The Biology Graduate Program represents many areas of biology, and interactions with a diverse group of colleagues provide opportunities to broaden every student’s thinking and make connections between different fields and scientific approaches. Areas of research include microbiology, cell biology, development, physiology, neuroscience, animal behavior, plant biology, genetics, computational biology, evolution, ecology and biodiversity.

Each entering graduate student has the freedom to pursue topics ranging from the behavior of molecules to that of cells, organisms, genomes, and ecosystems. We encourage students to get broad exposure through lab rotations with any faculty member in the Biology Graduate Group. As students focus on more specific research interests, they tailor their graduate education accordingly, choosing courses from different departments and schools at Penn as appropriate.

Students complete most of their course work and lab rotations in the first year and then start their thesis research in the second year while completing their teaching requirement and preparing for their candidacy exams. Students are then fully focused on thesis research by the end of the second year. Students still have the option of taking additional courses in advanced years in order to enhance their graduate research.

For more information: http://www.bio.upenn.edu/graduate/

View the University’s Academic Requirements for PhD Degrees (http://catalog.upenn.edu/pennbook/academic-rules-phd).

### Required Courses

The total course units for graduation in this program is 20.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Course Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Foundation Course</strong></td>
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<tr>
<td>BIOL 700</td>
<td>Advanced Topics in Current Biological Research</td>
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<tr>
<td></td>
<td><strong>Writing Course</strong></td>
<td></td>
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<tr>
<td>BIOL 607</td>
<td>Writing for Biologists</td>
<td>1</td>
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<td><strong>Core Courses</strong></td>
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<td>Select two of the following:</td>
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<tr>
<td>BIOL 410</td>
<td>Advanced Evolution</td>
<td></td>
</tr>
<tr>
<td>BIOL 411</td>
<td>Evolutionary Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOL 540</td>
<td>Genetic Analysis</td>
<td></td>
</tr>
<tr>
<td>BIOM 600</td>
<td>Cell Biology</td>
<td></td>
</tr>
<tr>
<td>or BIOL 417</td>
<td>Theoretical Population Biology</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Electives</strong></td>
<td></td>
</tr>
<tr>
<td>Select three electives</td>
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<td>3</td>
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</tbody>
</table>
| 1 See the website for a list of electives: http://www.bio.upenn.edu/graduate/handbook/academic-topics/course-requirements

### Sample Plan of Study

#### Year 1

**Fall**
- BIOL 700 Advanced Topics in Current Biological Research
- BIOM 600 Cell Biology or BIOL 410 Advanced Evolution
- BIOL 446 Statistics for Biologists (or other elective)
- BIOL 999 Independent Study and Research

**Spring**
- BIOL 540 Genetic Analysis
- BIOL 411 Evolutionary Ecology or BIOL 417 Theoretical Population Biology
- Electives
  - BIOL 999 Independent Study and Research
  - BIOL 999 Independent Study and Research

**Summer**
- Thesis Research

#### Year 2

**Fall**
- Additional Coursework
- BIOL 999 Independent Study and Research
- Teaching Requirement

**Spring**
- Additional Coursework
- BIOL 607 Writing for Biologists
- BIOL 999 Independent Study and Research
- Teaching Requirement

**Summer**
- Candidacy Exam

### Year 3 and Beyond

- Dissertation

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2019 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.