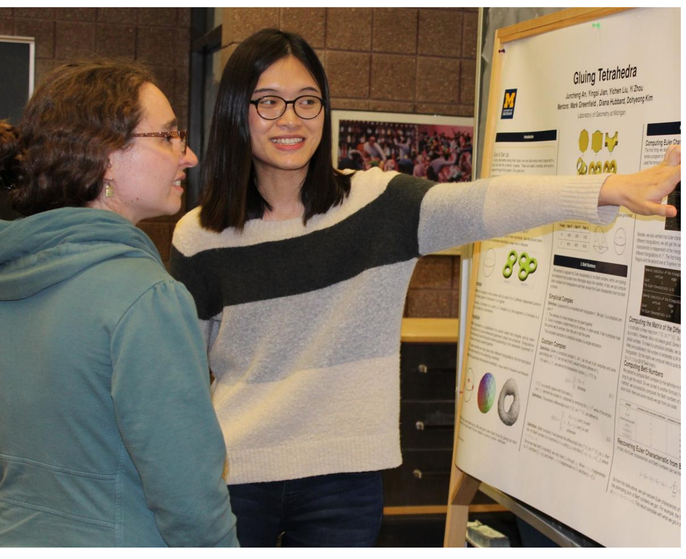

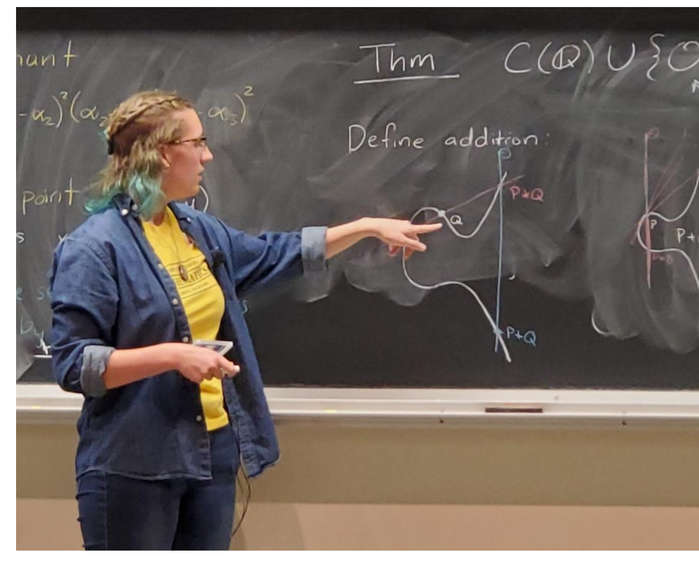

MATHEMATICS

Committed to excellent teaching and excellent research as complimentary skills

The Department of Mathematics is an internationally recognized leader in mathematical research and mathematical instruction innovation—particularly for its developments in inquiry-based learning, calculus, and its postdoctoral training, with the largest program of any university mathematics department in the country. The extent and commitment to inquiry based learning, to the undergraduate research experience, and to the professional development of its graduate students and postdoctoral assistant professors sets the department apart. Mathematics is consistently ranked among the top departments nationally and has long been one of the world's premier research institutions—noted for depth and breadth and many important innovations.

The challenge ahead is to maintain, in an extremely competitive environment, the quality of the department's research and instructional program, while simultaneously becoming increasingly interdisciplinary, so that its faculty can play collaborative roles in research endeavors in other disciplines—a development that is characterizing research in the 21st century. Our goal is to be recognized as one of the top five mathematics departments in the country, both for excellence in education and in research.

Our faculty and students contribute to expanding the knowledge of fundamental mathematics and its uses in other disciplines. While mathematics was once the province of a few, it is now an essential component for many livelihoods. The department teaches about 50,000 credit hours annually and provides students with the foundation for their studies at the university. While undergraduate mathematics majors receive a thorough grounding in mathematics and its applications, our graduate students are well prepared for research and a professional career, and our postdoctoral assistant professors receive the career foundation and training that will help shape them as the next generation of mathematicians.

To maintain its leadership role in research, expand its interdisciplinary programs, and enhance the student learning environment, the department depends heavily upon financial support from alumni and friends. The department must build on its strengths and ensure that gifted students have scholarship funds and faculty members have the resources they need to pursue research and offer an innovative curriculum.

