PROGRAM SUMMARY

Applied Mathematics

The University of Akron

APPLIED MATHEMATICS

Mathematics has always been fundamental to knowledge and progress. First used to address quantity, structure, space and change, the science of mathematics was applied to such domains as taxation, commerce, land management, architecture and astronomy.

Today, all sciences — every field within the social and natural sciences alike — offer problems that demand mathematical expertise. At the same time, discoveries within mathematics itself have profoundly affected its scope and direction as a separate science — and its impact on other sciences. For example, breakthroughs in understanding string theory in physics have unfurled new mathematical concepts. In turn, these concepts have inspired the mathematics used in other areas of science, engineering and technology.

The explosion of knowledge in the scientific age creates specializations in mathematics, and among the most recognizable are applied and theoretical mathematics. The former concerns itself with mathematical concepts to further other areas; statistics, operations research and computer science evolved from applied mathematics, for example. The latter, often called "pure mathematics," follows the rigorous challenge of mathematics to develop knowledge regardless of its reference to other fields.

Certainly, there is a robust interplay between theoretical and applied mathematics. Concepts and techniques inspired by one can prove useful to the other and, in the end, join the collection of mathematical knowledge.

DEGREE PROGRAMS AT UA

You will receive a rock-solid education at The University of Akron and gain an in-depth understanding of one or more areas in the mathematical sciences. As a graduate of the program, you will enter graduate school or the workforce with confidence in your skills and knowledge.

Students in mathematics begin with the fundamentals, taking courses in calculus, linear algebra, mathematical models and numerical methods. Once completing these, they can then tailor their degree program by completing specific courses i n an area of specialization. They can also concentrate on an area of application, such as engineering, physics, chemistry, computer science, social science, business or secondary education.

Qualified students might choose to complete the B.S./M.S. Program in Mathematics, an accelerated, five-year program leading to a master's degree in mathematics and a bachelor's degree in mathematics or applied mathematics. During the first three years and under faculty supervision, students in the program complete core requirements and most electives for the bachelor's degree. In the remaining two years and upon acceptance to the Graduate School, students complete coursework for the master's degree. Students in this graduate-studies phase — as long as they take nine or more graduate credits each semester — often are granted graduate assistantships in the department.

Teaching is a top priority at The University of Akron, and department faculty are committed to helping students in and outside the classroom. By consulting with local industry, faculty can approach the teaching of mathematical concepts and challenges from a practical, working-world perspective. Staff members provide introductory seminars and are available to assist and guide students.

The department features a variety of computing facilities, operating environments, programming languages and software, and routine upgrades ensure their relevancy to the developments in mathematical sciences today.

Department computers are a mainstay to student learning and a conduit to all the new information and knowledge in the mathematical sciences. Students have wide access to the Internet, as well as to the Ohio Supercomputing Center. Based in Columbus, Ohio, the latter is especially vital to undergraduates working on research topics.

Because faculty offices are close to the computer laboratories, student-faculty interaction is commonplace, and e-mail exchanges cultivate routine direction, discussion and encouragement.

CAREER OPPORTUNITIES

A degree in applied mathematics avails you career opportunities in both the public and private sector and in such diverse areas as business, law, medicine, computer technology, engineering, physics and the social sciences. Graduates in the field might work on projects involving the aerodynamic design of automobiles, the efficiency standards of alternate energies, or the application of nanotechnology to medical diagnostics.

Those with advanced degrees increase their ability to succeed in the marketplace of jobs. In addition, as advancing technologies spur job creation and growth, the demand for knowledge and skills in mathematics accelerates accordingly. Academic backgrounds in related scientific and technological fields complement degrees in the mathematical sciences.

Among the fields open to graduates in applied mathematics are those related to computer technology; business administration, sales and management; engineering and engineering technology; finance and banking. Many establish careers in education and academics, conducting studies at universities and research centers.

According to government reports, mathematicians work for research and testing services; educational services; security and commodity exchanges; banks; insurance

FOR MORE INFORMATION, VISIT THESE WEB SITES:

Department of Theoretical and Applied Mathematics: http://www.math.uakron.edu/
Buchtel College of Arts and Sciences: http://www.uakron.edu/colleges/artsci/
The University of Akron: http://www.uakron.edu
Office of Admissions: http://www.uakron.edu/admissions/
Honors College: http://www3.uakron.edu/honors/
Center for Career Management: http://www.uakron.edu/ccm/
U.S. Bureau of Labor Statistics: http://www.bls.gov/
U.S. Bureau of Labor Statistics Occupational Outlook Handbook: http://www.bls.gov/oco/

companies; management and public relations businesses; and the aerospace and drug industries.

