Mathematical Economics

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The Departments of Economics and Mathematics offer the Bachelor of Arts in Mathematical Economics program as a platform for systematic concentration in the mathematical approach to economics. Economics has progressed in the last several decades by making extensive use of mathematical techniques. As a result, students who wish to pursue graduate study in economics, finance, accounting and other disciplines that make an extensive use of economics need a thorough grounding in both economics and mathematics. The Mathematical Economics curriculum provides this grounding with a broad selection of courses that cover all important areas of economics and the mathematical tools required for a critical, deep mastery of these areas. This program is especially recommended for those students who intend to pursue graduate studies in Economics.

Bachelor of Arts

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)
   • MATH 0701 and/or ENG 0701, if required by placement testing.
   • All Temple students must take a minimum of two writing-intensive courses as part of their major. Following is a list of courses that can be used to satisfy the writing-intensive requirement:
     • ECON 3596 Energy, Ecology, and Economy 3
     • ECON 3597 Health Economics 3
     • ECON 3598 Economics Writing Seminar 3
     • MATH 3096 Introduction to Modern Algebra 3
     • MATH 3098 Modern Algebra 3
     • MATH 4096 Senior Problem Solving 3
   • Students must complete the General Education (GenEd) requirements.
     • The General Education Curriculum consists of approximately 31-32 s.h. See the General Education (http://bulletin.temple.edu/archives/2014-2015/undergraduate/general-education) section of the Undergraduate Bulletin for the GenEd curriculum.
     • Students who complete this major typically receive a waiver for 1 Quantitative Literacy (GQ) GenEd course.

2. College Requirements
   • 90 credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
   • 45 Upper-Level (2000+) credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
   • Two (2) Upper-Level (2000+) Liberal Art courses.
   • Second (2nd) Level of a Foreign Language (1002).

3. Major Requirements for Bachelor of Arts (61-62 s.h.)

Computer & Information Science

Select one of the following: 4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>CIS 1053</td>
<td>Programming in Matlab</td>
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<tr>
<td>CIS 1057</td>
<td>Computer Programming in C</td>
</tr>
<tr>
<td>CIS 1068</td>
<td>Program Design and Abstraction</td>
</tr>
<tr>
<td>CIS 1968</td>
<td>Honors Program Design and Abstraction (F)</td>
</tr>
</tbody>
</table>

Mathematics
MATH 1041  Calculus I  4
or MATH 1941  Honors Calculus I
MATH 1042  Calculus II  4
or MATH 1942  Honors Calculus II
MATH 2043  Calculus III  4
or MATH 2943  Honors Calculus III
MATH 2101  Linear Algebra  3
MATH 3031  Probability Theory I  3
MATH 3032  Mathematical Statistics  3
MATH 3043  Numerical Analysis I (F)  3-4
3 Mathematics electives at the 3000 level or above  9

Economics
ECON 1102  Microeconomic Principles  3
or ECON 1902  Honors Microeconomic Principles
ECON 3501  Intermediate Microeconomic Analysis  3
ECON 3502  Intermediate Macroeconomic Analysis  3
ECON 3503  Introduction to Econometrics  3
ECON 3598  Economics Writing Seminar  3
2 economics electives at the 3000 level or above, with permission from advisor  6
ECON 3504  Mathematical Economics  3
or ECON 3521  Economics of Risk and Uncertainty

Total Credit Hours 61-62

1 MATH 2111 can fulfill one of the Mathematics electives, but it must be taken prior to MATH 3098 and MATH 3141.

(F) - Fall only course.

Distinction in Major
For distinction in Mathematical Economics a student must have an overall GPA of 3.25 or higher. A student must also have a GPA of 3.50 or higher in the 3000+ Mathematics courses, and a GPA of 3.60 or higher in the 3000+ Economics courses.

Suggested Academic Plan
Bachelor of Arts in Mathematical Economics
Requirements for New Students starting in the 2014-2015 Academic Year

<table>
<thead>
<tr>
<th>Year 1</th>
<th></th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
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<tr>
<td>Select one of the following:</td>
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<td>4</td>
</tr>
<tr>
<td>CIS 1053  Programming in Matlab</td>
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</tr>
<tr>
<td>CIS 1968  Honors Program Design and Abstraction (F)</td>
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<td></td>
</tr>
<tr>
<td>MATH 1041 or 1941  Calculus I</td>
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<td>4</td>
</tr>
<tr>
<td>General Education/Elective Credits</td>
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<td>7</td>
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<tr>
<td>Term Credit Hours</td>
<td></td>
<td>15</td>
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<tr>
<td>Spring</td>
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<tr>
<td>ECON 1102 or 1902  Microeconomic Principles</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 1042 or 1942  Calculus II</td>
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<td>4</td>
</tr>
<tr>
<td>General Education/Elective Credits</td>
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<td>9</td>
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<tr>
<td>Term Credit Hours</td>
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<td>16</td>
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<tr>
<td>Year 2</td>
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<tr>
<td>Fall</td>
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<tr>
<td>ECON 3501  Intermediate Microeconomic Analysis</td>
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<td>3</td>
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<td>Year 2</td>
<td>Fall</td>
<td>Spring</td>
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<tr>
<td></td>
<td>MATH 2043 or 2943 (Calculus III)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>General Education/Elective Credits</td>
<td>9</td>
</tr>
<tr>
<td>Term Credit Hours</td>
<td>16</td>
<td></td>
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</tbody>
</table>

**Spring**

- ECON 3502 (Intermediate Macroeconomic Analysis) | 3 |
- Select one of the following:
  - MATH 2111 (Basic Concepts of Math) | 3 |
  - 3000+ Mathematics Elective | 3 |
- General Education/Elective Credits | 9 |

**Term Credit Hours**

- 15

**Year 3**

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td></td>
<td>3000+ Economics Elective, with permission from advisor</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MATH 2101 (Linear Algebra)</td>
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<td></td>
<td>MATH 3031 (Probability Theory I)</td>
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<td></td>
<td>General Education/Elective Credits</td>
<td>6</td>
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</tbody>
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**Term Credit Hours**

- 15

**Spring**

- ECON 3504 or 3521 (Mathematical Economics) | 3 |
- MATH 3032 (Mathematical Statistics) | 3 |
- 3000+ Mathematics Elective | 3 |
- General Education/Elective Credits | 6 |

**Term Credit Hours**

- 15

**Year 4**

<table>
<thead>
<tr>
<th>Year 4</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ECON 3503 (Introduction to Econometrics)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MATH 3043 (Numerical Analysis I (F))</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>General Education/Elective Credits</td>
<td>10-9</td>
</tr>
</tbody>
</table>

**Term Credit Hours**

- 16

**Spring**

- ECON 3598 (Economics Writing Seminar [WI]) | 3 |
- 3000+ Economics Elective, with permission from advisor | 3 |
- 3000+ Mathematics Elective | 3 |
- General Education/Elective Credits | 6 |

**Term Credit Hours**

- 15

**Total Credit Hours:** 123

1. MATH 2111 can fulfill one of the Mathematics electives, but it must be taken prior to MATH 3098 and MATH 3141.
2. One of the Mathematics electives must be a writing-intensive course in order to satisfy the University requirement that each student must fulfill two writing-intensive courses within the major.