MATHEMATICAL BIOLOGY OPTION

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

- Mathematics - College of Science (http://catalog.oregonstate.edu/college-departments/science/mathematics/mathematics-bs-hbs)

In addition to the usual required lower-division mathematics courses and the junior core courses, mathematics majors in the Mathematical Biology option have an opportunity to concentrate much of their further course work on applied mathematics, mathematical biology, modeling and computation.

A grade of at least C– and a GPA of 2.25 are required in all mathematics courses used to fulfill degree requirements. No course used to fulfill requirements for the mathematics major or any of its options may be taken S/U.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI 211</td>
<td>*PRINCIPLES OF BIOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BI 212</td>
<td>*PRINCIPLES OF BIOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BI 213</td>
<td>*PRINCIPLES OF BIOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>MTH 251</td>
<td>*DIFFERENTIAL CALCULUS</td>
<td>4</td>
</tr>
<tr>
<td>MTH 252</td>
<td>INTEGRAL CALCULUS</td>
<td>4</td>
</tr>
<tr>
<td>MTH 253</td>
<td>INFINITE SERIES AND SEQUENCES</td>
<td>4</td>
</tr>
<tr>
<td>MTH 254</td>
<td>VECTOR CALCULUS I</td>
<td>4</td>
</tr>
<tr>
<td>MTH 255</td>
<td>VECTOR CALCULUS II</td>
<td>4</td>
</tr>
<tr>
<td>MTH 256</td>
<td>APPLIED DIFFERENTIAL EQUATIONS</td>
<td>4</td>
</tr>
<tr>
<td>CH 231 &amp; CH 261</td>
<td>GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 231</td>
<td>5</td>
</tr>
</tbody>
</table>

**Upper-Division Requirements**

**Part A: Required Mathematics Core Courses**

- MTH 311 ADVANCED CALCULUS 4
- MTH 312 ADVANCED CALCULUS 4
- MTH 341 LINEAR ALGEBRA I 3
- MTH 342 LINEAR ALGEBRA II 4
- MTH 343 INTRODUCTION TO MODERN ALGEBRA 3
- MTH 355 DISCRETE MATHEMATICS 3

Select one of the following writing intensive courses (WIC): 3

- MTH 323 *MATHEMATICAL MODELING
- MTH 333 *FUNDAMENTAL CONCEPTS OF TOPOLOGY
- MTH 338 *NON-EUCLIDEAN GEOMETRY

**Part B: Required Area Course Work in Mathematics and Statistics**

- MTH 427 INTRODUCTION TO MATHEMATICAL BIOLOGY 3
- MTH 428 STOCHASTIC ELEMENTS IN MATHEMATICAL BIOLOGY 3
- MTH 463 PROBABILITY I 3
- MTH 480 SYSTEMS OF ORDINARY DIFFERENTIAL EQUATIONS 3

Select one of the following: 4

- ST 351 INTRODUCTION TO STATISTICAL METHODS
- ST 411 METHODS OF DATA ANALYSIS

**Part C: Directed Electives**

Select one of the following: 3

- MTH 483 COMPLEX VARIABLES
- MTH 430 METRIC SPACES AND TOPOLOGY

Select one of the following: 3

- MTH 420 MODELS AND METHODS OF APPLIED MATHEMATICS
- MTH 440 COMPUTATIONAL NUMBER THEORY
- MTH 441 APPLIED AND COMPUTATIONAL ALGEBRA
- MTH 464 PROBABILITY II
- MTH 482 APPLIED PARTIAL DIFFERENTIAL EQUATIONS

Select one of the following or another upper division life science course approved by a mathematics advisor: 3-4

- BI 311 GENETICS
- BI 351 MARINE ECOLOGY
- BI 370 ECOLOGY
- BI 445 EVOLUTION
- BOT 341 PLANT ECOLOGY
- BOT 442 PLANT POPULATION ECOLOGY
- BOT 476 INTRODUCTION TO COMPUTING IN THE LIFE SCIENCES
- CS 446 NETWORKS IN COMPUTATIONAL BIOLOGY
- FW 320 INTRODUCTORY POPULATION DYNAMICS

**Total Hours: 93-94**

* Baccalaureate Core Course (BCC)
^ Writing Intensive Course (WIC)

Option Code: 737