Graduate Degree Programs in Mathematics

**Actuarial Science, MS** (http://catalog.illinois.edu/graduate/las/actuarial-science-ms)

**Applied Mathematics, MS** (http://catalog.illinois.edu/graduate/las/applied-mathematics-ms)

**optional concentrations:**
- Actuarial Science (p. 1)
- Computational Science and Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering)

**Mathematics, MS** (http://catalog.illinois.edu/graduate/las/mathematics-ms)

**optional concentration:**
- Computational Science and Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering)

**Mathematics, PhD** (http://catalog.illinois.edu/graduate/las/mathematics-phd)

**optional concentrations:**
- Actuarial Science & Risk Analytics (http://catalog.illinois.edu/graduate/las/mathematics-phd/actuarial-science-risk-analytics)
- Computational Science and Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering)

Teaching of Mathematics, MS (http://catalog.illinois.edu/graduate/las/teaching-mathematics-ms)

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**Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 540</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MATH 561</td>
<td>Theory of Probability I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 563</td>
<td>Risk Modeling and Analysis</td>
<td>4</td>
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<tr>
<td>STAT 510</td>
<td>Mathematical Statistics I</td>
<td>4</td>
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</tbody>
</table>

Select one of:

- MATH 511 Intro to Algebraic Geometry
- MATH 518 Differentiable Manifolds I
- MATH 525 Algebraic Topology I
- MATH 530 Algebraic Number Theory
- MATH 531 Analytic Theory of Numbers I
- MATH 542 Complex Variables I
- MATH 550 Dynamical Systems I
- MATH 553 Partial Differential Equations
- MATH 570 Mathematical Logic
- MATH 580 Combinatorial Mathematics

Students must also demonstrate proficiency in undergraduate complex analysis, which can be done by a B+ in MATH 448, a B+ in MATH 542, or by passing the exam associated to MATH 542.

**Students must demonstrate competence in the following:**

- MATH 564 Applied Stochastic Processes 4
- STAT 425 Applied Regression and Design 3 or 4
- FIN 591 Theory of Finance 4

**Students must demonstrate competence in two of the following:**

- ASRM 575 Life Insurance and Pension Mathematics 4
- ASRM 510 Financial Mathematics 4
- ASRM 561 Loss Data Analytics & Credibility 4

**Master's equivalency**

- MATH 599 Thesis Research (0 min applied toward degree) 0

**Total Hours required for the degree**

96

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**Other requirements**

**Requirement** | **Description**
|-----------------|----------------------|
| Other requirements may overlap.  
MATH 405, MATH 406, MATH 415,  
MATH 444, and MATH 499 cannot  
be counted toward this graduate  
degree.  
64 hours in residence  
Masters Degree Required for  
Admission to PhD | No

Information listed in this catalog is current as of 03/2020
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Required</th>
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<tbody>
<tr>
<td>Comprehensive Exam Required</td>
<td>Yes</td>
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<tr>
<td>Preliminary Exam Required</td>
<td>Yes</td>
</tr>
<tr>
<td>Final Exam/Dissertation Defense Required</td>
<td>Yes</td>
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<td>Dissertation Deposit Required</td>
<td>Yes</td>
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<td>Minimum GPA</td>
<td>3.25</td>
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</table>

1 To demonstrate competence, a student must receive a B+ or higher in the course, or pass a written exam on the topic.