend 3 hours per week shadowing a Barnard junior or senior Research Intern who is conducting a year-long research project. In addition to this exposure to research at Barnard, students will discuss how to obtain summer science internships in laboratories off campus. Seminar assignments will include readings about the research process, as well as short library-based research projects about scientific claims in textbooks. In the fall, students will develop their presentation skills in a session with Barnard's Speaking Fellows. In the spring, each student will deliver an oral presentation about the research career of a scientist of her choosing.

HSPP BC1002 Research Apprenticeship Seminar. 3 points.

This year-long course is 3 pts (1.5/semester)**Not offered during 2023-2024 academic year.**

Prerequisites: This course is open to 16 first-year students who are also enrolled in an introductory lab science sequence; applications will be made available via the first-year class blog through the Dean of Studies Office.

The course will meet in a seminar format, and will discuss how research problems are defined, how scientists immerse themselves in the existing literature on a topic, how researchers craft experimental protocols and collect data, and how data can be used to test hypotheses. Students will also consider science stories in the *New York Times* and lead formal debates about ethical and social issues. Occasionally, the seminar period will be devoted to tours of faculty science labs to learn about the research that Barnard professors conduct and the research opportunities available on campus.

Additionally, students will participate in a month-long laboratory rotation each semester. During the rotation period, each student will spend 3 hours per week shadowing a Barnard junior or senior Research Intern who is conducting a year-long research project. In addition to this exposure to research at Barnard, students will discuss how to obtain summer science internships in laboratories off campus. Seminar assignments will include readings about the research process, as well as short library-based research projects about scientific claims in textbooks. In the fall, students will develop their presentation skills in a session with Barnard's Speaking Fellows. In the spring, each student will deliver an oral presentation about the research career of a scientist of her choosing.

BIOL BC1008 HEALTHIER LIFE. 3 points.

Not offered during 2023-2024 academic year.

This is an introductory biology survey course which explores fundamentals of physiology in humans and other organisms, both in the context of global health and global ecological issues. It emphasizes reciprocal interactions between individual healthy humans and healthy societies, and the function of ecosystems in supporting humans and other biodiversity.

BIOL BC1002 Global Health and Ecology. 4.5 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC1012 lab enrollment is required. This lecture & lab course does not fulfill biology major nor pre-health requirements, but is recommended for prospective biology majors who lack a high-school level background in biology. For students fulfilling a Nine Ways of Knowing lab science requirement, this course may be taken with AP/IB credit OR with BIOL BC1502 & BIOL BC1503 in the spring. Students fulfilling a Foundations requirement may take BIOL BC1002/BIOL BC1012 as a one-semester course in addition to another science lecture, such as BIOL BC1001 Revolutionary Concepts in Biology, to fulfill the lab science requirement.

What disease is the number one killer worldwide? What will be the next pandemic? Fundamentals of human physiology and microbiology are explored in the context of major global health issues. Principles of ecology are outlined, with an emphasis on the bidirectional impact of the interactions of humans with the global environment. Lab exercises introduce biological techniques for studying these topics. Enrollment in BIOL BC1012 (BC1002 lab) is required, and limited to 16 students per section.

BIOL BC1012 BIOL BC1002 Lab. 0 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC1002 Global Health & Ecology is a co-requisite. This lab course does not fulfill biology major nor pre-health requirements. Enrollment in each lab section is limited to 16 students per section. Students must attend the first lab to hold their place. Fundamentals of human physiology and microbiology are explored in the context of major global health issues. Principles of ecology are outlined, with an emphasis on the bidirectional impact of the interactions of humans with the global environment. Lab exercises introduce biological techniques for studying these topics.

BIOL BC1001 REVOLUTIONARY CONCEPTS IN BIOL. 3.00 points.

Prerequisites: This lecture course does not fulfill Biology major nor premedical requirements, but does count toward the Science Lecture GER requirement for students fulfilling a Foundations requirement. Exploration of the major discoveries and ideas that have revolutionized the way we view organisms and understand life. This is an introductory survey course that explores basic concepts of molecular and cellular biology, genetics and evolution. Students will focus on biological concepts, biotechnology and bioethics, which inundate contemporary society

BIOL BC1500 INTRO ORGANISMAL/EVOL BIOL. 3.00 points.

Prerequisites: This course is suitable for majors & fulfillment of pre-health requirements. A high school biology background or equivalent preparation is highly recommended. For those without this background seeking to major in biology, BIOL BC1002 & BIOL BC1012 are recommended in the fall of their freshmen year, followed by the year-long 1500-level lecture & lab sequence. BIOL BC1500 & BIOL BC1502 do not have to be taken in a fall to spring sequence.

Co-requisite: (strongly recommended) BIOL BC1501 This course is suitable for majors # fulfillment of pre-health requirements. A high school biology background or equivalent preparation is highly recommended. BIOL BC1500 # BIOL BC1502 form a 2-semester introductory biology series and do not have to be taken in a fall to spring sequence. Detailed introduction to biological phenomena above the cellular level; development, anatomy, and physiology of plants and animals; physiological, population, behavioral, and community ecology; evolutionary theory; analysis of micro-evolutionary events; and systematics

Fall 2024: BIOL BC1500

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 1500	001/00008	M W 8:40am - 9:55am 304 Barnard Hall	Emlyn Resetarits, Abigail Gutierrez, Henry Truong	3.00	111/110

BIOL BC1510 BIOL BC1500 DISCUSSION SECTION. 0.00 points.

The goals of these discussion sections include providing a space to build community during remote learning and promoting opportunities for active engagement with the lecture material. These discussion sections will also serve as a space for students to consider science from multiple perspectives beyond discipline-specific content in the lecture and text (e.g. hearing guest lectures from BIPOC scientists, considering racial disparities in health outcomes, etc.). Participation will include posting on discussion boards between sessions, delivering short presentations during discussion, working well with partners, and making thoughtful comments during the discussion period

BIOL BC1501 INTRO LAB/ORGANISMAL#EVOL BIO. 2.00 points.

