MATHEMATICS (B.S.)

Required course work includes the university requirements (see regulation J-3) and:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 170</td>
<td>Analytic Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 175</td>
<td>Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 275</td>
<td>Analytic Geometry and Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>MATH 330</td>
<td>Linear Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

Options

Select one of the following options: 36-54

- General
- Applied - Computation
- Applied - Quantitative Modeling
- Applied - Mathematical Biology

Total Hours 50-68

A. General Option

This is the traditional curriculum in Mathematics. It is more mathematically rigorous than the other options. It is especially good for secondary education majors and students intending to go to graduate school in Mathematics or other sciences.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 176</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 215</td>
<td>Proof via Number Theory</td>
<td>3</td>
</tr>
<tr>
<td>MATH 310</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 385</td>
<td>Theory of Computation</td>
<td>3</td>
</tr>
<tr>
<td>MATH 395</td>
<td>Analysis of Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>MATH 415</td>
<td>Cryptography</td>
<td>3</td>
</tr>
<tr>
<td>MATH 428</td>
<td>Numerical Methods</td>
<td>3</td>
</tr>
<tr>
<td>MATH 432</td>
<td>Numerical Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 452</td>
<td>Mathematical Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 451</td>
<td>Probability and Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two additional courses from the following: 6

- MATH 376 Discrete Mathematics II
- MATH 426 Discrete Optimization
- MATH 430 Advanced Linear Algebra
- MATH 432 Numerical Linear Algebra
- MATH 451 Probability Theory
- MATH 452 Mathematical Statistics
- MATH 461 Abstract Algebra I
- MATH 462 Abstract Algebra II
- MATH 476 Combinatorics

Supporting Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 120</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>CS 121</td>
<td>Computer Science II</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Hours 37

Courses to total 120 credits for this degree

B. Applied - Computation Option

The emphasis is on the mathematics related to computer science and technology. With a major or minor in computer sciences this is a good preparation for work in the computer industry.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 176</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 215</td>
<td>Proof via Number Theory</td>
<td>3</td>
</tr>
<tr>
<td>MATH 310</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 385</td>
<td>Theory of Computation</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two additional courses from the following: 6

- MATH 342 Advanced Linear Algebra
- MATH 432 Numerical Linear Algebra
- MATH 451 Probability Theory
- MATH 452 Mathematical Statistics
- MATH 462 Abstract Algebra II
- MATH 476 Combinatorics

Supporting Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 120</td>
<td>Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>CS 121</td>
<td>Computer Science</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Hours 37

Courses to total 120 credits for this degree

C. Applied – Quantitative Modeling Option

The emphasis is on the mathematics used to model phenomena in engineering, science, business and economics. With a second major in one of these disciplines, this provides ideal preparation for graduate school.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 176</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 310</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 385</td>
<td>Theory of Computation</td>
<td>3</td>
</tr>
<tr>
<td>MATH 451</td>
<td>Probability Theory</td>
<td>3</td>
</tr>
<tr>
<td>MATH 437</td>
<td>Mathematical Biology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 438</td>
<td>Mathematical Modeling</td>
<td>3</td>
</tr>
</tbody>
</table>

Select three additional courses from the following: 9

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 301</td>
<td>Probability and Statistics</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 452</td>
<td>Mathematical Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Hours 36

Courses to total 120 credits for this degree
Courses to total 120 credits for this degree

D. Applied - Mathematical Biology Option

This option offers training across Mathematics and Biology and provides the background to pursue a career in technical industries and to obtain graduate degrees in Biomathematics, Biostatistics, and Bioinformatics.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 437</td>
<td>Mathematical Biology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 451</td>
<td>Probability Theory</td>
<td>3</td>
</tr>
<tr>
<td>MATH 452</td>
<td>Mathematical Statistics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 251</td>
<td>Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 301</td>
<td>Probability and Statistics</td>
<td></td>
</tr>
<tr>
<td>Select two courses from the following:</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>MATH 310</td>
<td>Ordinary Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 453</td>
<td>Stochastic Models</td>
<td></td>
</tr>
<tr>
<td>STAT 431</td>
<td>Statistical Analysis</td>
<td></td>
</tr>
<tr>
<td>Select two courses from the following:</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>MATH 428</td>
<td>Numerical Methods</td>
<td></td>
</tr>
<tr>
<td>MATH 430</td>
<td>Advanced Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>MATH 480</td>
<td>Partial Differential Equations</td>
<td></td>
</tr>
</tbody>
</table>

Biology Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 114</td>
<td>Organisms and Environments</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 115</td>
<td>Cells &amp; the Evolution of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 115L</td>
<td>Cells and the Evolution of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 310</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 456</td>
<td>Computer Skills for Biologists</td>
<td>3</td>
</tr>
<tr>
<td>Select 12 Credits Upper Division Biology courses</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Supporting Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>Principles of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111L</td>
<td>Principles of Chemistry I Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Hours

54