Applied Mathematical and Computational Sciences, Ph.D.

Requirements

The Doctor of Philosophy program in applied mathematical and computational sciences (AMCS) requires a minimum of 72 s.h. of graduate credit.

Course of Study

Faculty members can help each student plan a course of study that is consistent with the student’s background, interests, and goals.

These individual plans are designed to help students develop expertise in methods of applied mathematics and build a good foundation in related topics of mathematics. The individual plans also provide sufficient knowledge in an outside area to enable students to use mathematical techniques in that area.

Students may arrange their study plans to earn a master’s degree from another department after they complete part of their plan. Students find suitable thesis problems and supervisors with the help of the faculty.

Required Courses in Core Areas

Students must successfully complete these three core course sequences in the first two years of graduate study.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH:5200 &amp; MATH:5210</td>
<td>Introduction to Analysis I-II</td>
<td>8</td>
</tr>
<tr>
<td>MATH:5600 &amp; MATH:5700</td>
<td>Nonlinear Dynamics with Numerical Methods - Introduction to Partial Differential Equations</td>
<td>8</td>
</tr>
<tr>
<td>MATH:5800 &amp; MATH:5810</td>
<td>Numerical Methods I-II</td>
<td>8</td>
</tr>
</tbody>
</table>

Outside Area Courses

Students must take and pass Ph.D.-level courses in areas in which mathematics is applied: one preparation course in the first two years and then two advanced courses outside of mathematics at the 6000-level or above.

Advanced Mathematics Course Requirement

In order to establish a solid foundation in mathematics, students must successfully pass two more courses numbered MATH:5000 to MATH:5999 and complete at least 12 s.h. of graduate mathematics courses numbered MATH:6000 to MATH:7799, with the exception of seminar courses. The courses should be chosen to obtain mathematical breadth and must be approved by the AMCS chair.

Comprehensive Examination

Students complete a comprehensive examination that covers their outside research area within three-and-a-half years after beginning graduate study. The examination is typically based on the outside area courses and/or directed readings.