Prerequisites: BIOL BC1500 lecture is a pre- or co-requisite (preferred). Students must also enroll for a section of BIOL BC1511 recitation. A high school biology background or equivalent preparation is highly recommended. This course is suitable for fulfillment of biology major and pre-health requirements. Enrollment is limited to 16 students per section. A laboratory-based introduction to the major groups of living organisms; anatomy, physiology, evolution, and systematics; and laboratory techniques for studying and comparing functional adaptations

Fall 2024: BIOL BC1501

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 1501	001/00437	M 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	9/8
BIOL 1501	002/00438	M 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	5/8
BIOL 1501	003/00439	T 9:10am - 12:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	9/8
BIOL 1501	004/00440	T 9:10am - 12:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	8/8
BIOL 1501	005/00441	T 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	9/8
BIOL 1501	006/00442	T 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	9/8
BIOL 1501	007/00443	W 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	7/8
BIOL 1501	008/00444	W 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	5/8
BIOL 1501	009/00445	Th 9:10am - 12:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	6/8
BIOL 1501	010/00446	Th 9:10am - 12:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	3/8
BIOL 1501	011/00447	Th 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	9/8
BIOL 1501	012/00448	Th 1:10pm - 4:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	8/8
BIOL 1501	013/00449	F 10:10am - 1:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	6/8
BIOL 1501	014/00450	F 10:10am - 1:00pm Room TBA	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	4/8

BIOL BC1511 BIOL BC1501 RECITATION. 0.00 points.

Prerequisites: BIOL BC1500 lecture is a pre- or co-requisite (preferred). This recitation (BIOL BC1511) is a co-requisite course for enrollment in BIOL BC1501 Introductory Lab in Organismal & Evolutionary Biology. Each individual lab section is limited to 16 students per section, however all students must enroll in one of the two recitation sections offered.

Prerequisites: BIOL BC1001 or equivalent preparation. Enrollment limited to 16 students per section. Course suitable for fulfillment of premedical requirements. BIOL BC1500 as prerequisite or corequisite. A laboratory-based introduction to the major groups of living organisms; anatomy, physiology, evolution, and systematics; and laboratory techniques for studying and comparing functional adaptations

Fall 2024: BIOL BC1511

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 1511	001/00435		Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	40/230

BIOL BC1502 INTRO CELL AND MOLECULAR BIOL. 3.50 points.

Prerequisites: BIOL BC1002 or equivalent preparation. Course suitable for fulfillment of premedical requirements. Together with BIOL BC1500 this course is part of a yearlong introductory sequence. BIOL BC1500 and BIOL BC1502 do not need to be taken in sequence.

Detailed introduction to cellular and subcellular biology: cell structures and functions, energy metabolism, biogenesis of cell components, biology of inheritance, molecular genetics, regulation of gene expression, and genes in development

Spring 2024: BIOL BC1502

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 1502	001/00567	M W 11:40am - 12:55pm 304 Barnard Hall	Abigail Gutierrez, Henry Truong, Rishita Shah	3.50	229/230

BIOL BC1512 BIOL BC1502 DISCUSSION SECTION. 0.00 points.

The goals of these discussion sections include providing a space to build community during remote learning and promoting opportunities for active engagement with the lecture material. These discussion sections will also serve as a space for students to consider science from multiple perspectives beyond discipline-specific content in the lecture and text (e.g. hearing guest lectures from BIPOC scientists, considering racial disparities in health outcomes, etc.). Participation will include posting on discussion boards between sessions, delivering short presentations during discussion, working well with partners, and making thoughtful comments during the discussion period

Spring 2024: BIOL BC1512

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 1512	001/00565	M 1:10pm - 2:00pm 805 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	22/20
BIOL 1512	002/00566	M 1:10pm - 2:00pm 113 Milstein Center	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	23/20
BIOL 1512	003/00612	T 11:10am - 12:00pm 227 Milbank Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	12/20
BIOL 1512	004/00613	T 12:10pm - 1:00pm 323 Milbank Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	20/20
BIOL 1512	005/00614	T 2:10pm - 3:00pm 323 Milbank Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	17/20
BIOL 1512	006/00615	T 3:10pm - 4:00pm 323 Milbank Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	19/20
BIOL 1512	007/00616	T 12:10pm - 1:00pm 907 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	15/20
BIOL 1512	008/00617	W 1:10pm - 2:00pm 805 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	21/20
BIOL 1512	009/00618	W 1:10pm - 2:00pm 903 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	21/20
BIOL 1512	010/00619	Th 12:10pm - 1:00pm LI001 Milstein Center	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	15/20
BIOL 1512	011/00620	Th 12:10pm - 1:00pm 323 Milbank Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	7/20
BIOL 1512	012/00621	F 11:10am - 12:00pm 805 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	20/20
BIOL 1512	013/00622	M 1:10pm - 2:00pm 325 Milbank Hall	Jessica Goldstein, Abigail Gutierrez,	0.00	20/20

BIOL BC1503 INTRO LAB CELLULAR#MOLEC BIO. 2.00 points.

Prerequisites: BIOL BC1502 lecture is a pre- or co-requisite (preferred). Students must also enroll for a section of BIOL BC1513 recitation. A high school biology background or equivalent preparation (such as BIOL BC1002 & BIOL BC1012) is highly recommended. This course is suitable for fulfillment of biology major and pre-health requirements. Enrollment is limited to 16 students per section; must attend first lab to hold place. A laboratory-based introduction to cell and molecular biology. Both classic and modern approaches are used to investigate principles of heredity as well as the structure and function of cells and their molecular components. Lab exercises introduce practical techniques and data analysis

Spring 2024: BIOL BC1503

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 1503	001/00598	M 1:10pm - 4:00pm 913 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	16/16
BIOL 1503	002/00599	M 1:10pm - 4:00pm 912 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	15/16
BIOL 1503	003/00600	T 9:10am - 12:00pm 913 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	16/16
BIOL 1503	004/00601	T 9:10am - 12:00pm 912 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	15/16
BIOL 1503	005/00602	T 1:10pm - 4:00pm 913 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	15/16
BIOL 1503	006/00603	T 1:10pm - 4:00pm 912 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	16/16
BIOL 1503	007/00604	W 1:10pm - 4:00pm 913 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	15/16
BIOL 1503	008/00605	W 1:10pm - 4:00pm 912 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	16/16
BIOL 1503	009/00606	Th 9:10am - 12:00pm 913 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	12/16
BIOL 1503	010/00607	Th 9:10am - 12:00pm 912 Altschul Hall	Jessica Goldstein, Henry Truong	2.00	9/16
BIOL 1503	011/00608	Th 1:10pm - 4:00pm 913 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	16/16
BIOL 1503	012/00609	Th 1:10pm - 4:00pm 912 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	15/16
BIOL 1503	013/00610	F 10:10am - 1:00pm 913 Altschul Hall	Jessica Goldstein, Abigail Gutierrez, Henry Truong	2.00	13/16

BIOL BC1513 BIOL BC 1503 RECITATION. 0.00 points.

Prerequisites: BIOL BC1502 lecture is a pre- or co-requisite (preferred). This recitation (BIOL BC1513) is a co-requisite course for enrollment in BIOL BC1503 Introductory Lab in Cell & Molecular Biology. Each individual lab section is limited to 16 students per section, however all students must enroll in one of the two recitation sections offered. A laboratory-based introduction to cell and molecular biology. Both classic and modern approaches are used to investigate principles of heredity as well as the structure and function of cells and their molecular components. Lab exercises introduce practical techniques and data analysis

Spring 2024: BIOL BC1513

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 1513	001/00568		Jessica Goldstein, Abigail Gutierrez, Henry Truong	0.00	204/230

BIOL BC1599 SCIENCE JOURNAL CLUB. 1.00 point.

Prerequisites:) Limited to 16 students who are participating in the Science Pathways Scholars Program. Prerequisites:) Limited to 16 students who are participating in the Science Pathways Scholars Program. Students in this seminar course will be introduced to the scientific literature by reading a mix of classic papers and papers that describe significant new developments in the field. Seminar periods will be devoted to oral reports, discussion of assigned reading, and student responses. Section 1: Limited to students in the Science Pathways Scholars Program. Section 2: Limited to first-year students who received a 4 or 5 on the AP and are currently enrolled in BIOL BC1500

BIOL BC2100 MOLECULAR # MENDELIAN GENETICS. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent. This course is a pre-requisite for most 3000-level courses. Mendelian and molecular genetics of both eukaryotes and prokaryotes, with an emphasis on human genetics. Topics include segregation, recombination and linkage maps, cytogenetics, gene structure and function, mutation, molecular aspects of gene expression and regulation, genetic components of cancer, and genome studies

Spring 2024: BIOL BC2100

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 2100	001/00594	T Th 10:10am - 11:25am 805 Altschul Hall	Brian Morton	3.00	26/37

Fall 2024: BIOL BC2100

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 2100	001/00006	T Th 10:10am - 11:25am 405 Milbank Hall	Jennifer Mansfield	3.00	45/70

BIOL BC2240 PLANT EVOLUTION # DIVERSITY. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent. Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent. Survey of plant biology emphasizing evolutionary and ecological perspectives on mating and reproduction, physiology, anatomy, and morphology.

BIOL BC2262 Vertebrate Biology. 3 points.
Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, and BIOL BC1503 or the equivalent.

Systematic survey of the Phylum Chordata: fossil history, biogeography, systematics, natural history, body architecture, energetics, locomotion, feeding, and behavior.

BIOL BC2272 ECOLOGY. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent. This course is a pre- or co-requisite for BIOL BC2873 Laboratory in Ecology.

The definition of ecological problems in experimentally tractable ways; the design of experiments and analysis of ecological data; class projects on population ecology. Students conduct individual projects during last month of term

Spring 2024: BIOL BC2272

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 2272	001/00570	M W 10:10am - 11:25am 805 Altschul Hall	Emlyn Resetarits	3.00	5/40

BIOL BC2278 Evolution. 3 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent.

Study of the process of evolution with an emphasis on the mechanisms underlying evolutionary change. Topics include the origins of life, rates of evolutionary change, phylogenetics, molecular evolution, adaptive significance of traits, sexual selection, and human evolution.

BIOL BC2280 ANIMAL BEHAVIOR. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, and BIOL BC1503 or the equivalent. This course is a pre-requisite for BIOL BC2281 Laboratory in Animal Behavior.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or equivalent. This introduction to animal behavior takes an integrative approach to understand the physiological and genetic basis of behavior, the ecological context of behavior, and the evolutionary consequences of behavior. This course focuses on the process of scientific research, including current research approaches in animal behavior and practical applications of these findings

Spring 2024: BIOL BC2280

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 2280	001/00569	T Th 11:40am - 12:55pm LI104 Diana Center	Alison Pischedda	3.00	38/50

BIOL BC2281 LABORATORY IN ANIMAL BEHAVIOR. 3.00 points.

Prerequisites: (BIOL BC1500) and (BIOL BC1502) and (BIOL BC2280) and (BIOL BC1501) and (BIOL BC1503) This lab provides an introduction to animal behavior research, including current research approaches and practical applications of these findings. Students will complete two main projects. The first is a group project using the fruit fly, *Drosophila melanogaster*, which will involve observing, recording, and analyzing reproductive behaviors. The second is an independent project that will be designed, conducted, and analyzed by students using publicly available animal behavior resources and/or data. Both projects will incorporate critical thinking, problem solving and experimental design, with an emphasize on scientific writing and oral presentation skills

Fall 2024: BIOL BC2281

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 2281	001/00434	T 1:10pm - 6:00pm Room TBA	Alison Pischedda	3.00	9/10

BIOL BC2490 CODING IN BIOLOGY. 3.00 points.

An introduction to the basics of Python and R coding in the context of solving basic problems in molecular biology. Python will be used to write programs that analyze various features of DNA sequence data and R will be used to analyze output from RNA-seq experiments. No prior programming experience is necessary. The work will involve modifying existing code as well as developing simple programs from the ground up

Spring 2024: BIOL BC2490

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 2490	001/00573	T 1:10pm - 4:00pm Qlab Sulzberger Hall	Brian Morton	3.00	23/25

BIOL BC2500 MATLAB FOR SCIENTISTS. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1502, and MATH UN1101 Introduction to MATLAB programming and numerical methods applied to the analysis of biological data. Topics range from foundational programming concepts and algorithms and an introduction to MATLAB, to more advanced concepts such as data visualization, curve fitting and data interpolation, basic statistical methods, modeling biological systems of ordinary differential equations, and image analysis

Spring 2024: BIOL BC2500

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 2500	001/00575	M 1:10pm - 4:00pm Qlab Sulzberger Hall	Nicolo Pini	3.00	14/12

BIOL BC2801 Laboratory in Genetics. 3 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503; and pre or corequisite, BIOL BC2100 and Enrollment limited to 16 students per section.

Exercises in genetics at both the Mendelian and molecular levels. Basic principles of genetic analysis will be studied using *Drosophila* and bacteria. A project in molecular genetics, involving such techniques as PCR, gel electrophoresis, and cloning, will be undertaken using plant genes.

BIOL BC2841 LAB-PLANT EVOLUTION # DIVERSITY. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or equivalent. Enrollment is limited to 16; must attend first lab to hold place. Prerequisites: () Enrollment is limited to 16; must attend first lab to hold place. Studies of the structure, ecology, and evolution of plants. Laboratory exercises include field problems, laboratory experiments, plant collections and identification, and examination of the morphology of plant groups

BIOL BC2851 Plants and Profits: The Global Power of Botany. 4 points.

The course is part of the Barnard Teaches program. It will have a lab that will teach science and digital skills and on Thursdays two consecutive times are scheduled to allow lecture and lab to accommodate trips to NYBG. **Not offered during 2023-2024 academic year.**

Prerequisites: Strongly recommend prior enrollment in BIOL BC1001 or 1002, or in BIOL BC 1501 and 1502, or the equivalent. Students need to understand genetics and must be prepared to read professional science literature. Science students must be prepared for lengthy reading assignments. Sustaining complex human systems requires plants, which in turn depend on soils, geology, and climate. With that reality in the foreground, this course will foster fluency and expertise in classical and cutting edge botanical science: genetics, genomics, biogeography, conservation biology, economic and ethno-botany. At the center of its investigations will be the ongoing digital revolution, recognizing that natural history has been and will continue to be essential to all of the plant sciences. The course will encourage interdisciplinary perspectives, pushing students outside of their intellectual comfort zones and aiming to comprehend plant biodiversity from a multiplicity of human perspectives.

BIOL BC2873 Laboratory in Ecology. 3 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC2272 (which can be taken as a pre- or co-requisite). Enrollment is limited to 16; must attend first lab to hold place. The definition of ecological problems in experimentally tractable ways; the design of experiments and analysis of ecological data; class projects on population ecology. Students conduct individual projects during last month of term.

BIOL BC3303 LAB IN MOLECULAR BIOLOGY. 3.00 points.

Prerequisites: BIOL BC2100 (which can be taken as a pre- or co-requisite). Enrollment is limited to 16; must attend first lab to hold place. Introduction to the use of molecular techniques to answer questions about subcellular biological phenomena. Techniques include isolation of genomic and plasmid DNAs, restriction enzyme analysis, DNA and protein electrophoresis, bacterial transformation, and plasmid subcloning

Spring 2024: BIOL BC3303

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3303	001/00576	W 1:10pm - 6:00pm 1316 Altschul Hall	Stephen Sturley	3.00	13/12

Fall 2024: BIOL BC3303

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3303	001/00432	W 1:10pm - 6:00pm Room TBA	Stephen Sturley	3.00	9/14

BIOL BC3304 Topics in Molecular Genetics. 3 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1502, BIOL BC2100 or equivalent
Selected topics in molecular genetics and gene regulation, with a focus on examples from human evolution, physiology, and disease. The course will be organized into four modules with combined lecture and journal club-style discussion. Module topics include molecular regulation of transcription, epigenetic regulation of the genome, gene regulatory networks, and genome architecture and evolution. We will draw from examples in the current literature and explore current experimental approaches in molecular genetics of humans and model organisms.

BIOL BC3305 PROJECT LAB IN MOLECULAR GENETICS. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503, and BIOL BC2100 or permission of instructor. Enrollment limited to 16. Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503, and BIOL BC2100 or permission of instructor. Enrollment limited to 16. Laboratory course in which students conduct original research projects in molecular genetics. Students will participate in experimental design, conduct and data analysis, and work with key techniques for studying gene structure, expression and function such as nucleic acid extraction and synthesis, cloning, bioinformatics analysis, PCR and qPCR. Students will present their results orally and in writing. Enrollment in both semesters (BIOL BC3305 and BIOL BC3306) of this full-year course is required, and fulfills two upper-level lab courses for the Barnard Biology major. Must be taken in sequence, beginning in the fall. -B. Morton - J. Mansfield

Fall 2024: BIOL BC3305

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3305	001/00431	T 1:10pm - 6:00pm Room TBA	Jennifer Mansfield	3.00	5/12

BIOL BC3306 PROJECT LAB MOLECULAR GENETCS. 3.00 points.

Prerequisites: BIOL BC2100 or permission of the instructors. Enrollment is limited to 16; must attend first lab to hold place. Laboratory course in which students conduct original research projects in molecular genetics. Students will participate in experimental design, conduct data analysis, and work with key techniques for studying gene structure, expression, and function including nucleic acid extraction and synthesis, cloning, bioinformatics analysis, PCR, and qPCR. Students will present their results orally and in writing. Enrollment in both semesters (BIOL BC3305 and BIOL BC3306) of this full-year course is required, and fulfills two upper-level lab courses for the Barnard Biology major. Must be taken in sequence, beginning in the fall

Spring 2024: BIOL BC3306

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3306	001/00582	W 1:10pm - 6:00pm 1214 Altschul Hall	Jennifer Mansfield, Brian Morton	3.00	6/12

BIOL BC3308 INTRODUCTION TO MICROBIAL GENOMICS. 3.00 points.

