MATHEMATICS

Discipline Coordinator
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Mathematics is a discipline in the Interdisciplinary Ph.D. (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/interdisciplinary-phd-program/) Program administered by the School of Graduate Studies.

Note: The discipline-specific requirements listed here are *in addition* to the requirements listed in Interdisciplinary Ph.D. Application Procedure and Minimum Criteria for Admission and Minimum Interdisciplinary Ph.D. Academic Regulations and Degree Requirements.

Discipline-Specific Admission Requirements

For applicants electing mathematics as the primary discipline: To get full admission, an applicant should have a Bachelor's degree or a Master's degree in mathematics/statistics (or equivalent) from an accredited college or university. Applicants who do not have a Master's degree are expected to provide strong evidence of academic ability and research capability. GRE General scores are required in most cases, but may be waived under extenuating circumstances, provided there are sufficient other indicators of academic ability. Applicants are encouraged to contact the discipline coordinator to inquire whether a waiver can be granted.

For applicants electing mathematics as a co-discipline: To get full admission, an applicant should have a Bachelor's degree in mathematics/statistics from an accredited college or university, or a Bachelor's degree in another subject including evidence of a strong performance in at least three mathematics courses beyond Calculus I, II, and III.

Applicants may get provisional admission if the above conditions are not fully satisfied at the time of application.

In order to complete the Interdisciplinary Ph.D. with Mathematics as the primary discipline, students are expected to complete the following requirements:
1. Qualifying Coursework

A student who is admitted to the Interdisciplinary Ph.D. program while having not completed all of the qualifying coursework as described below must complete the missing courses with a GPA of 3.0 or better in order to be deemed qualified to continue in the Interdisciplinary Ph.D. program in the Department of Mathematics and Statistics.

The qualifying courses for the Interdisciplinary Ph.D. are as follows:

Mathematics Emphasis

MATH 5509 (https://catalog.umkc.edu/search/?P=MATH%205509) Algebra I

MATH 5513 (https://catalog.umkc.edu/search/?P=MATH%205513) Real Variables I

MATH 5532 (https://catalog.umkc.edu/search/?P=MATH%205532) Numerical Linear Algebra

MATH 5510 (https://catalog.umkc.edu/search/?P=MATH%205510) Complex Variables I

MATH 5521 (https://catalog.umkc.edu/search/?P=MATH%205521) Differential Equations

Statistics Emphasis

STAT 5501 (https://catalog.umkc.edu/search/?P=STAT%205501) Statistical Design Of Experiments

MATH 5513 (https://catalog.umkc.edu/search/?P=MATH%205513) Real Variables I

STAT 5537 (https://catalog.umkc.edu/search/?P=STAT%205537) Mathematical Statistics I

STAT 5547 (https://catalog.umkc.edu/search/?P=STAT%205547) Mathematical Statistics II

STAT 5551 (https://catalog.umkc.edu/search/?P=STAT%205551) Applied Statistical Analysis

STAT 5565 (https://catalog.umkc.edu/search/?P=STAT%205565) Regression Analysis

STAT 5572 (https://catalog.umkc.edu/search/?P=STAT%205572) Multivariate Analysis

2. Doctoral Course Work

Following the completion of Qualifying Coursework, the student needs to complete the Doctoral Coursework described below. This coursework must be completed with a B(3.0) average.

Mathematics Emphasis

MATH 5519 (https://catalog.umkc.edu/search/?P=MATH%205519) Algebra II

MATH 5523 (https://catalog.umkc.edu/search/?P=MATH%205523) Real Variables II

MATH 5542 (https://catalog.umkc.edu/search/?P=MATH%205542) Advanced Numerical Analysis

Any one of STAT 5576 (https://catalog.umkc.edu/search/?P=STAT%205576), STAT 5578 (https://catalog.umkc.edu/search/?P=STAT%205578), or STAT 5588 (https://catalog.umkc.edu/search/?P=STAT%205588)

Statistics Emphasis

STAT 5576 (https://catalog.umkc.edu/search/?P=STAT%205576) Probability

STAT 5578 (https://catalog.umkc.edu/search/?P=STAT%205578) Advanced Mathematical Statistics

STAT 5588 (https://catalog.umkc.edu/search/?P=STAT%205588) Theory of Linear Model

Any one of MATH 5519 (https://catalog.umkc.edu/search/?P=MATH%205519), MATH 5523 (https://catalog.umkc.edu/search/?P=MATH%205523), or MATH 5542 (https://catalog.umkc.edu/search/?P=MATH%205542)

Additional elective courses may be required at the discretion of the Interdisciplinary Ph.D. Supervisory Committee.

