

# Applied Mathematical and Computational Sciences, PhD

## Academic Plans

### Sample Plan of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

### Applied Mathematical and Computational Sciences, PhD

Course	Title	Hours
<b>Academic Career</b>		
<b>Any Semester</b>		
72 s.h. must be graduate level coursework; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. <sup>a</sup>		
<b>Hours</b>		<b>0</b>
<b>First Year</b>		
<b>Fall</b>		
MATH:5200	Introduction to Analysis I <sup>b</sup>	3
MATH:5600	Nonlinear Dynamics With Numerical Methods <sup>b</sup>	3
MATH:5800	Numerical Methods I <sup>b</sup>	3
MATH:5900	First-Year Graduate Seminar	1
<b>Hours</b>		<b>10</b>
<b>Spring</b>		
AMCS:5900	Seminar: Applied Mathematical and Computational Sciences	1
MATH:5210	Introduction to Analysis II <sup>b</sup>	3
MATH:5700	Introduction to Partial Differential Equations <sup>b</sup>	3
MATH:5810	Numerical Methods II <sup>b</sup>	3
AMCS Lectures on Programming		
<b>Hours</b>		<b>10</b>
<b>Summer</b>		
MATH:5950	Qualifying Exam Preparation Seminars	0
Exam: PhD Qualifying Exams <sup>c</sup>		
<b>Hours</b>		<b>0</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH:6600	Ordinary Differential Equations I <sup>d</sup>	3
MATH:6850	Advanced Numerical Methods I <sup>d</sup>	3
Outside Area Preparation course <sup>e, f</sup>		3
<b>Hours</b>		<b>9</b>
<b>Spring</b>		
MATH:4820	Optimization Techniques	3

MATH:6610	Ordinary Differential Equations II <sup>d</sup>	3
MATH:6860	Advanced Numerical Methods II <sup>d</sup>	3
AMCS Lectures on Programming		
<b>Hours</b>		<b>9</b>

#### Third Year

##### Fall

AMCS:7990	Reading and Research	2
MATH:5000	Abstract Algebra I <sup>d</sup>	3
or MATH:5400	or Fundamental Groups and Covering Spaces	
or MATH:5750	or Mathematical Biology I	
Outside Area course (numbered 6000 or above) <sup>e, f</sup>		3
<b>Hours</b>		<b>8</b>

##### Spring

Exam: PhD Comprehensive Exam		
AMCS:7990	Reading and Research	2
MATH:5010	Abstract Algebra II <sup>d</sup>	3
or MATH:5410	or Introduction to Smooth Manifolds	
or MATH:5760	or Mathematical Biology II	
Outside Area course (numbered 6000 or above) <sup>e, f</sup>		3
<b>Hours</b>		<b>8</b>

#### Fourth Year

##### Fall

MATH:4700	Partial Differential Equations and Applications	3
AMCS:7990	Reading and Research	3
<b>Hours</b>		<b>6</b>

##### Spring

MATH:4060	Discrete Mathematical Models	3
AMCS:7990	Reading and Research	3
<b>Hours</b>		<b>6</b>

#### Fifth Year

##### Fall

MATH:4840	Mathematics of Machine Learning	3
AMCS:7990	Reading and Research	2
<b>Hours</b>		<b>5</b>

##### Spring

GRAD:6003	Doctoral Final Registration	1
Exam: PhD Final Exam <sup>g</sup>		
<b>Hours</b>		<b>1</b>
<b>Total Hours</b>		<b>72</b>

a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.

b Students must pass (grade of B-minus or higher in each course) all three core course sequences (or be exempted) in the first two years of graduate study.

c Taken in August.

d Students must take and successfully pass two MATH courses numbered 5000-5999, and complete at least 12 s.h. of MATH courses numbered 6000-7799 with the exception of the seminars. Work with faculty advisor to determine appropriate graduate coursework and receive departmental approval.

- e Work with faculty advisor to determine appropriate graduate coursework and sequence.
- f Students must take and pass PhD 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.
- g Dissertation defense.