

Majoring in Biology at Barnard

The following slides are meant to help guide newly declared and prospective majors in navigating a major in Biology at Barnard. Courses are organized by their pre-requisites and whether the course is offered in the fall, spring, or either semester. Whether a course is offered in the spring or fall is provided as a general guideline; these are subject to change at the discretion of the instructor. Questions can be directed to the department administrator, Melissa Flores (mflores@barnard.edu) or the chair, Hilary Callahan (hcallaha@barnard.edu).

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Introductory Biology Requirement

Notes: Those considering a major in biology should begin with BIOL BC1500 or BIOL BC1002 in their freshman fall.

For students without a strong high school background in Biology (such as AP Biology)

BIOL BC1002
Global Health & Ecology
(Fall Only)

Co-Requisite:
BIOL BC1012
BIOL BC1002 Lab
(Fall Only)

Co-Requisites:

BIOL BC1510 **BIOL BC1501**
BIOL BC1500 Introductory Lab in
Discussion + Organismal &
Section Evolutionary Biology
(Fall Only) (Fall Only)

Co-Requisite for BIOL BC1501:

BIOL BC1511
BIOL BC1501 Recitation
(Fall Only; Asynchronous)

BIOL BC1500
Introduction to Organismal & Evolutionary Biology
(Fall Only)

For students with a strong high school background in Biology (such as AP Biology)

BIOL BC1502
Introduction to Cellular & Molecular Biology
(Spring Only)

Full-year sequence; can be taken in either order.

Recommended: begin in your first year

Co-Requisite for BIOL BC1503:

BIOL BC1513
BIOL BC1503 Recitation
(Spring Only; Asynchronous)

Co-Requisites:

BIOL BC1512 **BIOL BC1503**
BIOL BC1502 Introductory Lab
Discussion + in Cell &
Section Molecular Biology
(Spring Only) (Spring Only)

Recommended: once a student has completed the full-year introductory 1500-level sequence, they are encouraged but not required to take BIOL BC2100 Molecular & Mendelian Genetics

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To view a list of upper-level biology lab courses offered at Barnard, click [here](#).

If you have not yet taken genetics, click the bubble below to see which courses you can take prior to fulfilling your genetics requirement.

[Upper-Level Labs & Lectures WITHOUT
A Genetics Pre-Requisite](#)

If you are currently enrolled in or have already taken genetics, click the bubble below to see which courses you have met the pre-requisites for.

[BIOL BC2100 Molecular &
Mendelian Genetics](#)

[OR](#)

[BIOL UN3031 Genetics](#)

Genetics Requirement

Notes: Recommended, but not required to complete in your sophomore year following the 1500-level series.

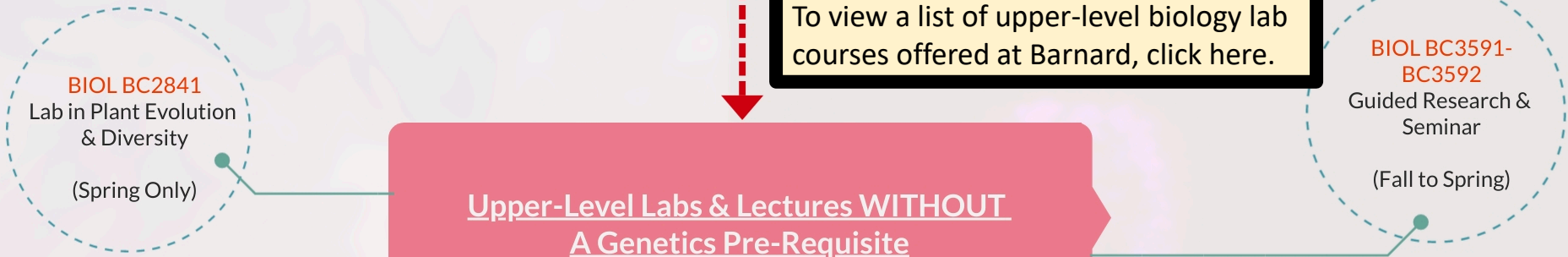
Though Genetics is a pre-requisite for many courses, especially C&M courses, some C&M and many P&O and E&E courses do not require Genetics and can be taken as early as your sophomore year