3. Qualifying Exams

Within a year of completing the doctoral Core Coursework, the student is required to complete the Interdisciplinary Ph.D. qualifying examinations. The written examinations under either emphasis are based on two of the three doctoral core courses.

- For the Mathematics emphasis, the written examinations are based on two of the following Doctoral Core Courses: MATH 5519 (https://catalog.umkc.edu/search/?P=MATH%205519), MATH 5523 (https://catalog.umkc.edu/search/?P=MATH%205523), and MATH 5542 (https://catalog.umkc.edu/search/?P=MATH%205542).
- For the Statistics emphasis, the written examinations are based on two of the following Doctoral Core Courses: STAT 5576 (https://catalog.umkc.edu/search/?P=STAT%205576), STAT 5578 (https://catalog.umkc.edu/search/?P=STAT%205578), and STAT 5588 (https://catalog.umkc.edu/search/?P=STAT%205588).
- The student may take one written examination from the opposite emphasis if his or her supervisory committee deems it in the best interest of the student's Plan of Study, provided the student has taken the course on which the examination is based.
- If a student fails either one or more qualifying exams on the first attempt, he or she may retake the failed parts from the first attempt after a period of 12 weeks. If the student fails the qualifying examination(s) a second time, he or she is terminated from the Interdisciplinary Ph.D. program in Mathematics.

4. The Interdisciplinary Ph.D. Comprehensive Examination

Following the completion of the qualifying examinations, the student is deemed fully qualified to carry out doctoral-level research. At this stage, the student begins his or her doctoral research. Within two years of successful completion of the qualifying examination, the student is required to complete the Interdisciplinary Ph.D. Comprehensive Examination. The Comprehensive Exam consists of submitting a fully developed proposal of the Ph.D. research topic, together with an oral presentation to the student's full Ph.D. committee. The exact timing and topic of this written and oral comprehensive exam will be determined by the student and their supervisory committee.

5. Dissertation and Final Oral Examination

Within two years of admission to Candidacy, the student is required to have completed the necessary research and writing to form the Dissertation. Once this is complete, the student must complete the Final Oral Examination. This is a two-hour discussion with the student and the supervisory committee. The student must prepare a presentation that outlines the content of the dissertation. The presentation is a public event, so anyone is free to attend. Following the completion of the presentation is a closed-door session with the student and the Supervisory Committee in which the Candidate fields questions and comments regarding the content of the Dissertation. Following successful completion of the Final Oral Examination, the committee will make recommendations for revisions to the dissertation, and the Candidate is required to address these recommendations in order to complete the Interdisciplinary Ph.D.

6. Other Requirements

- In addition to the requirements listed above, the student must satisfy the co-discipline coursework requirements.
- All Interdisciplinary Ph.D. students with mathematics as the primary discipline are required to attend the department graduate seminar at least five times per semester. Those who cannot fulfill this requirement must contact the graduate seminar coordinator.
- The student must satisfy all requirements set forth by the School of Graduate Studies.

Mathematics as a Co-discipline

The number of hours required in mathematics for a student who chooses Mathematics as a co-discipline will be at least 9 graduate credit hours. Up to three of these credit hours may be at the 400-level. The Mathematics hours counting toward the degree must have a B (3.0) average.

Suggested Compatible Co-disciplines

Cell Biology and Biophysics (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/cell-biology-biophysics/), Chemistry (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/chemistry/), Computer Networking and Communication Systems (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/telecommunication-computer-networking/), Computer Science (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/computer-science/), Curriculum and Instruction (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/curriculum-instruction/), Electrical and Computer Engineering (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/electrical-computer-engineering/), Engineering (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/engineering/), Geosciences (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/geosciences/), Molecular Biology and Biochemistry (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/molecular-biology-biochemistry/), Physics (https://catalog.umkc.edu/archive/2021-2022/colleges-schools/graduate-studies/physics/)