MS in Mathematics

Admission Requirements
Transcripts of all undergraduate and any graduate work must be submitted. In addition to the Graduate College minimum requirements, applicants must meet the following program requirements:

- **Baccalaureate Field** Mathematics or a related field. Applicants must have 20 semester hours of undergraduate work in mathematics beyond calculus. Additional requirements vary by area as noted in each section.
- **Grade Point Average** At least 3.00/4.00 for the final 60 semester hours (90 quarter hours) of undergraduate study, and an average of 3.00 in all mathematics courses beyond calculus.
- **Tests Required** GRE General. The GRE Subject Test (in Mathematics or in Computer Science, depending on the area of interest) is highly recommended but not required.
- **Minimum English Competency Test Score**
  - TOEFL 100, with sub-scores of Reading 19, Listening 17, Speaking 20, and Writing 21 (iBT Internet-based TOEFL); 60, with sub-scores of Reading 19, Listening 17, Writing 21 (New Paper-Based—after August 2018); 600 (Institutional Testing Paper-Based—prior to August 2018), OR,
  - IELTS 7.0, with sub-scores of 7.0 for all four sub-scores, OR,
  - PTE-Academic 54, with sub-scores of Reading 51, Listening 47, Speaking 53, and Writing 56.
- **Letters of Recommendation** Three required from persons familiar with the applicant’s academic work.
- **Personal Statement** Required.

Degree Requirements
In addition to the Graduate College minimum requirements, students must meet the following program requirements:

- **Minimum Semester Hours Required** 32.
- **Course Work** At least 24 hours must be in mathematics courses, of which 12 hours must be at the 500-level. The student must complete a course of study in one of the following concentrations or, in exceptional cases approved by the Graduate Studies Committee, a general program of study without concentration can be followed.

**Concentration in Pure Mathematics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>MATH 417</td>
<td>Complex Analysis with Applications</td>
</tr>
<tr>
<td>MATH 516</td>
<td>Second Course in Abstract Algebra I</td>
</tr>
<tr>
<td>MATH 533</td>
<td>Real Analysis I</td>
</tr>
</tbody>
</table>

Select one of the following:

- MATH 446 Introduction to Topology II
- MATH 517 Second Course in Abstract Algebra II
- MATH 534 Real Analysis II
- MATH 535 Complex Analysis I
- MATH 536 Complex Analysis II

Other courses may be substituted with the permission of the director of graduate studies.

**Concentration in Applied Mathematics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MATH 417</td>
<td>Complex Analysis with Applications</td>
</tr>
<tr>
<td>MATH 480</td>
<td>Applied Differential Equations</td>
</tr>
<tr>
<td>MATH 481</td>
<td>Applied Partial Differential Equations</td>
</tr>
</tbody>
</table>

Remaining courses to be selected in consultation with an advisor.

Students must do one of the following:

- Pass a written comprehensive examination in applied mathematics
- Write a thesis and pass an oral defense

**Concentration in Mathematical Computer Science**

<table>
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<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>MCS 401</td>
<td>Computer Algorithms I</td>
</tr>
<tr>
<td>MCS 421</td>
<td>Combinatorics</td>
</tr>
<tr>
<td>MCS 471</td>
<td>Numerical Analysis</td>
</tr>
</tbody>
</table>

Select at least three courses as follows:

- Two 500-level MCS courses
- One MCS graduate-level course OR
- STAT 471 Linear and Non-Linear Programming

Other courses may be substituted with permission of the director of graduate studies.

Remaining courses to be selected in consultation with an advisor.

Students must do one of the following:

- Pass a written comprehensive examination in mathematical computer science
- Write a thesis and pass an oral defense

- **Comprehensive Examination** Optional. Students who do not pass a written comprehensive examination must complete a thesis.
- **Thesis, Project, or Course-Work-Only Options** Thesis or course work only (with written comprehensive examination). No other options are available.