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

Code	Title	Hours
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.		
MATH 500	Abstract Algebra I	4
MATH 540	Real Analysis	4
Plus choose three of the following:		12
ASRM 563	Risk Modeling and Analysis	
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 561	Theory of Probability I	
MATH 570	Mathematical Logic	
MATH 580	Combinatorial Mathematics	
Master's equivalency		32
MATH 599	Thesis Research (0 min applied toward degree)	0
Total Hours:		96

Other Requirements

Requirement	Description
Other requirements may overlap	
MATH 405, 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

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1. Acquire a foundation in abstract algebra at the graduate level.
2. Acquire a foundation in real analysis at the graduate level.
3. Acquire a suitable breadth of knowledge to provide a foundation for undertaking high-level research.
4. Gain a broad understanding of the range of current research in the mathematical sciences.
5. Demonstrate depth of knowledge in chosen area of research specialization.
6. Gain the ability to conduct independent mathematical research at a professional level.
7. Gain experience and competence in the teaching of mathematics at the college level.

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Mathematics Department

Department Chair: Vera Hur
Director of Graduate Studies: Jared Bronski
Mathematics Department website (http://www.math.illinois.edu/)

Mathematics Department faculty (https://math.illinois.edu/directory/faculty/)
Mathematics faculty research (https://math.illinois.edu/research/faculty-research/)
273 Altgeld Hall, 1409 West Green Street, Urbana, IL 61801
(217) 333-5749
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College of Liberal Arts & Sciences

College of Liberal Arts & Sciences website (https://las.illinois.edu/)

Admissions

Mathematics Admissions & Requirements (https://math.illinois.edu/admissions/graduate-program-mathematics-admissions/#Math-PhD)
Graduate College Admissions & Requirements (https://grad.illinois.edu/admissions/apply/)