Prerequisites: (BIOL BC1500)(BIOL BC1501)(BIOL BC1502)(BIOL BC1503) and BIOL BC2100 or the equivalent. This course is an upper-level laboratory.

This course will focus on understanding, implementing, and using basic bioinformatic algorithms and tools to analyze microbial genomes and genomic information. Topics cover a history of genome sequencing methods, local and global alignment methods, sequence annotation tools, de novo genome assembly, multiple sequence alignments, and simple molecular phylogeny. Theoretical lectures will be taught in parallel with labs focused on hands-on analysis of real-world data so that students create tangible and applicable skills. Knowledge of a programming language is required to take this course. Class notes are intended to be self-contained for these topics

Spring 2024: BIOL BC3308

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3308	001/00577	W 1:10pm - 4:00pm Qlab Sulzberger Hall	Philippe Chlenski	3.00	6/12

BIOL BC3310 CELL BIOLOGY. 3.00 points.

Prerequisites: (BIOL BC1500)(BIOL BC1501)(BIOL BC1502)(BIOL BC1503) and BIOL BC2100 or equivalent.

This course explores the components, systems, and regulatory mechanisms involved in eukaryotic cellular function. Topics include: signal transduction, translational and protein quality control, organellar and cytoskeletal dynamics, and some coordinated responses such as proliferation and programmed cell death. Throughout the course we will see how general cell biology can be specialized to achieve specific cellular functions through regulation of the basic machinery. We will also explore the cellular and molecular bases for a variety of human pathologies, with an emphasis on cancer. In addition to lecture, we will spend some time discussing the material, including selected articles from the primary literature, and learning through group presentations

Fall 2024: BIOL BC3310

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3310	001/00430	T Th 8:40am - 9:55am 302 Barnard Hall	Jonathan Snow	3.00	35/45

BIOL BC3311 LABORATORY IN CELL BIOLOGY. 3.00 points.

Prerequisites: BIOL BC2100 Enrollment is limited to 16; must attend first lab to hold place.

Introduction to cell biological techniques used to investigate structural, molecular, and physiological aspects of eukaryotic cells and their organization into tissues. Techniques include light and electron microscopy, cell culture, isolation of cellular organelles, protein electrophoresis, and Western Blot analysis

Fall 2024: BIOL BC3311

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3311	001/00436	Th 1:10pm - 6:00pm Room TBA	Jonathan Snow	3.00	0/14

BIOL BC3320 MICROBIOLOGY. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503, and BIOL BC2100 or the equivalent. This course is a pre-requisite for BIOL BC3321 Laboratory in Microbiology.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent, and BIOL BC2100. Survey of the diversity, cellular organization, physiology, and genetics of the major microbial groups. Also includes aspects of applied microbiology and biotechnology, the function of microorganisms in the environment, and the role of microbes in human diseases

BIOL BC3321 LABORATORY IN MICROBIOLOGY. 3.00 points.

Prerequisites: BIOL BC3320 (which can be taken as a pre- or co-requisite). Enrollment is limited to 16; must attend first lab to hold place.

Enrollment limited to 16. Provides experience in the isolation, cultivation, and analysis of pure cultures of microorganisms. Methods used for the study of cell structure, growth, physiology, and genetics of microbes will be incorporated into laboratory exercises

Spring 2024: BIOL BC3321

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3321	001/00574	Th 1:10pm - 6:00pm 1316 Altschul Hall	Gabrielle Corradino	3.00	13/12

BIOL BC3352 DEVELOPMENT. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503, and BIOL BC2100 or the equivalent.

Introduction to animal developmental biology and its applications.

This course will examine the basic mechanisms through which animal bodies organize themselves, from an integrative perspective at the levels of genes and gene networks, cell properties and behaviors, coordinated interactions of cells in developing tissues, organs and organ systems, and the role of developmental processes in morphological evolution. Topics include: fertilization, cleavage and gastrulation, establishment of body axes, neural development, organ formation, tissue and organ regeneration, stem cells and medical applications, evolution of developmental programs, and teratogenesis

Spring 2024: BIOL BC3352

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3352	001/00571	T Th 8:40am - 9:55am 903 Altschul Hall	Jennifer Mansfield	3.00	23/40

Fall 2024: BIOL BC3352

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3352	001/00429	M W 10:10am - 11:25am 140 Horace Mann Hall	Rishita Shah	3.00	13/45

BIOL BC3354 LABORATORY IN EMBRYOLOGY. 3.00 points.

Not offered during 2023-2024 academic year.

This lab course will explore the foundational methods of vertebrate embryology. Using both classical and modern experimental approaches, we will identify and manipulate developmental processes such as gastrulation, neurulation, and organogenesis. Students will investigate molecular regulation of patterning and the importance of tissue-tissue interactions during early development. Utilizing modern genetic tools and imaging techniques, such as digital microscopy, students will have the opportunity to visualize embryogenesis in real-time. Prerequisite: Two terms of introductory biology (BIOL BC1500, BIOL BC1502 or equivalent) AND one term of Genetics (BIOL BC2100 or equivalent) AND at least one upper level lab course at the cell and molecular level. OR permission from the instructor

BIOL BC3360 PHYSIOLOGY. 3.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, and BIOL BC1503 or the equivalent.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent. This course examines how mammals carry out basic functions like manipulating objects, sensing the external world, oxygenating tissues, and processing food. Emphasis is placed on (a) how the body regulates itself through the integrated action of multiple organ systems and (b) what goes awry in disease

Spring 2024: BIOL BC3360

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3360	001/00572	T Th 6:10pm - 7:25pm 504 Diana Center	Jordan Balaban	3.00	44/60

Fall 2024: BIOL BC3360

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3360	001/00428	M W 11:40am - 12:55pm 328 Milbank Hall	Jordan Balaban	3.00	45/45

BIOL BC3361 LABORATORY IN PHYSIOLOGY. 3.00 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC3360 (or equivalent, which can be taken as a pre- or co-requisite). Enrollment is limited to 16; must attend first lab to hold place.

