Master of Arts in Mathematics

Why study mathematics?

Because mathematics is a framework upon which humanity builds an understanding of the world.

Mission of the Graduate Program:

The mission of the Graduate Program of the Department of Mathematics is to prepare students for leadership roles in meeting the mathematical needs of our society and to produce professional mathematicians for positions in universities, colleges, industry, governmental agencies, and research centers.

Master of Arts in Mathematics:

The Mathematics Department offers the degree of Master of Arts (M.A.) in Mathematics. The M.A. is a coursework only degree with the option of culminating in a thesis demonstrating expertise in a particular area of mathematics. This degree is intended for students who plan to pursue a Ph.D. subsequently, as well as those who intend to work outside academia. A broad range of specialties are possible; research interests of department faculty include algebra, analysis, combinatorics, control theory, dynamical systems, geometry, numerical analysis, partial differential equations, probability, and statistics. College-wide requirements for graduate students may be found in the Graduate School Catalog (http://catalog.ku.edu/liberal-arts-sciences/#graduatetext).

Admission to Graduate Studies

Admission Requirements

- All applicants must meet the requirements outlined in the Admission to Graduate Study (https://policy.ku.edu/graduate-studies/admission-to-graduate-study/) policy.

- Bachelor's degree: A copy of official transcripts showing proof of a bachelor's degree (and any post-bachelor's coursework or degrees) from a regionally accredited institution, or a foreign university with equivalent bachelor's degree requirements is required.

- English proficiency: Proof of English proficiency (https://gradapply.ku.edu/english-requirements/) for non-native or non-native-like English speakers is required. There are two bands of English proficiency, including Admission and Full proficiency. For applicants to online programs, Full proficiency is required.

Admission to the M.A. in Mathematics

The minimum prerequisites for admission are:

- an undergraduate degree from an accredited institution with a program of study in mathematics;
- a record of achievement that shows strong promise of success in graduate school, including a 3.0 cumulative grade-point average in undergraduate studies and a 3.0 grade-point average in mathematics (department requirement);
- course work in abstract algebra, linear algebra, and advanced calculus or introduction to analysis (comparable to KU courses MATH 500, MATH 558, and MATH 590).

It is beneficial to have preparation in probability/statistics (comparable to MATH 627/MATH 628) and/or numerical analysis (comparable to MATH 581). Although not required, it is also helpful to have taken introductory courses in complex analysis (comparable to MATH 646), partial differential equations (comparable to MATH 647), geometry (comparable to MATH 660/MATH 661), and/or topology.

The Mathematics Department currently does not require the general or subject Graduate Record Examination (GRE). International students whose native language is not English must fulfill English language requirements specified by university policies.

Applicants must submit a graduate application online (https://gradapply.ku.edu/apply/), including the following required materials:

- Transcript from each college or university the applicant has attended (an official transcript must be sent upon acceptance and completion of degree).
- Applicant's résumé/curriculum vitae.
- A list of the textbooks used in mathematics courses beyond calculus.
- A statement of purpose indicating the applicant's mathematical preferences and interests.
- 3 letters of reference.
- International applicants must fulfill the University's requirements for English proficiency (https://gradapply.ku.edu/english-requirements/).

Incomplete applications will not be considered. Meeting the minimum admission requirements does not guarantee admission. The Department of Mathematics evaluates candidates and makes recommendations to the Office of Graduate Studies regarding admission. The number of students admitted to the program changes from year to year, and admissions are competitive based on all application materials. The Department does not guarantee GTA or other financial support for students accepted to the M.A. program. Further information about applications and admissions is available from the Department of Mathematics (https://math.ku.edu/admission-graduate-program/).

Contact the department:

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Department of Mathematics
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Degree Requirements

The M.A. in Mathematics requires 30 hours and allows for the following two degree completion options:

1. Course Work-Only
2. Master's Thesis Final Defense

The program is designed to be flexible and accommodate students with differing interests and backgrounds, with a variety of intended careers including academia and industry. The requirements for an M.A. are as follows:

Course Work Requirements

Code	Title	Hours
Students must take at least one of the sequences below		**6**
MATH 727 & MATH 728	Probability Theory and Statistical Theory	
MATH 765 & MATH 766	Mathematical Analysis I and Mathematical Analysis II	
MATH 781 & MATH 782	Numerical Analysis I and Numerical Analysis II	
MATH 790 & MATH 791	Linear Algebra II and Modern Algebra	
Electives or Thesis Hours		**24**
Students choosing the course work only option should complete the following:		
Minimum of 12 hours of MATH courses at the 700+ level [1]		
Minimum of 12 hours of MATH courses at the 500+ level (excluding MATH 526)		
Students choosing the thesis option should complete the following:		
Minimum of 12 hours of MATH courses at the 700+ level; 1-6 hours must be MATH 899. [1]		
Minimum of 12 hours of MATH courses at the 500+ level (excluding MATH 526)		
Total Hours		**30**

[1] A student may count up to 6 credit hours of courses outside Mathematics toward this requirement. These outside courses must be approved in advance by the Graduate Committee.

