APPLIED MATHEMATICS

Illinois Tech is a small, private university that educates students to go on to do big things. For graduates of our **Department of Applied Mathematics** (AMAT), this has included further study at top graduate schools and jobs at places such as Goldman Sachs, Blue Cross Blue Shield, Wolfram (developers of Mathematica), Facebook, Groupon, and more.

Applied mathematics and statistics solves problems in science, engineering, and society. There is a growing demand for people who can use mathematics and statistics to solve problems: The U.S. Bureau of Labor Statistics predicts a 33 percent growth in these two fields combined through 2026. At Illinois Tech you not only develop skills in logic and abstraction but also learn advanced tools, such as stochastics for financial mathematics and climate change, or computational mathematics for fast, accurate algorithms. Our graduates are accepted into excellent graduate programs in mathematics, physics, design, accounting, and business. They work as financial and insurance analysts, computer programmers, researchers, and in academia.

AMAT MAJORS AND SPECIALIZATIONS AT ILLINOIS TECH

Choose from two bachelor's degrees:

- **B.S. in Applied Mathematics**
- **B.S. in Statistics**

For Applied Mathematics, specialize in an area of interest to you:

- **Applied Analysis**
- **Computational Mathematics**
- **Discrete Applied Mathematics**
- **Mathematical Finance**
- **Stochastics**

The Bachelor of Science in Statistics program features:

- **Mathematical aspects of statistics**
- **Computational knowledge and skills**
- **Exposure to diverse interdisciplinary areas of applied mathematics**
- **Opportunities for research with faculty**

MASTER OF DATA SCIENCE

Data scientist is Glassdoor's #1 job. Either B.S. degree at Illinois Tech can prepare you for an M.D.S. program.

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BEST VALUE
2019

WHERE MINORS ARE MAJOR

As an AMAT student, you will take a minor outside of the department—giving you an area of focus where mathematics may be applied. Minors in **computer science, business, psychology, entrepreneurship, artificial intelligence,** or one of the **engineering** areas, for example, allow you to pursue your application area of interest. Our AMAT program is designed for maximum flexibility, allowing you ample opportunity to assemble a portfolio of courses that will satisfy your intellectual curiosity and prepare you for your career.

Students who pursue specializations or minors in mathematical finance or business may qualify for admission to our highly rated **Master of Mathematical Finance** program.

RESEARCH—EVEN AS AN UNDERGRAD!

Applied mathematics undergraduates at Illinois Tech have the opportunity to work on major research right from the start. Our new **Elevate** program consists of summer courses that allow all undergraduates to experience research early in their careers at Illinois Tech (the summer after your first year, or the summer before your first year for transfer students). We also offer **$5,000 Undergraduate Summer Research Stipends** to select students.

Recently, two AMAT undergraduates worked on research projects with assistant professor **Sonja Petrović**, resulting in a research paper accepted by the *SIAM Undergraduate Research Online* journal. And in summer 2017 Tianci Zhu (Applied Math '17) worked with Fred Hickernell, professor of AMAT, to develop financial applications that utilize the Guaranteed Automatic Integration Library.

RESEARCH ON THE EDGE

With Ph.D.s from MIT, UCLA, Cornell, UC San Diego, and Vanderbilt University, to name a few, our applied mathematics faculty are pushing the boundaries of what we know in many areas, including computational mathematics, discrete applied mathematics, statistics, and stochastics. Our research groups include:

- Algebraic Statistics
- Applied Analysis
- Computational Mathematics
- Discrete Mathematics
- Mathematical Finance
- Meshfree and Monte Carlo Methods
- Multiscale and Stochastic Modeling and Computation
- Statistics
- Stochastics

Professor Jeffrey Duan is researching the interaction of coupled oscillating systems. Oscillatory movements or rhythms are essential for various systems. When a rhythm stalls, the effect can be fatal. In a power grid it can mean a blackout, and in the human heart even death. Duan's research team has developed a new approach for revoking these undesired effects. They use dynamical systems tools, combined with analysis and simulation, and demonstrate the new approach in experiments with chemical reactions.

LEARN TO INNOVATE IN IPROS

In Illinois Tech's signature **Interprofessional Projects (IPRO) Program**, you'll work with students from various majors to solve real-world problems. Recent math-oriented IPROs include:

- Designing ball-and-stick models that communicate information about atoms to a computer
- Galilean test of the Einstein principle of equivalence
- Creating a reliable sports player's statistical performance evaluation methodology
- Leveraging big data and analytics for innovative access control business opportunities
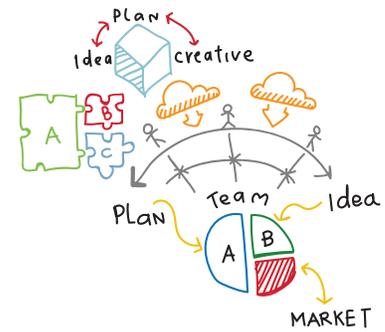
Maximize Your Education

Illinois Tech's accelerated master's degree programs allow you to receive both your **bachelor's and master's degrees** in as few as five years.

- Bachelor of Science in Applied Mathematics/M.S. in Applied Mathematics
- Bachelor of Science in Applied Mathematics/M.S. in Computer Science
- Bachelor of Science in Applied Mathematics/Master of Data Science
- Bachelor of Science in Applied Mathematics/Master of Mathematical Finance

STAND OUT.

Our graduates are far from ordinary.
But we expect them to be extraordinary.
Meet some of our alumni.

Jacob Matijevic
(Math '69)—One of the original technology developers for the Mars rovers

YoungJu Jo
(Electrical Engineering/ Applied Math '09)— Associate Director– Modeling and Calibration at Moody's Analytics

Sam Karlin
(Math '44, M.S. '45)— National Medal of Science recipient, contributed to software used to first map DNA sequences

> "The classes at Illinois Tech are exciting and fun. I loved looking at data, calculating statistics, and figuring out how to improve systems. I was also a peer mentor and teaching assistant. It was a fun way to express what I know while also learning about a new topic."

—**Sarah Maciorowski**
(Applied Math/Stochastics Specialization '17),
St. Louis
Catastrophe analyst, Guy Carpenter

TAKE A VIRTUAL TOUR

Visit us now! Log on to **iit.edu/virtualtour** to view a cool online virtual tour of our buildings, labs, open spaces, and more!
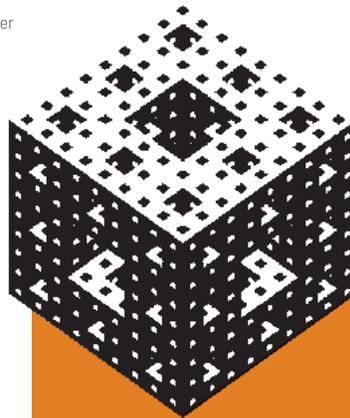
LEGACY OF EXCELLENCE

Karl Menger, a former Illinois Tech mathematics professor (1946–1971), is regarded as one of the finest mathematicians of the twentieth century. He made significant contributions to the fields of dimension theory, probability, geometry, and more. Perhaps most notable among his accomplishments is his creation of the three-dimensional "Menger sponge." It's a purely theoretical shape that has infinite surface area and no volume whatsoever. And because of that, it doesn't occupy three dimensions, or two. It manages to exist in fractional dimensions.

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