Prerequisites: Pre- (or co-) requisite is a physiology lecture class (e.g. BIOL BC3360). Enrollment limited to 16. Provides a hands-on introduction to the different physiological systems in vertebrates and invertebrates. Emphasizes the operation of a variety of physiological monitoring devices and the collection and analysis of physiological data

BIOL BC3362 MOLECULAR # CELLULAR NEUROSCIENCE. 3.00 points.

Prerequisites: BIOL BC1502 BIOL BC1503, and either BIOL BC1500 BIOL BC1501 or NSBV BC1001 or permission from the instructor. Structure and function of neural membranes; ionic basis of membrane potential and action potential; synaptic transmission and neurochemistry; sensory transduction and processing; reflexes and spinal cord physiology; muscle structure and function; neuronal circuitry; and nervous system development

Fall 2024: BIOL BC3362

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3362	001/00007	T Th 11:40am - 12:55pm 405 Milbank Hall	Elizabeth Bauer	3.00	60/60

BIOL BC3363 LAB IN MOLEC # CELL NEUROSCI. 3.00 points.

Prerequisites: BIOL BC3362 (which can be taken as a pre- or co-requisite). Enrollment is limited to 16; must attend first lab to hold place.

Prerequisites: BIOL BC3362 (or corequisite). Enrollment limited to 16.

Introduction to techniques commonly used in current neurobiological research, including intracellular and extracellular recording of action potentials, neuroanatomical methods, and computer simulation of the action potential

BIOL BC3367 Ecophysiology. 3 points.

Not offered during 2023-2024 academic year.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, and BIOL BC1503, or the equivalent. BIOL BC2280 is recommended.

Individuals, communities and ecosystems are composed of complex organism-environment interactions. We will examine these dynamic relationships in animals at the physiological level, covering basic concepts as they specifically relate to animal fitness. Course focus: how changes in stress and reproductive endocrinology and ecoimmunology relate to individual and population dynamics.

BIOL BC3380 Applied Ecology and Evolution. 3 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503 or the equivalent.

Ecological and evolutionary models of populations (exponential and density-dependent growth; species interactions; genetic differentiation resulting from mating, random drift, and selection) applied to problems resulting from human-induced environmental change (endangered species; use of pesticides and antibiotics; escaping transgenic organisms; global climate change; emerging pathogens; other invaders; etc.)

Spring 2024: BIOL BC3380

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3380	001/00595	M W 8:40am - 9:55am 903 Altschul Hall	Hilary Callahan	3	7/40

BIOL BC3400 MATHEMATICAL MODELING OF BIOLOGICAL SYSTEMS. 4 points.

Not offered during 2023-2024 academic year.

This course will focus on building and analyzing dynamic mathematical models (models that study how processes change in time) to understand the behavior of different biological systems. We will focus on a variety of topics in population biology, physiology and the biomedical sciences such as single and competing species models, pharmacokinetic models of drugs and toxins, enzyme reaction kinetics, epidemiology, infectious diseases and cancer. We will use mathematical tools like difference equations, differential equations, linear algebra and nonlinear analysis to study these biological processes. MATLAB programming will be used to implement these mathematical models in search of answers to biological questions.

BIOL BC3590 SR SEM IN BIOLOGY. 4.00 points.

Prerequisites: BIOL BC1500, BIOL BC1501, BIOL BC1502, BIOL BC1503, and BIOL BC2100 or the equivalent. Enrollment is limited to 12; must attend first class to hold place.

Required for all majors who do not select the year-long Senior Thesis Research # Seminar (BIOL BC3593 # BC3594) to fulfill their senior capstone requirement. These seminars allow students to explore the primary literature in the Biological Sciences in greater depth than can be achieved in a lecture course. Attention will be focused on both theoretical and empirical work. Seminar periods are devoted to oral reports and discussion of assigned readings and student reports. Students will write one extensive literature review of a topic related to the central theme of the seminar section. Topics vary per semester and include, but are not limited to: Plant Development, Animal Development # Evolution, Molecular Evolution, Microbiology # Global Change, Genomics, Comparative # Reproductive Endocrinology, and Data Intensive Approaches in Biology

Spring 2024: BIOL BC3590

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3590	001/00580	M 6:10pm - 8:00pm LI016 Milstein Center	Emlyn Resetarits	4.00	12/12

Fall 2024: BIOL BC3590

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3590	001/00426	F 12:10pm - 2:00pm 119 Milstein Center	Jordan Balaban	4.00	11/10
BIOL 3590	002/00427	M 4:10pm - 6:00pm 119 Milstein Center	Rishita Shah	4.00	0/10

BIOL BC3591 GUIDED RESEARCH # SEMINAR. 4.00 points.

Per Semester

This year-long course is open to junior and senior Biology majors and minors. Students will complete an independent research project in Biology under the guidance of a faculty mentor at Barnard or another local institution. Attendance at the weekly seminar is required. By the end of the year, students will write a scientific paper about their project and give a poster presentation about their research at the Barnard Biology Research Symposium. Completion of this year-long course fulfills two upper-level laboratory requirements for the Biology major or minor. This course must be taken in sequence, beginning with BIOL BC3591 in the Fall and continuing with BIOL BC3592 in the Spring. Acceptance into this course requires confirmation of the research project by the course instructors. A Barnard internal mentor is required if the research project is not supervised by a Barnard faculty member. This course cannot be taken at the same time as BIOL BC3593-BIOL BC3594

Fall 2024: BIOL BC3591

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3591	001/00424	M 1:10pm - 3:00pm 308 Diana Center	Jessica Goldstein, Alison Pischedda, JJ Miranda	4.00	4/10
BIOL 3591	002/00425	M 1:10pm - 3:00pm 227 Milbank Hall	Jessica Goldstein, Alison Pischedda, JJ Miranda	4.00	1/10

BIOL BC3592 GUIDED RESEARCH # SEMINAR. 4.00 points.