Electives

Below is a list of available electives:

Code	Title	Hours
Electives		
MATH 500	Intermediate Analysis	3
MATH 510	Introduction to the Theory of Computing	3
MATH 540	Elementary Number Theory	3
MATH 558	Introductory Modern Algebra	3
MATH 559	Modern Geometries	3
MATH 581	Numerical Methods	3
MATH 582	Computational Data Science	3
MATH 590	Linear Algebra	3
MATH 591	Applied Numerical Linear Algebra	3
MATH 596	Special Topics: _____	1-3
MATH 601	Algebraic Topics in Computing: _____	3
MATH 605	Applied Regression Analysis	3
MATH 608	Statistical Data Science	3
MATH 611	Time Series Analysis	3
MATH 624	Discrete Probability	3
MATH 627	Probability	3
MATH 628	Mathematical Theory of Statistics	3
MATH 630	Actuarial Mathematics	3
MATH 646	Complex Variable and Applications	3
MATH 647	Applied Partial Differential Equations	3
MATH 648	Calculus of Variations and Integral Equations	3

Code	Title	Hours
MATH 650	Nonlinear Dynamical Systems	3
MATH 660	Geometry I	3
MATH 661	Geometry II	3
MATH 696	Special Topics: _____	1-3
MATH 717	Nonparametric Statistics	3
MATH 724	Combinatorial Mathematics	3
MATH 725	Graph Theory	3
MATH 727	Probability Theory	3
MATH 728	Statistical Theory	3
MATH 750	Stochastic Adaptive Control	3
MATH 765	Mathematical Analysis I	3
MATH 766	Mathematical Analysis II	3
MATH 781	Numerical Analysis I	3
MATH 782	Numerical Analysis II	3
MATH 783	Applied Numerical Methods for Partial Differential Equations	3
MATH 790	Linear Algebra II	3
MATH 791	Modern Algebra	3
MATH 796	Special Topics: _____	1-3
MATH 800	Complex Analysis I	3
MATH 802	Set Theory	3
MATH 810	Real Analysis and Measure Theory I	3
MATH 820	Introduction to Topology	3
MATH 821	Algebraic Topology I	3
MATH 824	Algebraic Combinatorics	3
MATH 830	Abstract Algebra	3
MATH 831	Abstract Algebra II	3
MATH 840	Differentiable Manifolds	3
MATH 850	Differential Equations and Dynamical Systems	3
MATH 851	Topics in Dynamical Systems: _____	3
MATH 865	Stochastic Processes I	3
MATH 866	Stochastic Processes II	3
MATH 874	Statistical Decision Theory	3
MATH 881	Topics in Advanced Numerical Linear Algebra: _____	3
MATH 882	Topics in Advanced Numerical Differential Equations: _____	3
MATH 890	Fourier Analysis	3
MATH 910	Algebraic Curves	3
MATH 920	Lie Groups and Lie Algebras	3
MATH 940	Advanced Probability	3
MATH 950	Partial Differential Equations	3
MATH 951	Topics in Advanced Partial Differential Equations II: _____	3
MATH 960	Functional Analysis	3
MATH 961	Topics in Functional Analysis: _____	3
MATH 996	Special Topics: _____	3

Master's Thesis & Final Defense

Those choosing to complete the M.A. degree with a written thesis must do an oral presentation and defense of the thesis to a faculty committee in accordance with the Graduate Studies Policy on Master's Final Exams (https://policy.ku.edu/graduate-studies/masters-final-exams/). The thesis generally contains an original exposition of a topic in mathematics rather

than an original contribution to knowledge. The oral examination will not be scheduled until the thesis is complete. The student must submit the thesis to the supervisor and the faculty committee at least two weeks before the oral examination.

At the completion of this program, students will be able to:

- Demonstrate broad understanding of core areas of pure and applied mathematics, and familiarity with current research in a chosen area of specialization.
- Communicate mathematics effectively both orally and in writing.
- Prepare for a professional career in the mathematical sciences in industry or for further advanced study in the mathematical sciences.