MATHEMATICS STRATEGIC FUND

Each year, the department faces unexpected opportunities to extend its mission that are not funded by the standard budgeting process. An expendable account allows the department to respond to such opportunities and address unexpected special needs. The Strategic Fund helps to support community outreach programs such as Math Circle and Super Saturdays. Research opportunities for graduate and undergraduate student collaboration such as LogM (Laboratory of Geometry at Michigan) also receive funding. Discretionary funds like this provide the department chair with resources that can support exceptional cutting-edge work that will have a high impact on mathematics, our students, or our department. Annual contributions of $10,000 to $50,000 are vital to this discretionary fund.

As part of a wider departmental initiative aimed at encouraging math majors to actively support strong K-12 math education after they leave U-M, the department has several outreach programs that provide majors with supervised settings in which they can both learn and practice effective teaching strategies. U-M Mathematics runs a weekly Math Circle that brings area middle and high school students to the department to work with our faculty and graduate students on math problems. On Super Saturdays, free educational support for students in grades 6-12 in several subjects, including math, is offered by U-M students and faculty over Zoom. The Math Corps at the University of Michigan is a program for middle school math students and high school mentors from surrounding school districts. U-M undergraduate and graduate students help to organize the program and teach the students each summer. And the department manages the Michigan Math and Science Scholars (MMSS) Program, which brings intensive study of mathematics and science to high school students during the summer.

RESEARCH EXPERIENCES FOR UNDERGRADUATES

Each summer the department's Research Experiences for Undergraduates (REU) program gives students an authentic taste of what it is to "do mathematics." Paired with a faculty member, students work on research problems that are at the frontiers of the mathematical sciences. Students frequently report that participating in an REU was a high point of their undergraduate experience at Michigan. Each contribution of $8,000 will support one undergraduate student for a summer of research experiences.

NAMED POSTDOCTORAL ASSISTANT PROFESSORSHIP

Postdoctoral faculty play a vital role in refreshing the program with new ideas and research. At the same time, the department provides outstanding mentoring for these new researchers both in research expertise and educational methods. In learning new approaches to teaching and research, these young scholars have much to offer current students. Endowed funding of $1.5M is needed to attract the brightest new and recent Ph.D.s.

MATH CORPS AT THE UNIVERSITY OF MICHIGAN

The Math Corps is a free math summer camp for middle school students and high school mentors. The middle schoolers and high schoolers work closely with college students—a "kids teaching kids" model of learning, teaching, and growing. The program, which began in 1992 at Wayne State University in Detroit, is incredibly effective: 90 percent of the students who attend the program at Wayne State graduate from high school, and among these students, 80-90 percent attend college or enroll in the military. Following the educational and mentoring practices of the original program, the U-M Math Department started a Math Corps site in summer 2019 to serve children from the Ypsilanti area. The Math Corps costs about $200,000 to run each year; these funds are spent on buses, food, and supplies for our campers, stipends for the teachers and the 20 college students who work with us, and stipends for the 35 high school students who work with our middle school campers.

IMPACT

The U-M Math Corps is like traditional summer camps in many ways, where campers build new friendships and bond over shared experiences. Math Corps campers also come away with greater confidence in their math skills, as well as two to three times higher test scores. Math Corps accomplishes these outcomes by focusing on environment over instruction—fostering an inclusive environment where the rules for kids are simple and clear: be yourself, always strive to realize your own greatness, and be safe.

The cornerstone of Math Corps is “the conviction that all kids have a unique greatness inside, you just need to give them a safe space and it will shine,” said Sarah Koch, professor of mathematics and coordinator of Math Corps at U(M). “That’s why this program works unlike anything we’ve ever seen before. Everyone who works with us really, truly believes that, and it has this amazing consequence: these kids do incredible things. Every kid is treated like they will change the world.”

“Math Corps changed my life,” said Bailey Tate (A.B. '20), who grew up in the Detroit Math Corps program. Tate is one of the college instructors who were instrumental in getting Math Corps at U-M off the ground in 2019, and returned to the program to work again as a college instructor in 2020. “This program helped me to understand the power of believing in people and their abilities, especially kids. Not only that, it has helped me grow as a mentor and expand my network. It's not just a math camp, but a life program where you meet your forever family.”