Upper-Level Lab & Electives Requirements

Notes: Students must complete five courses from the three categories: Cellular & Molecular (C&M), Physiological & Organismal (P&O), and Ecological & Evolutionary (E&E). To select and complete one of the three tracks, at least four courses must be from the appropriate category and at least one from another category. To complete the Biology Major that is general rather than a specialized track, the five courses must include at least one course from each of the three categories. Although some courses are listed in multiple categories, a student can only use a course towards one of the categories. If a student completes courses which make them eligible for more than one of the four options, then they may select which one is reflected on their transcript. Students may take any upper-level Biology lab courses for which they meet the pre- or co-requisite. A year-long research & seminar or project lab course may fulfill up to two lab courses. Students may also take laboratory courses at Columbia (or other institutions) to satisfy the lab requirement with permission from the Chair.

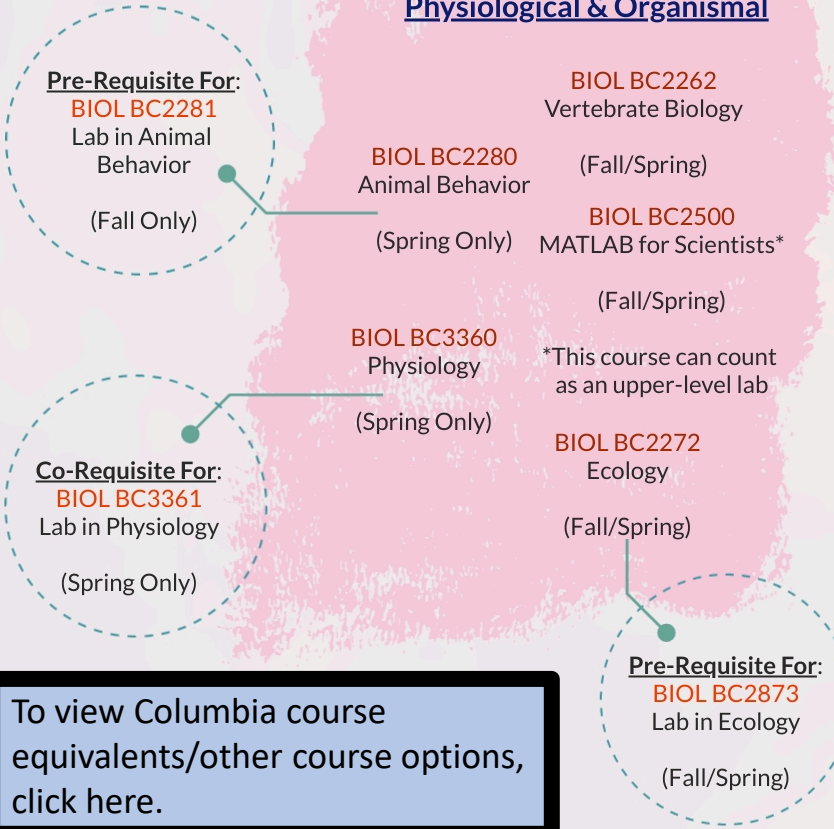
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To view a list of upper-level biology lab courses offered at Barnard, click [here](#).

