MATHEMATICS

http://www.math.illinois.edu

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Major: Applied Mathematics
Degrees Offered: M.S.
Graduate Concentration: Actuarial Science (in Applied Mathematics only)

Major: Mathematics
Degrees Offered: M.S., Ph.D.
Graduate Concentration: Actuarial Science and Risk Analytics (Ph.D. only)

Major: Teaching of Mathematics
Degrees Offered: M.S.

Graduate Degree Programs
The department offers graduate study leading to the Master of Science in Mathematics, the Doctor of Philosophy in Mathematics, the Master of Science in Applied Mathematics, and the Master of Science in Teaching of Mathematics. Opportunity also exists for specializing in computational science and engineering within the department's graduate programs via the Computational Science and Engineering (CSE) Concentration (http://cse.illinois.edu), and for specializing in financial mathematics via the Actuarial Science and Risk Analytics Concentration within the Mathematics Ph.D.

Admission
See the Mathematics Ph.D. information page (http://www.math.illinois.edu/GraduateProgram/apply-phd.html) or the Mathematics Masters information page (http://www.math.illinois.edu/GraduateProgram/apply-ms.html) for application deadlines, admission requirements including English requirements for non-native speakers, and for funding information.

The master’s degree programs can be completed in one-and-one-half years of full-time study by students entering without deficiencies.

- Master of Science in Applied Mathematics, Actuarial Science Concentration (http://catalog.illinois.edu/graduate/graduate-majors/math/ms-applied-math-conc-actuarial-science)
- Master of Science in Applied Mathematics, Applications to the Sciences option (http://catalog.illinois.edu/graduate/graduate-majors/math/ms-applied-math-apps-sciences)
- Master of Science in Applied Mathematics, Computational Science and Engineering option (http://catalog.illinois.edu/graduate/graduate-majors/math/ms-applied-math-science-applied-math-compute-science-eng)
- Master of Science in Applied Mathematics, Optimization and Algorithms option (http://catalog.illinois.edu/graduate/graduate-majors/math/ms-applied-math-optimiz-algo)
- Master of Science in Mathematics (http://catalog.illinois.edu/graduate/graduate-majors/math/ms-math)
- Master of Science in Teaching of Mathematics (http://catalog.illinois.edu/graduate/graduate-majors/math/ms-teaching-math)

Doctor of Philosophy in Mathematics
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.

Students must demonstrate competence in five core courses. Two of these are required to be MATH 500 (Abstract Algebra) and MATH 540 (Real Analysis). Students must also demonstrate proficiency in undergraduate complex analysis. 1

<table>
<thead>
<tr>
<th>Master's equivalency</th>
<th>32</th>
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<tbody>
<tr>
<td>MATH 599</td>
<td>Thesis Research (0 min applied toward degree)</td>
</tr>
<tr>
<td>Total Hours</td>
<td>96</td>
</tr>
</tbody>
</table>

1 Students in the Actuarial Science and Risk Analytics concentration are not required to take MATH 500.

Other Requirements 1
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
Comprehensive Exam Required Yes
Preliminary Exam Required Yes
Final Exam/Dissertation Defense Required
Dissertation Deposit Required Yes
Minimum GPA: 3.25

1 For additional details and requirements refer to the department's Guide to Graduate Studies (http://www.math.illinois.edu/GraduateProgram) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook).

Doctor of Philosophy in Mathematics - Actuarial Science and Risk Analytics Concentration
Students working toward a Ph.D. degree usually require 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.

Students must demonstrate competence in five core courses including the following:

Information listed in this catalog is current as of 10/2017
MATH 540  Real Analysis  4
MATH 561  Theory of Probability I  4
MATH 563  Risk Modeling and Analysis  4
STAT 510  Mathematical Statistics I  4

Students must also demonstrate proficiency in undergraduate complex analysis.

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:
MATH 565  Actuarial Models for Life Contingencies
MATH 567  Actuarial Models for Financial Economics
MATH 568  Actuarial Loss Models

Master's equivalency  32
MATH 599  Thesis Research (0 min applied toward degree)  0

Total Hours required for the degree  96

Other requirements

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
Comprehensive Exam Required  Yes
Preliminary Exam Required  Yes
Final Exam/Dissertation Defense Required  Yes
Dissertation Deposit Required  Yes
Minimum GPA  3.25

1 For additional details and requirements refer to the department's Guide to Graduate Studies (http://www.math.illinois.edu/GraduateProgram) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook).