MATHEMATICS, PHD

for the Doctor of Philosophy in Mathematics

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/)
- Mathematics, MS (http://catalog.illinois.edu/graduate/las/mathematics-ms/)
- Predictive Analytics and Risk Management, MS (http://catalog.illinois.edu/graduate/las/predictive-analytics-risk-management-ms/)
- Enterprise Risk Management (http://catalog.illinois.edu/graduate/las/predictive-analytics-risk-management-ms/enterprise-risk-management/)
- Financial and Insurance Analytics
- Mathematics, PhD (p. 1)
  - 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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Students working toward a Ph.D. degree usually require from four to six years to complete the requirements. Each student must pass the comprehensive examinations (testing the student's knowledge of basic graduate-level mathematics in algebra, analysis, and other areas) and the preliminary examination (testing the student's ability to begin or continue research in a chosen field). Students must also write and defend a research thesis in their field of mathematics.

For additional details and requirements refer to the department's Guide to Graduate Studies (https://math.illinois.edu/academics/graduate-program-mathematics/) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook/).

Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 500</td>
<td>Abstract Algebra I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 540</td>
<td>Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MATH 511</td>
<td>Intro to Algebraic Geometry</td>
<td></td>
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<tr>
<td>MATH 518</td>
<td>Differentiable Manifolds I</td>
<td></td>
</tr>
<tr>
<td>MATH 525</td>
<td>Algebraic Topology I</td>
<td></td>
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Students must demonstrate competence in five core courses including the following:

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

Information listed in this catalog is current as of 12/2023