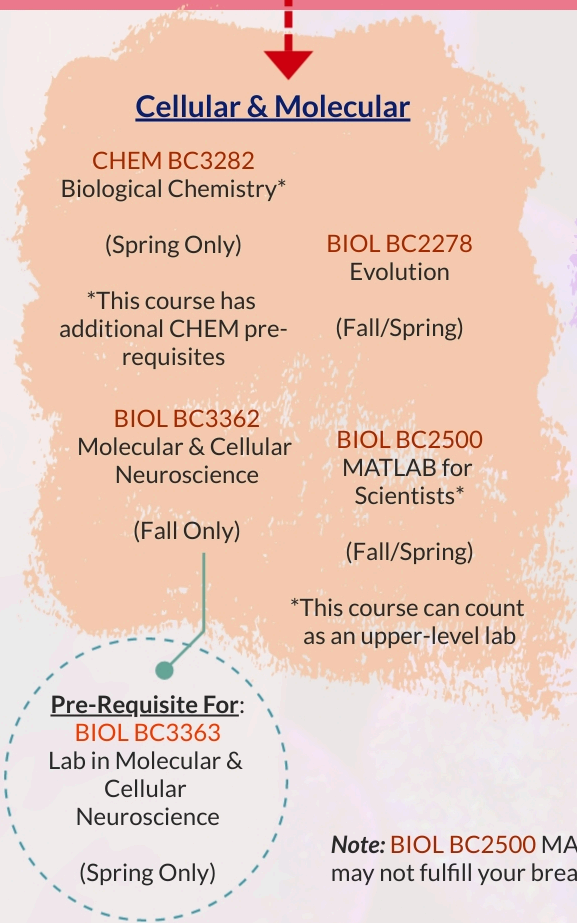


Upper-Level Labs & Lectures WITHOUT A Genetics Pre-Requisite

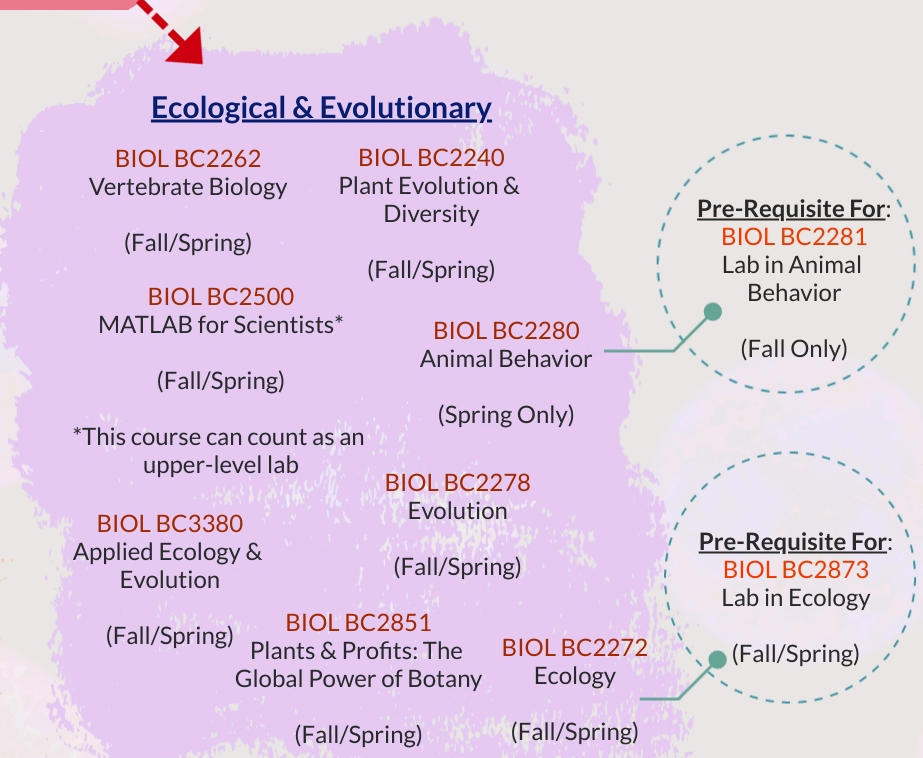
Physiological & Organismal



Cellular & Molecular



Ecological & Evolutionary



To view Columbia course equivalents/other course options, click [here](#).

Note: BIOL BC2500 MATLAB for Scientists can be used to fulfill a lecture for all three categories, however, it may not fulfill your breadth requirement (i.e. cannot be the only course for a category).

