THE NEW BIOLOGY MAJOR

The new major requirements automatically apply to any student who is currently in their first year or second at Barnard - that is, the class of 2019 or 2020. Any other student, regardless of whether or not they have already declared a Biology major, can elect to follow the new requirements but does not have to do so. You would then just follow the old major requirements. If you do wish to follow the new requirements, then speak to your adviser and fill out a change of major form (if you have already declared a Biology major) so that the form reflects the track you wish to fulfill.

There are four possible ways to complete a major within Biology. A student can obtain a general Biology Major or may complete one of the three majors that concentrate on a specific level of Biological organization: Cell and Molecular Biology, Physiology and Organismal Biology, or Ecology and Evolutionary Biology.

Introductory Biology and Genetics
All students complete the 1500-level introductory sequence followed by a course in Genetics:

- BIOL BC1500x Introduction to Organismal and Evolutionary Biology
- BIOL BC1501x Introductory Lab in Organismal and Evolutionary Biology
- BIOL BC1502y Introduction to Cell and Molecular Biology
- BIOL BC1503y Introductory Lab in Cell and Molecular Biology
- BIOL BC 2100 Molecular and Mendelian Genetics

It is recommended, but not required, that Genetics be taken immediately after completing the 1500-level introductory sequence.

Upper-level Courses
Students must complete five courses from the three categories below. To complete one of the three concentrations, at least 4 courses must be from the appropriate category and at least 1 from another category. To complete the Biology Major without a concentration, 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. Additional Columbia courses that can be used to fulfill the major requirements are provided on the biology website. If a student completes courses which make her eligible for more than one of the four majors then she may select which one is reflected on her transcript.
Courses in the Biology Major (see the last page of this packet for courses offered in Spring 2017)

**Cell & Molecular Biology:**
- BIOL BC2278 Evolution
- BIOL BC3308 Genomics and Bioinformatics
- BIOL BC3310 Cell Biology
- BIOL BC3320 Microbiology
- BIOL BC3352 Development
- BIOL BC3362 Molecular and Cellular Neuroscience
- CHEM BC3282 Biochemistry I
- BIOL W3034 Biotechnology
- BIOL W3073 Cellular and Molecular Immunology
- BIOL W3310 Virology

**Physiology & Organismal Biology**
- BIOL BC2262 Vertebrate Biology
- BIOL BC2280 Animal Behavior
- BIOL BC2286 Statistics and Research Design
- BIOL BC3320 Microbiology
- BIOL BC3360 Physiology
- BIOL BC3367 Ecophysiology
- EEEB W3011 Behavioral Biology of Living Primates
- EEEB W3208 Explorations in Primate Anatomy
- EEEB W4112 Ichthyology
- BIOL W3005 Neurobiology: Development & Systems

**Ecology & Evolutionary Biology**
- BIOL BC2240 Plant Evolution and Diversity
- BIOL BC2262 Vertebrate Biology
- BIOL BC2272 Ecology
- BIOL BC2278 Evolution
- BIOL BC2286 Statistics and Research Design
- BIOL BC3280 Applied Ecology and Evolution
- BIOL BC3367 Ecophysiology
- BIOL BC3388 Tropical Ecology
- EEEB W3087 Conservation Biology
- EEEB W4110 Coastal Estuarine Ecology

The four majors are summarized in the following Table:

<table>
<thead>
<tr>
<th>Major</th>
<th>Course Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>Five courses with at least one course from each of the three categories.</td>
</tr>
<tr>
<td>Cell &amp; Molecular Biology</td>
<td>Four courses from the Cell &amp; Molecular Biology category, one from another category.</td>
</tr>
<tr>
<td>Physiology &amp; Organismal Biology</td>
<td>Four courses from the Physiology &amp; Organismal Biology category, one from another category.</td>
</tr>
<tr>
<td>Ecology &amp; Evolutionary Biology</td>
<td>Four courses from the Ecology &amp; Evolutionary Biology category, one from another category.</td>
</tr>
</tbody>
</table>
Three upper-level laboratory courses
Students may take any upper-level Biology lab courses for which they meet the pre- or co-requisite. A year-long research-seminar course may substitute for lab courses, as described below. Students may also take laboratory courses at Columbia (or other institutions) to satisfy the lab requirement, with permission from the department chair.

Guided Research and Seminar
Enrollment in the year-long sequence of Guided Research and Seminar (BIOL BC3591x, 3592y) fulfills two upper-level labs. This course is only available as a Fall-Spring sequence.

Senior Capstone Experience
Students complete the Senior Capstone Experience with either of the following two options:
1. One semester of Senior Seminar BIOL BC3595
2. The year-long Senior Thesis Research and Seminar (BIOL BC3592x, 3593y)

Chemistry Requirement
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).

THE BIOLOGY MINOR
A minor in biology includes:
2. Three biology lecture courses at the 2100 level or higher.
3. Two biology laboratory courses. One of the lab courses may be replaced by two semesters of Guided Research and Seminar (BIOL BC3591x followed by BIOL BC3592y).

Please note: Chemistry, environmental science, physics, and psychology majors need to take only one advanced laboratory instead of two, but the lab may NOT be a guided research course.

ADVISING POLICIES
In the biology department, students select their advisors rather than having them assigned. The student’s choice must be approved and her major declaration form signed by the Associate Chair. Any biology faculty member can serve as an advisor. There are also two interdepartment majors (below).