AKRON ADVANTAGE

The college offers job-related services through its A&S Careers Program, which creates links between students, alumni and local professionals. As a Buchtel College of Arts and Sciences student, you have access to its lending library with up-to-date, career-related publications; a computer workroom for resume writing and employment research; volunteer, paid and for-credit internship placement on and off campus; and department-specific mentoring arrangements.

You also are encouraged to gain important practical professional experience through the University's optional cooperative education program. Participating in the program gives you firsthand, professional experience in the applied mathematical field of your choice.

Through co-op, you'll alternate semesters of work and school. As an added benefit, you'll earn a competitive salary. Placements for our applied mathematics students have included NASA Lewis Research Center, National Security Agency, Glidden Co., BFGoodrich, General Electric, Babcock and Wilcox, Diebold, Inc., Roadway Logistics, Telxon, Inc., and Ciba Corning Diagnostics Corp.

Classroom instruction also is enhanced through student activities. As a mathematics major, you may be interested in the Mathematical Association of America, Pi Mu Epsilon (mathematics honorary) and the Math Club. Participation in student organizations provides valuable experience and the chance to meet other mathematical science students and professionals.

HIGH SCHOOL PREPARATION

High school students considering the applied mathematics program at The University of Akron are encouraged to follow the college prep curriculum while in high school. This includes four years of English, three years each of math, natural science and social science, and two years of foreign languages. Clear, concise writing skills also are imperative. If you have not completed the recommended courses, you may be required to take University courses to meet the basic criteria.

THE UNIVERSITY OF AKRON

You may already know that The University of Akron is the public research university for Northern Ohio. But we're much more than labs and lasers.

Our 24,000 students choose from approximately 300 academic programs and areas of study, from accounting to zoology. Many of our undergraduate programs have gained national recognition, including psychology, sales and marketing, dance, global business and gerontological nursing.

About 7,000 students live in our 14 residence halls or just a short walk from campus. When they aren't hitting the books, thousands take advantage of UA's fraternities, sororities and more than 200 student organizations, from gospel choir and alpine skiing to career-building professional and academic societies. We also offer 17 intramural sports and clubs, from bowling to cardio kickboxing.

The University's ongoing, major campus renovation campaign that began in 2000, the "New Landscape for Learning," has added 10 new structures, including two classroom buildings, as well as 30 acres of green space and 15 additions.This transformation continues today — construction on UA's 15th residence hall is under way.

Here's just some of what you'll find at the new UA:

- Student Recreation and Wellness Center, a massive structure with ball courts, fitness facilities, rock climbing wall and a recreational pool that includes a 30-seat spa, "lazy river" and fountain.
- Student Union, containing a movie theatre, billiards/bowling room, food court, Starbucks, bookstore and headquarters for student organizations.
- Honors Complex with combination residence hall and academic facilities.
- Gardens, lawns, amphitheatre and tree-lined pathways.

You'll also discover a campus retooled for your academic success. We are Ohio's most wired-for-wireless public university, and can provide you reduced-rate, high-speed Internet access off campus.

ADMISSION INFORMATION

The Office of Admissions
330-972-7077 or 800-655-4884
mailto:admissions@uakron.edu
http://www.uakron.edu/admissions/

Sample Curriculum

Bachelor of Arts Degree in Applied Mathematics

First Year	
Analytic Geometry-Calculus I	4
English Composition I	4
Beginning Foreign Language I	4
Social Science Requirement	3-4
Analytic Geometry-Calculus II	4
English Composition II	3
Beginning Foreign Language II	4
Social Science Requirement	3-4
Physical Education/Wellness	1-3
Total	30-34

Second Year	
Analytic Geometry-Calculus III	4
Intermediate Foreign Language I	3
Natural Science Requirement	4
Introduction to Computer Science	4
Elective	3
Introduction to Ordinary Differential Equations	3
Linear Algebra	3
Introduction to Public Speaking or Effective Oral Communication	3
Natural Science Requirement	4
Intermediate Foreign Language II	3
Total	34

Third Year	
Fundamentals of Advanced Mathematics or 300/400 level elective	3
Applied Numerical Methods I, II	6
Outside elective-Applied Math area	6
Humanities In Western Tradition I	4
Mathematical Models	3
Humanities elective	3
Area Studies & Cultural Diversity	2
Elective	6
Total	33

Fourth Year	
Advanced Calculus I	3
Applied Statistics I	4
Humanities elective	3
Advanced Calculus II or Complex Variables	3
300/400 level electives	9
Area Studies &Cultural Diversity	2
Electives	7
Total	31