**BIOL BC2100 Molecular & Mendelian Genetics
OR
BIOL UN3031 Genetics**

Pre-Requisite For:
BIOL BC2801
Lab in Genetics
(Fall/Spring)

Pre-Requisite For:
BIOL BC3303
Lab in Molecular
Biology
(Fall/Spring)

Pre-Requisite For:
**BIOL BC3305-
BC3306**
Project Lab in
Molecular Genetics
(Fall to Spring)

Pre-Requisite For:
BIOL BC3311
Lab in Cell Biology
(Fall Only)

To view a list of
upper-level
biology lab
courses offered
at Barnard,
click here.

Physiological & Organismal

BIOL BC3352
Development
(Spring Only)

BIOL BC3320
Microbiology
(Fall Only)

**BIOL BC2801, BC3303,
BC3305-BC3306, BC3311, OR
BC3321 are Pre-Requisite For:**

BIOL BC3354
Lab in Embryology
(Fall/Spring)

Pre-Requisite For:
BIOL BC3321
Microbiology
(Spring Only)

Cellular & Molecular

BIOL BC3304
Topics in Molecular Genetics
(Spring Only)

BIOL BC3308
Genomics and Bioinformatics
(Fall/Spring)

BIOL BC3352
Development
(Spring Only)

BIOL BC2490
Coding in Biology*
(Spring Only)

BIOL BC3310
Cell Biology
(Fall Only)

*This course can count as an
upper-level lab

BIOL BC3320
Microbiology
(Fall Only)

Ecological & Evolutionary

BIOL BC3320
Microbiology
(Fall Only)

Pre-Requisite For:
BIOL BC3321
Microbiology
(Spring Only)

Pre-Requisite For:
BIOL BC3321
Microbiology
(Spring Only)

To view Columbia course
equivalents/other course
options, click here.

Upper-Level Biology Labs Offered at Barnard

- BIOL BC2281 Laboratory in Animal Behavior (pre-req: BIOL BC2280)
- BIOL BC2490 Coding in Biology* (pre-req: BIOL BC2100)
- BIOL BC2500 MATLAB for Scientists** (pre-req: BIOL BC1500, BIOL BC1502, & MATH UN1101)
- BIOL BC2801 Laboratory in Genetics (pre-/co-req: BIOL BC2100)
- BIOL BC2841 Laboratory in Plant Evolution and Diversity (pre-req: BIOL BC1500, BIOL BC1501, BIOL BC1502, & BIOL BC1503)
- BIOL BC2873 Laboratory in Ecology (pre-req: BIOL BC1500, BIOL BC1501, BIOL BC1502, & BIOL BC1503)
- BIOL BC3303 Laboratory in Molecular Biology (pre-/co-req: BIOL BC2100)
- BIOL BC3305-BC3306 Project Laboratory in Molecular Genetics (yearlong) (pre-req: BIOL BC2100)
- BIOL BC3311 Laboratory in Cell Biology (pre-req: BIOL BC2100)
- BIOL BC3321 Laboratory in Microbiology (pre-req: BIOL BC3320)
- BIOL BC3354 Laboratory in Embryology (pre-req: BIOL BC2801, BIOL BC3303, BIOL BC3305-BIOL BC3306, BIOL BC3311, OR BIOL BC3321)
- BIOL BC3361 Laboratory in Physiology (pre-/co-req: BIOL BC3360)
- BIOL BC3363 Laboratory in Molecular and Cellular Neuroscience (pre-req: BIOL BC3362)
- BIOL BC3591-BC3592 Guided Research and Seminar

*Note: 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 category.

**Note: 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, and E&E categories, but cannot fulfill a breadth requirement.

List of Commonly Offered Upper Level Labs

Notes: General Biology, C&M, P&O, and E&E majors must complete at least three upper-level labs. Students may take any upper-level biology lab courses for which they meet the pre- or co-requisite, meaning a course that must be taken prior to or simultaneously in order to enroll in the lab course.

A yearlong research & seminar or project lab course may fulfill up to two lab courses. Students may also take laboratory courses at Columbia (or other institutions) to satisfy the lab requirement with permission from the Chair.

Here, courses are listed with their course pre-requisite equivalents.



