Course Catalog

Biomathematics

Faculty

Farzan Aminian, Ph.D., Professor, Engineering Science
Eduardo Cabral Balreira, Ph.D., Professor, Mathematics; Co-Director
Kevin Livingstone, Ph.D., Associate Professor, Biology; Co-Director
David Ribble, Ph.D., Professor, Biology

Overview

The Biomathematics minor is an interdisciplinary program designed primarily for students majoring in math or biology who are interested in the expanding field of mathematical modeling of biological phenomena.

Requirements

The Minor

The requirements for a Biomathematics minor are as follows:

I. The Core (21 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1311</td>
<td>Integrative Biology I</td>
</tr>
<tr>
<td>BIOL 1111</td>
<td>Introductory Biology Laboratory</td>
</tr>
<tr>
<td>BIOL 2312</td>
<td>Cells and Cell Systems</td>
</tr>
<tr>
<td>BIOL 2112</td>
<td>Cell Systems Laboratory</td>
</tr>
<tr>
<td>BIOL 3413</td>
<td>Genes, Phenotypes, and Evolutionary Dynamics</td>
</tr>
<tr>
<td>MATH 1311</td>
<td>Calculus I</td>
</tr>
<tr>
<td>MATH 1320</td>
<td>Statistical Methods</td>
</tr>
<tr>
<td>MATH 2308</td>
<td>Introduction to Analytical Models</td>
</tr>
</tbody>
</table>
II. Advanced Interdisciplinary Study (7 hours)

Complete one of the following pairs of courses. The BIOL course should be taken first for either option, as the MATH course will build on the knowledge from the BIOL course. The two MATH courses are offered alternate years, so students should check with the MATH department to ensure they can complete their desired option.

**Ecology option**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 3434</td>
<td>Ecology</td>
</tr>
<tr>
<td>MATH 3328</td>
<td>Mathematical models in Life Sciences</td>
</tr>
</tbody>
</table>

or

**Genetics option**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 3450</td>
<td>Genetics</td>
</tr>
<tr>
<td>MATH 3327</td>
<td>Probabilistic Models in Life Sciences</td>
</tr>
</tbody>
</table>

III. Contemporary Topics and Research in Biomathematics (at least 2 hours)

Complete all of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIMA 2094</td>
<td>Seminar in Biomathematics I</td>
</tr>
<tr>
<td>BIMA 3-90</td>
<td>Independent Research in Biomathematics (at least one hour)</td>
</tr>
<tr>
<td>BIMA 3194</td>
<td>Seminar in Biomathematics II</td>
</tr>
</tbody>
</table>

Courses

BIMA-2094 Seminar in Biomathematics I
This discussion format course focuses on contemporary subjects in biomathematics chosen by the instructor and students. (Offered every fall.) Prerequisite: Consent of instructor

BIMA-3-90 Independent Research in Biomathematics
Individual Research in biomathematics conducted with faculty. Course credit will depend on the nature and scope of the proposed research project. Prerequisites: consent of the faculty research mentor and the minor director.

BIMA-3391 Special Topics in Biomathematics
Advanced study of a topic or field not covered by other courses. May be repeated for credit for different topics. (Offered occasionally). Prerequisites: consent of instructor
BIMA-3194 Seminar in Biomathematics II

This discussion format course focuses on contemporary subjects in biomathematics chosen by the instructor and students. Students will also be expected to present the results of their own research project, including relevant background from the literature. (Offered every fall.) Prerequisite: BIMA 2094 and Consent of instructor