Per Semester

This year-long course is open to junior and senior Biology majors and minors. Students will complete an independent research project in Biology under the guidance of a faculty mentor at Barnard or another local institution. Attendance at the weekly seminar is required. By the end of the year, students will write a scientific paper about their project and give a poster presentation about their research at the Barnard Biology Research Symposium. Completion of this year-long course fulfills two upper-level laboratory requirements for the Biology major or minor. This course must be taken in sequence, beginning with BIOL BC3591 in the Fall and continuing with BIOL BC3592 in the Spring. Acceptance into this course requires confirmation of the research project by the course instructors. A Barnard internal mentor is required if the research project is not supervised by a Barnard faculty member. This course cannot be taken at the same time as BIOL BC3593-BIOL BC3594

Spring 2024: BIOL BC3592

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3592	001/00578	M 1:10pm - 3:00pm 207 Milbank Hall	Jessica Goldstein, Alison Pischedda, Jordan Balaban	4.00	10/10
BIOL 3592	002/00579	M 1:10pm - 3:00pm 111 Milstein Center	Jessica Goldstein, Alison Pischedda, Jordan Balaban	4.00	10/10

BIOL BC3593 SENIOR THESIS RESEARCH # SEMINAR. 4.00 points.

Per Semester

Prerequisites: Permission of a faculty sponsor and the department. Cannot be taken concurrently with BIOL BC3591 or BIOL BC3592. This year-long course is open to senior Biology majors. Students will complete an independent research project in Biology under the guidance of a faculty mentor at Barnard or another local institution. Attendance at the weekly seminar is required. By the end of the year, students will write a scientific paper about their project and give an oral presentation about their research at the Barnard Biology Research Symposium. Completion of this year-long course fulfills the senior capstone requirement for the Biology major. This course must be taken in sequence, beginning with BIOL BC3593 in the Fall and continuing with BIOL BC3594 in the Spring. Acceptance into this course requires confirmation of the research project by the course instructors. A Barnard internal mentor is required if the research project is not supervised by a Barnard faculty member. This course cannot be taken at the same time as BIOL BC3591-BIOL BC3592

Fall 2024: BIOL BC3593

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3593	001/00423	M 1:10pm - 3:00pm 318 Milbank Hall	Jessica Goldstein, Alison Pischedda, JJ Miranda	4.00	7/10

BIOL BC3594 SENIOR THESIS RESEARCH # SEMINAR. 4.00 points.

Prerequisites: Permission of a faculty sponsor and the department.

Cannot be taken concurrently with BIOL BC3591 or BIOL BC3592.

This year-long course is open to senior Biology majors. Students will complete an independent research project in Biology under the guidance of a faculty mentor at Barnard or another local institution. Attendance at the weekly seminar is required. By the end of the year, students will write a scientific paper about their project and give an oral presentation about their research at the Barnard Biology Research Symposium. Completion of this year-long course fulfills the senior capstone requirement for the Biology major. This course must be taken in sequence, beginning with BIOL BC3593 in the Fall and continuing with BIOL BC3594 in the Spring. Acceptance into this course requires confirmation of the research project by the course instructors. A Barnard internal mentor is required if the research project is not supervised by a Barnard faculty member. This course cannot be taken at the same time as BIOL BC3591-BIOL BC3592

Spring 2024: BIOL BC3594

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3594	001/00581	M 1:10pm - 3:00pm 903 Altschul Hall	Jessica Goldstein, Alison Pischedda, Jordan Balaban	4.00	9/10

BIOL BC3597 GUIDED RESEARCH. 1.00-4.00 points.

Prerequisites: Permission of a faculty sponsor.

Similar to BIOL BC3591-BIOL BC3592, this is a one-semester course that provides students with degree credit for unpaid research without a seminar component. You may enroll in BIOL BC3597 for between 1-4 credits per semester. As a rule of thumb, you should be spending approximately 3 hours per week per credit on your research project. A Project Approval Form must be submitted to the department each semester that you enroll in this course. Your Barnard research mentor (if your lab is at Barnard) or internal adviser in the Biology Department (if your lab is elsewhere) must approve your planned research before you enroll in BIOL BC3597. You should sign up for your mentor's section. This course does not fulfill any Biology major requirements. It is open to students beginning in their first year

Spring 2024: BIOL BC3597

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3597	001/00584		Elizabeth Bauer	1.00-4.00	5/15
BIOL 3597	002/00585		Hilary Callahan	1.00-4.00	1/15
BIOL 3597	003/00586		John Glendinning	1.00-4.00	17/15
BIOL 3597	004/00760		Jessica Goldstein	1.00-4.00	3/15
BIOL 3597	005/00587		Jennifer Mansfield	1.00-4.00	4/15
BIOL 3597	006/00588		JJ Miranda	1.00-4.00	8/15
BIOL 3597	007/00589		Brian Morton	1.00-4.00	2/15
BIOL 3597	008/00590		Alison Pischedda	1.00-4.00	4/15
BIOL 3597	009/00591		Jonathan Snow	1.00-4.00	5/15
BIOL 3597	010/00592		Gabrielle Corradino	1.00-4.00	3/15
BIOL 3597	011/00593		Jordan Balaban	1.00-4.00	2/5

Fall 2024: BIOL BC3597

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
BIOL 3597	001/00411		Elizabeth Bauer	1.00-4.00	0/15
BIOL 3597	002/00412		Hilary Callahan	1.00-4.00	0/15
BIOL 3597	003/00413		John Glendinning	1.00-4.00	0/15
BIOL 3597	004/00414		Jordan Balaban	1.00-4.00	2/15
BIOL 3597	005/00415		JJ Miranda	1.00-4.00	0/15
BIOL 3597	006/00416		Alison Pischedda	1.00-4.00	0/15
BIOL 3597	007/00417		Jonathan Snow	1.00-4.00	1/15
BIOL 3597	008/00418		Brian Morton	1.00-4.00	0/15
BIOL 3597	009/00419		Jennifer Mansfield	1.00-4.00	1/15
BIOL 3597	010/00420		Gabrielle Corradino	1.00-4.00	0/15
BIOL 3597	011/00421		Jessica Goldstein	1.00-4.00	2/15
BIOL 3597	012/00422		Emlyn Resetarits	1.00-4.00	0/15

Cross-Listed Courses

Anatomy (Barnard)

ANAT BC2573 HUMAN ANATOMY AND MOVEMENT. 3.00 points.