Senior Capstone Experience

BIOL BC3590
Senior Seminar

(Fall/Spring)

Topics Vary by Semester

BIOL BC3593-BC3594
Senior Thesis Research &
Seminar

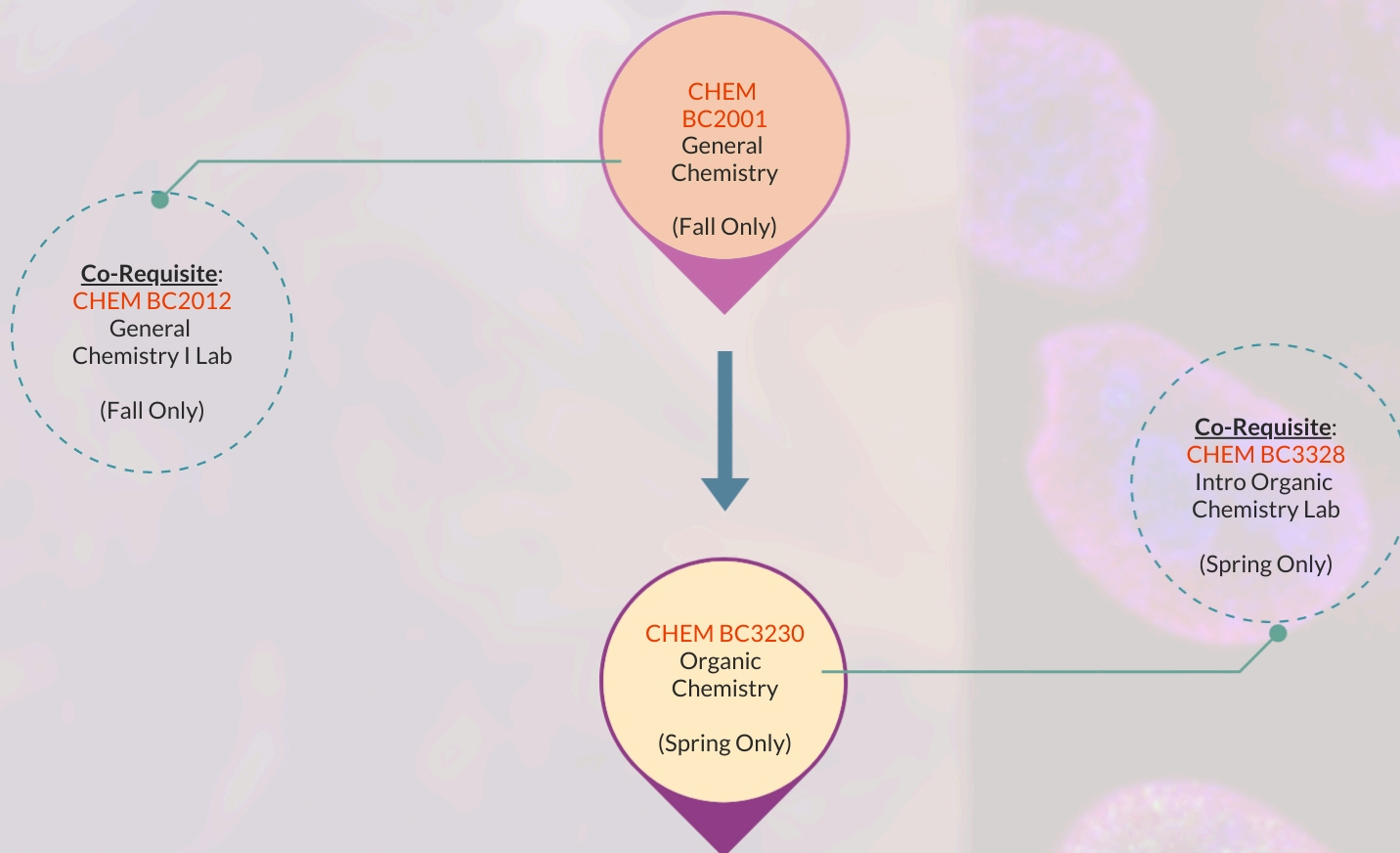
(Fall to Spring)

Notes: In Senior Seminar, enrolled students participate in a seminar focusing on primary literature and compose and give a presentation on a senior thesis in the format of a literature review. This course may also count as an upper-level elective if a topic is taken prior to the topic taken during your senior year (i.e. as space is available in the class, you may be able to take this course as a junior). Genetics is a pre-requisite.

