GENETICS OPTION

This option is offered within the following major(s):


The Biology major Genetics option is designed to provide a solid background in genetic theory and methods, as well as their application to evolutionary questions. Option students couple the core biological sciences background from the Biology major with genetics laboratory-intensive course work in addition to electives in the areas of evolutionary genetics and bioinformatics. Undergraduate research or internship experience is strongly recommended for option students, and three credits can be applied to the Upper-division Science Elective requirements. The Genetics option is an excellent way to prepare for graduate programs in genetics and evolutionary biology.

Options in the Biology major require fifteen or fewer additional credits (one term) beyond the basic Biology major, and most students can complete the additional course work in the Genetics option in four years.

Courses used to satisfy the Genetics option requirements also satisfy the Physiology, Writing Intensive and Upper-division Science Elective requirements for the Biology major.

The statistics courses in the Genetics option also complete half of the Biology major statistics requirement (ST 352 INTRODUCTION TO STATISTICAL METHODS).

It is recommended that Genetics option students take COMM 111 *PUBLIC SPEAKING to complete the Biology major baccalaureate core communications requirement.

For further information, see MyDegrees or the Integrative Biology website at http://ib.oregonstate.edu.

### Code Core Title Hours

<table>
<thead>
<tr>
<th>Code Core</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BB 315/BI 315</td>
<td>MOLECULAR BIOLOGY LABORATORY (BB/BI 315 recommended)</td>
<td>3</td>
</tr>
<tr>
<td>or BB 493</td>
<td>BIOCHEMISTRY LABORATORY MOLECULAR TECHNIQUES 1</td>
<td></td>
</tr>
<tr>
<td>BB 494</td>
<td>BIOCHEMISTRY LABORATORY MOLECULAR TECHNIQUES 2</td>
<td>3</td>
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<tr>
<td>BI 483</td>
<td>POPULATION BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>CS 161</td>
<td>INTRODUCTION TO COMPUTER SCIENCE I</td>
<td>4</td>
</tr>
<tr>
<td>CS 162</td>
<td>INTRODUCTION TO COMPUTER SCIENCE II</td>
<td>4</td>
</tr>
<tr>
<td>ST 411 &amp; ST 412</td>
<td>METHODS OF DATA ANALYSIS and METHODS OF DATA ANALYSIS</td>
<td>8</td>
</tr>
<tr>
<td>Z 425</td>
<td>EMBRYOLOGY AND DEVELOPMENT</td>
<td>5</td>
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</table>

### Writing Intensive Course

Select one of the following:

- BB 317/BI 317 *SCIENTIFIC THEORY AND PRACTICE
- BI 319/Z 319 *CRITICAL THINKING AND COMMUNICATION IN THE LIFE SCIENCES

### Evolutionary Genetics Elective

Select one of the following:

- BB 486 ADVANCED MOLECULAR GENETICS

### Bioinformatics

Select one course from the following: 3

- BB 485 APPLIED BIOINFORMATICS
- BOT 476 INTRODUCTION TO COMPUTING IN THE LIFE SCIENCES

### Upper-Division Elective

Complete one of the following tracks: 3

**Track I Experiential Learning Credits**

Select any combination of 3 credits of the following:

- BI 401 RESEARCH AND SCHOLARSHIP (by approval)
- BI 410 INTERNSHIP (by approval or international internships approved by the Biology Chief Advisor)

**Track II Science Course**

Select one course 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BI 456</td>
<td>PHYLOGENETICS</td>
</tr>
<tr>
<td>BOT 460</td>
<td>FUNCTIONAL GENOMICS</td>
</tr>
<tr>
<td>BOT 475</td>
<td>COMPARATIVE GENOMICS</td>
</tr>
</tbody>
</table>

Total Hours 45-46

1 Following completion of ST 351 INTRODUCTION TO STATISTICAL METHODS.

2 One 3+ credit, 300–400 level course from the College of Science (BB, BHS, BI, BOT, CH, MB, MTH, PH, ST, and Z) may be used to meet this requirement with the exception of the courses listed below as excluded. Students who do not complete BI 315 MOLECULAR BIOLOGY LABORATORY as part of the Genetics option must take a qualifying WIC course which can be used to meet this requirement. Other science courses outside of College of Science and courses taken internationally may be used by biology chief advisor approval. Courses from other majors, minors or baccalaureate core requirements not used to meet requirements above may also be used.

**EXCLUDED COURSES:** 401–410 credits (except as outlined above or by approval), BB 350 ELEMENTARY BIOCHEMISTRY, BB 490 BIOCHEMISTRY 1: STRUCTURE AND FUNCTION—BB 492 BIOCHEMISTRY 3: GENETIC BIOCHEMISTRY, BB 331 ADVANCED HUMAN ANATOMY AND PHYSIOLOGY—BB 333 ADVANCED HUMAN ANATOMY AND PHYSIOLOGY, BI 341 ADVANCED HUMAN ANATOMY AND PHYSIOLOGY LABORATORY—BI 343 ADVANCED HUMAN ANATOMY AND PHYSIOLOGY LABORATORY, CH 334 ORGANIC CHEMISTRY, CH 335 ORGANIC CHEMISTRY, CH 336 ORGANIC CHEMISTRY, ST 314 INTRODUCTION TO STATISTICS FOR ENGINEERS, Z 361 INVERTEBRATE BIOLOGY/Z 362 INVERTEBRATE BIOLOGY LABORATORY, Z 461 MARINE AND ESTUARINE INVERTEBRATE ZOOLOGY and any 399 or 499 courses not specifically approved.

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

### Option Code: 517