The biology PhD program seeks to provide a broad background knowledge base in conjunction with in-depth study of a specialized area of biology. Two optional concentrations are available: cell and molecular biology and molecular microbiology. The program emphasizes close interaction between graduate students and faculty members in developing the intellectual and experimental skills required for creative, independent research.

The PhD program entails course work from a core biology curriculum along with advanced courses in the student's area of research interest. This is complemented by intensive research and completion of a dissertation under faculty supervision. Faculty research includes biochemistry, microbiology, cell and molecular biology, genetics, neurobiology, regenerative biology, and the biology of reproduction.

**Program Requirements**

**Bachelor's Degree Entrance**

Complete all courses and requirements listed below unless otherwise indicated.

**Milestones**

- Qualifying examination
- Annual review
- Dissertation committee
- Dissertation proposal
- Colloquia (minimum of three)
- First-author publication
- Dissertation defense

**General Requirements**

**Research Ethics**

BIOL 7399 Research Problem Solving, Ethics, and Communication Skills

**Colloquium**

Complete the following (repeatable) course twice:

- BIOL 5100 Biology Colloquium

**Dissertation Courses**

Complete the following (repeatable) course twice:

- BIOL 9990 Dissertation

**BIOLOGY PHD WITHOUT CONCENTRATION**

**Required Course Work**

Complete 8 semester hours from the following:

- BIOL 6303 Neurobiology and Behavior
- BIOL 6399 Dynamics of Microbial Ecology
- BIOL 6401 Research Methods and Critical Analysis in Molecular Cell Biology
- BIOL 6405 Prokaryotic Cell and Molecular Biology
- BIOL 6407 Biochemistry for Molecular Biologists
- EEMB 6402 Concepts and Trends in Evolution and Ecology

**Electives**

Complete 16 semester hours from the following:

- BIOL 5103 to BIOL 8674

**Concentrations**

- Cell and Molecular Biology (p. 1)
- Molecular Microbiology (p. 1)

**CELL AND MOLECULAR BIOLOGY CONCENTRATION**

**Required Course Work**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>BIOL 6401</td>
<td>Research Methods and Critical Analysis in Molecular Cell Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 6407</td>
<td>Biochemistry for Molecular Biologists</td>
<td>4</td>
</tr>
</tbody>
</table>

**Electives**

In consultation with faculty advisor, complete 16 semester hours from the topic of cell and molecular biology:

- BIOL 5103 to BIOL 8674

**MOLECULAR MICROBIOLOGY CONCENTRATION**

**Required Course Work**

Complete 8 semester hours from the following:

- BIOL 6399 Dynamics of Microbial Ecology
- BIOL 6405 Prokaryotic Cell and Molecular Biology
- BIOL 6407 Biochemistry for Molecular Biologists

**Electives**

In consultation with faculty advisor, complete 16 semester hours from the topic of molecular microbiology:

- BIOL 5103 to BIOL 8674

**Program Credit/GPA Requirements**

- 30 total semester hours required
- Minimum 3.000 GPA required