Notes: In Senior Thesis Research and Seminar, students complete an original research project in a lab, and compose and give a presentation on a senior thesis in the format of a primary research paper. Students may not be enrolled in both Senior Thesis Research and Seminar AND Guided Research and Seminar. They may, however, continue a project begun in their sophomore or junior year while enrolled in Guided Research and Seminar.

Senior Capstone Experience

Notes: Students complete the Senior Capstone Experience with either of these two options.



Chemistry Requirement

Notes: All majors, regardless of their track, must complete at least one semester of General Chemistry (with laboratory) and at least one semester of Organic Chemistry (with laboratory). Equivalent courses at Columbia may be taken in lieu of the Barnard Chemistry CHEM BC2001 + CHEM BC2012 General Chemistry lecture + lab and CHEM BC3230 + CHEM BC3328 Organic Chemistry lecture + lab courses.

Columbia Biological Sciences & Ecology, Evolution, and Environmental Biology (E3B) Upper-Level Electives & Labs

Upper-Level Labs

EEEB W3215

Forensic
Osteology

(Fall/Spring)

EEEB G4910

Field Botany -
Plant Systematics

(Fall/Spring)

Physiological & Organismal

BIOL UN3006

General
Physiology*

(Fall Only)

*Equivalent to
BIOL BC3360
Physiology

BIOL UN3022
Developmental
Biology*

(Fall Only)

*Equivalent to
BIOL BC3352
Development

EEEB UN3208
Explorations in
Primate Anatomy

(Fall/Spring)

BIOL UN3005

Neurobiology II:
Development &
Systems

(Spring Only)

EEEB UN3011
Behavioral Biology
of Living Primates

(Spring Only)

Note: the 1000-
level course with
the same name
does NOT count
toward the major.

EEEB W4112
Ichthyology

(Fall/Spring)

Cellular & Molecular

BIOL UN3022
Developmental
Biology*

(Fall Only)

*Equivalent to
BIOL BC3352
Development

BIOL UN3041
Cell Biology*

(Fall/Spring)

*Equivalent to
BIOL BC3310 Cell
Biology

BIOL UN3300
Biochemistry*

OR

BIOC UN3511
Biochemistry I:
Structure &
Metabolism*

(Both -- Fall Only)

*Equivalent to
CHEM BC3282
Biological
Chemistry

BIOL UN3004
Neurobiology I:
Cellular &
Molecular
Neurobiology

(Fall Only)

BIOL UN3034
Biotechnology

(Fall Only)

BIOL UN3073
Cellular &
Molecular
Immunology

(Fall Only)

BIOL UN3310
Virology

(Spring Only)

BIOC UN3512
Molecular
Biology

(Spring Only)

Ecological & Evolutionary

EEEB UN3005

Introduction to Statistics
for Ecology & Evolutionary
Biology

(Fall/Spring)

EEEB UN3087
Conservation Biology

(Fall/Spring)

EEEB W3030
Biology, Systematics, and
Evolutionary History of
"The Apes"

(Fall/Spring)

EEEB W4060
Invasion Biology

(Fall/Spring)

EEEB W4110
Coastal Estuarine Ecology

(Fall/Spring)

EEEB W3204

Dynamics of Human
Evolution

(Fall/Spring)

EEEB UN3220
The Evolution of Human
Growth & Development

(Spring Only)

EEEB UN3970
Biological Basis of Human
Variation

(Fall/Spring)

EEEB W4111
Ecosystem Ecology &
Global Change

(Fall/Spring)

EEEB G4910
Field Botany - Plant
Systematics

(Fall/Spring)

To go back to the Barnard
course listings that DO NOT
require genetics, click here.

To go back to the Barnard
course listings that DO require
genetics, click here.