The connections that middle and high school campers form with their college instructors is the heart of the program, and the great benefits are felt in both directions. Math Corps gives LSA undergraduates a chance to experience firsthand how their own work can make an impact on someone’s life and help to change the world.

UNDERGRADUATE SCHOLARSHIPS

Attracting bright undergraduate students to the department and to the university is essential to achieving excellence in mathematics education. Providing assistance to outstanding students not only benefits the students, it strengthens our program and our ability to provide future productive members of society with the most competitive skills. Named undergraduate scholarships can be funded by endowments of $25,000. Funding for endowments of $200,000 so that we can award multiple scholarships each year is a high priority.

GRADUATE STUDENT FELLOWSHIPS

Very talented students are essential for a top quality department, and competition for them is intense. Department funding for graduate students is becoming more limited. Attracting the top students assures that our program will thrive and graduates will be prepared to contribute to the mathematical community. With an endowed gift of $1M, fellowship funding could be provided to graduate students.

"The Michigan math community provides a safe and open space to explore mathematical ideas and for everyone to find their identity as a mathematician, whether that be in financial math, biological modeling, topology, or anything in between. I also love that almost every class emphasizes working with peers to come to the answer collaboratively, which is an invaluable skill. Further, I was trained in the mathematical process of tackling problems one step at a time, starting with, "what do I know?" and then, "what next?" One thing is clear, for a math major or minor at Michigan, there are countless options for "what's next." Thanks to scholarships from the department, I am able to pursue a Masters degree in math simultaneously with a career in Actuarial Science. Michigan Math has been one of the best communities during the best period of my life, setting me up for even more great things to come."
–Abby Hess, BS '24, MS '24

NAMED PROFESSORSHIP

To maintain its leadership in research and teaching, the department needs to retain current faculty and to continue recruiting at the highest level in a fiercely competitive environment. An endowment of $3M would provide a competitive annual salary for a distinguished professor and a supplemental research fund. We seek endowed professorships for both theoretical mathematics and applied mathematics.

NAMED LECTURESHIP IN ACTUARIAL SCIENCE

It has been challenging to recruit and retain outstanding faculty members in the area of actuarial mathematics. The academic field is already a fiercely competitive environment, and in this area of study, we compete with much more lucrative positions in industry. An endowment of $3M would provide a competitive annual salary for a distinguished and experienced faculty member with experience in the actuarial field. An endowed lectureship in this area will maintain and enhance our existing strong program.

AREA-SPECIFIC RESEARCH INITIATIVE FUNDS

Faculty often have research expenses that cannot be covered by conventional sources. These include funding for graduate students to work on research projects, computing costs, conference activities, travel, and research related items. Endowed funds of $1M may be named.

MICHIGAN CENTER FOR APPLIED AND INTERDISCIPLINARY MATHEMATICS (MCAIM)

Our modern world faces an increasing number of challenging problems in medicine, public health, engineering, climate change, machine learning, and more across the natural sciences that require a combination of expertise in different fields of science with deep mathematical understanding. Founded in 2016, MCAIM unites disciplines to generate new crucial results in these overlapping areas, and serves as the focal point for activities that integrate mathematics with these areas across the University of Michigan. An overarching goal of MCAIM is to fuse seemingly different research avenues together into greater visionary directions through combined research efforts by mathematicians and scientists working in wide-ranging fields of applications.

MCAIM manages the Van Loo Postdoctoral Fellowship Program, organizes topical workshops and conferences to identify and explore issues at the forefront of applied mathematics, and holds advanced summer schools for graduate students and postdoctoral fellows. MCAIM also strives to promote applied mathematical research at Michigan by other means, such as external funding solicitation and facilitating collaborative interactions. An endowed gift of $1M will support the center and its mission.

WAYS TO FUND YOUR GIFT

Your gifts of cash, pledges, or appreciated securities change lives. Wills, estate, and planned gifts allow you to create a lasting legacy that will enable the best and brightest minds to experience a liberal arts education, solve problems in a changing world, and yield ideas and innovations that will make a difference in Michigan and around the globe.

CONTACT INFO

LSA Advancement // College of Literature, Science, and the Arts
101 N. Main Street, Suite 850 // Ann Arbor, MI 48104

P. 734.615.6333 // F. 734.647.3061 // lsa.umich.edu/math