

MATHEMATICAL SCIENCES

bachelor of arts

COLLEGE OF LIBERAL ARTS AND SCIENCES

One of the oldest and most fundamental sciences known to humankind is still a basic tool for understanding the world and solving the planet's economic, scientific, engineering, physics and business problems. It is also a living, dynamic subject. Mathematicians today use computational techniques, algorithms, and the latest computer technology to meet the ever-increasing demand for diverse quantitative skills. In this program, you'll learn the fundamentals, but will also choose electives that prepare you for advanced study or one of dozens of careers in this challenging field.

ADVANTAGE UIS

- **Faculty depth and breadth.** No giant lecture halls. No teaching assistants. Classes are taught by UIS' math professors, who hold Ph.D.s from institutions such as Yale University, University of Wisconsin, Southern Illinois University, and Oklahoma State University. Learn from the pros.
- **Theory or Applied.** The work of mathematicians falls into two broad classes — theoretical (pure) mathematics and applied mathematics. These classes, however, are not sharply defined, and often overlap. Generally, if you plan to teach mathematics or work in engineering or the physical sciences, you should choose mathematics courses as electives. If you wish to apply mathematical methods to life sciences, social sciences, or business fields, you should choose operations research or statistics courses.

A mathematician by any other name . . .

Because mathematics is the foundation upon which so many other academic disciplines are built, the number of professionals using mathematical techniques is much greater than the number formally designated as mathematicians. A math degree often launches the careers of engineers, computer scientists, physicists, economists, statisticians, actuaries, operations research analysts, even astronauts. The sky is no longer the limit with this degree.

Those who can, teach.

Talk about job security. There is a critical shortage of qualified elementary and secondary math teachers in Illinois and throughout the nation. In 2004, UIS received a federal grant to offer its bachelor's degree, along with Illinois teacher certification preparation, to students who have already earned their A.A. or A.S. degree at a community college. You can complete the degree entirely online as well as in the classroom. Choose to teach and count on being in demand.

Hot, hot, hot.

A successful math major represents a combination of creativity and analytic rigor that is respected worldwide. Some of the hottest fields today include biostatistics, mathematical biology, technical consulting, pharmaceutical research and development, aerospace, and cryptanalysis, in which you design, analyze and decipher encryption systems to transmit military, political, financial, or law enforcement-related information in code.

What can I do with this degree?

Our graduates have found careers in mathematics, operations research, and statistics in the fields of teaching, research, industry, insurance, state government, and management. Because many public and private sector positions require master's and Ph.D. degrees, many of our students go on to graduate study in specialized areas such as statistics, bio-statistics, mathematical biology, and industrial and applied mathematics.

Recent employers include:

*Horace Mann Educational Solutions, Inc.
Illinois Department of Insurance
Lockheed Martin
Michigan State University
Springfield School District #186
IBM Global Service, Hong Kong
Federal Highway Administration
Oracle, Inc. Software
John Deere Life Insurance Co.
National Computer Systems Pearson*

Practically speaking.

If it's running smoothly, chances are, a mathematician was involved. Techniques such as mathematical modeling and computational methods are used to analyze the most efficient way to schedule airline routes between cities, the effect and safety of new drugs, the aerodynamic characteristics of an experimental automobile, or the cost-effectiveness of alternative manufacturing processes.

Wise Words

Bill Bade
Chair, Mathematics & Engineering
Sciences Department
Lincoln Land Community College

"Graduating in 1992, I earned a degree in Mathematical Sciences, which opened doors for me and allowed me to advance to my current position. Looking back, I think the accessibility and genuine care expressed by my professors played a large part in my success."

The bachelor of arts in mathematical sciences is designed to prepare students for careers using mathematics, operations research, and statistics in the fields of teaching, research, industry, insurance, and management or for graduate study in mathematical sciences or related areas. By making different choices from technical electives, students can tailor their degrees to prepare for these various careers.

