Applied Mathematical and Computational Sciences

Chair
• Weimin Han (Mathematics)

Graduate degree: Ph.D. in applied mathematical and computational sciences
Faculty: http://www.amcs.uiowa.edu/faculty
Web site: http://www.amcs.uiowa.edu/

Applied mathematical scientists formulate scientific concepts and problems in mathematical terms; solve the resulting mathematical problems using analytical and computational methods; and discuss, interpret, and evaluate the solutions. They explore areas of mathematical application and develop mathematical theories in new areas.

Career opportunities for applied mathematicians include positions in colleges, universities, governmental laboratories, business, industry, and consulting firms.

Graduate Program of Study
• Doctor of Philosophy in applied mathematical and computational sciences

Doctor of Philosophy

The Doctor of Philosophy program in applied mathematical and computational sciences requires a minimum of 72 s.h. of graduate credit. The Ph.D. program is autonomous, broadly based, and interdisciplinary. It is designed to help students achieve a command of theoretical and applied mathematics and obtain basic knowledge in another area (engineering, medicine, or one of the behavioral, biological, physical, or social sciences).

The program is flexible; students can concentrate on applied mathematics, such as differential equations and numerical analysis, or on other applicable techniques in mathematics. Scientific computing is an important part of applied mathematics, so it is often a part of student training and dissertation research.

Prospective students should have a desire to apply a mathematical science (mathematics or statistics) to relevant problems in another area.

COURSE OF STUDY

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

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

Students can 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.

QUALIFYING AND COMPREHENSIVE EXAMINATIONS

Students take a qualifying examination over three of the four core course sequences required for the Ph.D. (analysis, differential equations, numerical analysis, and topology). They also take a comprehensive examination over the chosen outside area.

One program objective is to have each student's dissertation research include many of the activities of an applied mathematical scientist. For example, a student might formulate a model, do a quantitative analysis of the model, and interpret the results.

Admission

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College. To be prepared for graduate-level course work in mathematics and an additional area, applicants should have a bachelor's or master's degree with a strong mathematics component and some background in the additional area.

Applications for fall admission are due on January 15. For application forms and more information about the academic program, contact the chair of the Applied Mathematical and Computational Sciences Program.

Financial Support

Fellowships and research and teaching assistantships are available to qualified applicants. Fellowship support is available during summers. Applications for financial support should be submitted at the same time as applications for admission.

Courses

AMCS:5900 Seminar: Applied Mathematical and Computational Sciences
Current research by faculty, students, guests.

AMCS:7990 Reading and Research
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