Corequisites: ANAT BC2574

Corequisites: ANAT BC2574 Dancers and other movers will acquire concrete, scientific information about anatomy and integrate this knowledge into their sensed experience of movement. Through readings, lecture/discussions and movement practice, students will explore: (1) structure and function of bones and joints, (2) muscles, neuromuscular function and coordination, (3) motor cognition and learning

Fall 2024: ANAT BC2573

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
ANAT 2573	001/00251	M W 10:10am - 11:25am LI020 Milstein Center	Chisa Hidaka	3.00	24/22

ANAT BC2574 LABORATORY IN HUMAN ANATOMY. 3.00 points.

Corequisites: ANAT BC2573

Corequisites: DNCE BC2573 This new interdisciplinary laboratory course will introduce students to the practices of creative and scientific research in anatomy. The laboratory course will offer students “hands-on” opportunities to view cadaveric specimens, to collect, analyze and communicate scientific information/data related to anatomy and to explore the use of anatomical information to generate creative movement and choreography

Fall 2024: ANAT BC2574

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
ANAT 2574	001/00752	M 1:10pm - 5:00pm Room TBA	Chisa Hidaka, Cecilia Fontanesi	3.00	9/16

Chemistry (Barnard)

CHEM BC2900 Research Methods Seminar. 1 point.

Instructor's Permission Required

Prerequisites: Students must be sophomores with a strong interest in pursuing research in the biological or chemical sciences Skills to facilitate into biology and chemistry research. Students will learn to think and work like scientists and to identify, apply for and gain entry to research lab groups. Focus on writing and oral presentation skills. Additional readings and discussions on laboratory safety, women in science, and scientific ethics.

CHEM BC3282 BIOLOGICAL CHEMISTRY. 3.00 points.

Prerequisites: (CHEM BC3230) and (CHEM BC3231) BIOL BC1502.

Introduction to biochemical building blocks, macromolecules, and metabolism. Structures of amino acids, lipids, carbohydrates, nucleic acids. Protein structure and folding. Enzyme mechanisms, kinetics, allostery. Membranes and biosignaling. Catabolism and anabolism with emphasis on chemical intermediates, metabolic energy, catalysis by specific enzymes, regulation

Spring 2024: CHEM BC3282

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
CHEM 3282	001/00274	W F 11:40am - 12:55pm 903 Altschul Hall	Romina Mancusso	3.00	42/40

Fall 2024: CHEM BC3282

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
CHEM 3282	001/00055	M W 2:40pm - 3:55pm 328 Milbank Hall	Romina Mancusso	3.00	41/50

CHEM BC3355 BIOCHEMISTRY LAB TECHNIQUES. 5.00 points.

Prerequisites: Organic II lab (CHEM BC3333, BC3335, or equivalent); Quantitative analysis lab (BC3338, BC3340, or equivalent); Biochemistry (CHEM BC3282y, CHEM C3501, or equivalent). Lecture: T 1:10-12:50; Laboratory two afternoons: T 2:10-6:00 / TH 1:10-5:00.

Prerequisites: Organic II lab (CHEM BC3333, BC3335, or equivalent); Quantitative analysis lab (BC3338, BC3340, or equivalent); Biochemistry (CHEM BC3282y, CHEM C3501, or equivalent). Theory and application of fundamental techniques for the isolation, synthesis and characterization of biological macromolecules including proteins, lipids, nucleotides and carbohydrates. Techniques include spectroscopic analysis, gel electrophoresis, chromatography, enzyme kinetics, immunoblotting, PCR, molecular cloning and cell culture, as well as modern laboratory instrumentation, such as UV-Vis, GC-MS and HPLC

Spring 2024: CHEM BC3355

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
CHEM 3355	001/00330	T Th 1:10pm - 5:00pm 606 Altschul Hall	Rebecca Donegan	5.00	13/12

CHEM BC3357 Biochemistry Laboratory Techniques. 3 points.

Fee: \$45.

Prerequisites: four terms of chemistry and biology laboratory.

Corequisites: *BIOC C3501* or *BCHM G4021*.

Lecture and lab. Same course as *BC3355*, but only one section of lab hours required.

Neuroscience and Behavior (Barnard)

NSBV BC2002 STATISTICS AND EXPERIMENTAL DESIGN. 4.00 points.

This course is for students interested in learning how to conduct scientific research. They will learn how to (i) design well-controlled experiments and identify “quack” science; (ii) organize, summarize and illustrate data, (iii) analyze different types of data; and (iv) interpret the results of statistical tests

Spring 2024: NSBV BC2002

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
NSBV 2002	001/00046	T Th 2:40pm - 3:55pm 324 Milbank Hall	Anamaria Alexandrescu	4.00	15/30
NSBV 2002	001/00046	Th 4:10pm - 5:00pm 324 Milbank Hall	Anamaria Alexandrescu	4.00	15/30

Fall 2024: NSBV BC2002

Course Number	Section/Call Number	Times/Location	Instructor	Points	Enrollment
NSBV 2002	001/00139	T Th 2:40pm - 3:55pm 324 Milbank Hall	Anamaria Alexandrescu	4.00	25/25
NSBV 2002	001/00139	Th 4:10pm - 5:00pm 324 Milbank Hall	Anamaria Alexandrescu	4.00	25/25