Faculty Hei-Chi Chan, Yuichi Iwashita, Mahdi Majidi-Zolbanin, Tung Nguyen, Carol Saltsgaver, Chung-Hsien Sung, Larry Stonecipher, Richard Ringeisen

Entrance Requirements

- A. Admission to UIS.
- B. Completion of campus assessment test and entrance assessment test for majors. (Both tests are given at the beginning of each semester.)
- C. Matriculation into the mathematical sciences program. Requirements for matriculation are
 - 1) selection of a mathematical sciences faculty adviser,
 - 2) completion of three semesters of calculus (MAT 115, MAT 116, MAT 217),
 - 3) ability to write computer programs in a procedural language, and
 - 4) enrollment in MAT 330 Entrance Assessment.

Note: Courses taken to satisfy matriculation requirements are not counted as part of the 61 credit hours of upper division work needed for graduation. Students may begin work toward a degree before matriculation into the program, but matriculation should be completed before the last 16 semester hours of MAT courses needed for graduation.

Entrance Requirements for Online Program

- A. Earned a minimum of 30 credit hours at the lower-division level.
- B. GPA of 2.00 or higher (on a 4.00 scale) from an accredited college or university.
- C. Completion of 3 semesters of calculus.
- D. Ability to write computer programs in procedural language.

Courses taken to satisfy matriculation requirements are not counted as part of the 61 credit hours of upper-division work needed for graduation.

Check the program's website often for announcement of new online courses, or visit <http://online.uis.edu>

Program Requirements

Communication Skills Requirement	
MAT 330 Entrance Assessment	0 Hrs.
Required Mathematical Sciences Courses	
Core Concentration Courses	
MAT 332 Linear Algebra	4 Hrs.
MAT 415 Advanced Calculus	4 Hrs.
MAT 431 Mathematical Statistics I	4 Hrs.
MAT 444 Operations Research Methods	4 Hrs.
Total	16 Hrs.

One of the following clusters:	16 Hrs.
Cluster A	
MAT 403 Abstract Algebra	4 Hrs.
MAT 404 Geometry	4 Hrs.
Two MAT elective courses	8 Hrs.

Cluster B	
MAT 421 Statistical Methods	4 Hrs.
MAT 432 Mathematical Statistics II	4 Hrs.
Two MAT elective courses	8 Hrs.

Engaged Citizenship Coursework	13 Hrs.
General Electives	16 Hrs.
Total	61 Hrs.

Mathematical Sciences Minor

To earn a minor in mathematical sciences, students must complete a minimum of 24 semester hours, at least 12 hours of which must be upper division course work taken at UIS. Transfer credit for lower division course work and for upper division mathematics courses is evaluated on a case-by-case basis through the student petition process. Core courses include MAT 115 Calculus I, MAT 116 Calculus II, and MAT 332 Linear Algebra, or its equivalent. Students must then select an area of specialization (mathematics, operations research, or statistics) and complete 12 semester hours as follows:

A. Mathematics specialization requires:	
MAT 403 Abstract Algebra	4 Hrs.
MAT 404 Geometry	4 Hrs.
One elective from B or C	4 Hrs.
Total	12 Hrs.

B. Operations research specialization requires:	
MAT 442 Probability Modeling and Computer Simulation	4 Hrs.
MAT 444 Operations Research Methods	4 Hrs.
One elective from A	4 Hrs.
Total	12 Hrs.

C. Statistics specialization requires:	
MAT 421 Statistical Methods	4 Hrs.
MAT 431 Mathematical Statistics I	4 Hrs.
One elective from A	4 Hrs.
Total	12 Hrs.

Students wishing to minor in mathematical sciences should select an adviser from among the mathematical sciences faculty who will help ensure that all requirements for the minor are met.

Visit our website for more information on

- Engaged Citizenship requirement
- Prerequisites

To view course descriptions
uis.edu/uiscatalog

CONTACT INFORMATION

Mathematical Sciences

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Website

uis.edu/math

Office of Admissions (217) 206-4847
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IMPORTANT! — Information effective fall 2009. Subject to change without notice. The information is not to be considered final, nor does it constitute a contract between the student and UIS. See uis.edu/uiscatalog for current program requirements.