RELATED DEPARTMENTS AND MAJORS
Environmental Biology
(Potential advisors in Biology are Callahan, Hertz, or McGuire)
This major is run jointly by faculty in the Departments of Biology and Environmental Science. It examines the interactions between living and non-living components of the environment, and how human activities alter these interactions. http://envsci.barnard.edu/majors/environmental-biology

Neuroscience and Behavior
(Potential advisors in Biology are Bauer, Glendinning, or Hertz)
This major is run jointly by faculty in the Departments of Biology and Psychology. It provides a strong background in the biological underpinnings of behavior and cognition. http://neuroscience.barnard.edu/
RESEARCH OPPORTUNITIES

We strongly encourage students to get involved in research during the summer, academic year, or both. For many students, research is one of the most intellectually rewarding experiences at Barnard. It is also possible to receive credit for working in a laboratory at Barnard or anywhere else in New York City. You can become involved in biology research during any (or all) of your semesters at Barnard.

Three courses provide credit for research during the academic year. Before signing up for any of these courses, you should examine the associated Checklists for Enrollment located on the Biology website:

1. **Guided Research (BIOL BC3597)**: This is a variable-credit one-semester course, which can be taken during any Fall or Spring semester.

2. **Guided Research & Seminar (BIOL BC3591-2)**: This is a year-long course that begins in the fall. It can serve in lieu of 2 laboratory requirements* for the Biology major.

   *One caveat is that the 2 lab credits for Guided Research and Seminar cannot be applied retroactively. It can be applied to students currently enrolled in the course - and in future years - but not to students who took it previous to the 2015-16 academic year.

3. **Senior Thesis Research (BIOL BC3593-4)**: This is a year-long course, beginning in the fall the senior year. It can serve of the Senior requirement or in lieu of 2 laboratory requirements for the Biology major (but not both).

*Please Note:* You cannot get credit for doing research during the summer
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL BC1002</td>
<td>Contemporary Issues in Biology</td>
<td>Diana Heller</td>
<td>MWF 9:00am-9:50am</td>
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<tr>
<td>BIOL BC 1502</td>
<td>Introduction to Cellular &amp; Molecular Biology</td>
<td>TBD</td>
<td>MWF 9:00am-9:50am</td>
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<tr>
<td>BIOL BC1503</td>
<td>Introductory Lab in Cellular &amp; Molecular Biology</td>
<td>Jessica Goldstein</td>
<td>Various Sections</td>
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<tr>
<td>BIOL BC 1513</td>
<td>Recitation</td>
<td>Jessica Goldstein</td>
<td>M or F</td>
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<tr>
<td>BIOL BC 1599</td>
<td>Biology Journal Club</td>
<td>Paul Hertz</td>
<td>W 1:10am-11:25am</td>
</tr>
<tr>
<td>BIOL BC2100</td>
<td>Molecular and Mendelian Genetics</td>
<td>Jennifer Mansfield</td>
<td>TTH 10:10am-11:25am</td>
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<tr>
<td>BIOL BC2262</td>
<td>Vertebrate Biology</td>
<td>Paul Hertz</td>
<td>MW 10:10am-11:25am</td>
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<td>BIOL BC2280</td>
<td>Animal Behavior</td>
<td>TBD</td>
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<tr>
<td>BIOL BC3308</td>
<td>Genomics &amp; Bioinformatics</td>
<td>Matthew Rhodes</td>
<td>MW 11:40am-12:55pm</td>
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<tr>
<td>BIOL BC3360</td>
<td>Physiology</td>
<td>John Glendinning</td>
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<td>BIOL BC3388</td>
<td>Tropical Ecology</td>
<td>Krista McGuire</td>
<td>TTH 11:40am-12:55pm</td>
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<tr>
<td>DNCE BC2574</td>
<td>Laboratory in Human Anatomy</td>
<td>Chisa Hidaka</td>
<td>M 12:10pm-4:00pm</td>
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<tr>
<td>BIOL BC3303</td>
<td>Laboratory in Molecular Biology</td>
<td>Matthew Rhodes</td>
<td>TH 1:10pm-6:00pm</td>
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<tr>
<td>BIOL BC3306*</td>
<td>Project Laboratory in Molecular Genetics</td>
<td>Jennifer Mansfield &amp;</td>
<td>W 1:10pm-6:00pm</td>
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<td></td>
<td></td>
<td>Brian Morton</td>
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<tr>
<td>BIOL BC3361</td>
<td>Laboratory in Physiology</td>
<td>John Glendinning</td>
<td>TH 1:10pm-6:00pm</td>
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<tr>
<td>BIOL BC3363</td>
<td>Laboratory in Molecular and Cellular Neuroscience</td>
<td>Elizabeth Bauer</td>
<td>W 1:10pm-6:00pm</td>
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<td>BIOL BC3590</td>
<td>Senior Seminar</td>
<td>Brian Morton</td>
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<td>BIOL BC3592*</td>
<td>Guided Research and Seminar</td>
<td>Krista McGuire &amp;</td>
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<td></td>
<td>Hilary Callahan</td>
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<tr>
<td>BIOL BC3594*</td>
<td>Senior Thesis Seminar</td>
<td>Krista McGuire &amp;</td>
<td>M 1:10pm-2:00pm</td>
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<tr>
<td></td>
<td></td>
<td>Hilary Callahan</td>
<td></td>
</tr>
<tr>
<td>BIOL BC3597</td>
<td>Guided Research</td>
<td>All Faculty</td>
<td></td>
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<tr>
<td>HSPP BC1002*</td>
<td>Research Apprenticeship Seminar</td>
<td>Jennifer Mansfield</td>
<td>T 4:10pm-6:00pm</td>
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<tr>
<td>CHEM BC2900</td>
<td>Research Methods Seminar</td>
<td>Jennifer Mansfield &amp;</td>
<td>TH 1:00pm-2:00pm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jean Vadakkan</td>
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</tr>
</tbody>
</table>

*For continuing students only

Barnard College Department of Biology | 1203 Altschul Hall | http://biology.barnard.edu/