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>
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<tr>
<td>BI 213</td>
<td>*PRINCIPLES OF BIOLOGY</td>
<td>4</td>
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<tr>
<td>MTH 251</td>
<td>*DIFFERENTIAL CALCULUS</td>
<td>4</td>
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<tr>
<td>MTH 252</td>
<td>INTEGRAL CALCULUS</td>
<td>4</td>
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<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>
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<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</td>
<td>GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 231</td>
<td>5</td>
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</tbody>
</table>

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: 3

MTH 351 INTRODUCTION TO NUMERICAL ANALYSIS
MTH 451 NUMERICAL LINEAR ALGEBRA
MTH 452 NUMERICAL SOLUTION OF ORDINARY 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