

Degrees Available at SIUE

- Master of Science in Mathematics

A secondary education mathematics teaching focus is available with our Master of Science in Education (MSEd) in curriculum and instruction.

Specialized Learning Opportunities

- Computational and Applied Mathematics Specialization
- Postsecondary Mathematics Education Specialization
- Pure Mathematics Specialization
- Statistics and Operations Research Specialization
- Mathematics Professional Development Sequences
- Early Entry BS and MS in Mathematics

Mathematics and Statistics at SIUE

How does a statistician design an experiment to test a new drug? What is an efficient algorithm to solve a differential equation, and when does it work? How do you determine a fair price for an annuity? Given a complex network of nodes and edges, what is the shortest path from one vertex to another? How can you teach problem solving in a diverse high school classroom?

These are only some of the questions to be explored in our four graduate program concentrations. At SIUE, we have a graduate student-to-faculty ratio of two-to-one, so our students receive personalized attention from faculty recognized for outstanding teaching and excellent research. The Department of Mathematics and Statistics at SIUE provides learning and research opportunities in many areas and students are exposed to various cultures from diverse faculty members in the College of Arts and Sciences.

Career Opportunities

Professionals holding positions as mathematicians, statisticians and actuaries consistently rank their careers at the top of surveys on job satisfaction and security. According to the U.S Bureau of Labor Statistics, the job outlook in these fields remains strong, and growth is projected at 25 percent over the next 10 years. While salaries vary by field, employment type and education level, the median national salary for an actuary is approximately \$93,000, the median national salary for a mathematician is approximately \$101,000 and the median national salary for a statistician is \$75,000.

Most professionals in the field of mathematics will hold a master's or doctoral degree and our students are no exception. Our graduates have attended PhD programs at Indiana University, Texas A&M, St. Louis University, the University of Missouri, Northern Illinois, the University of Iowa, University of Nebraska and many others. Students from SIUE are employed in government and corporate organizations, and hold positions with Humana, The Warranty Group, Synchrony Financial, NRG Energy, Boeing, National Personnel Records Center, U.S. Transportation Command, the FBI and others.

Hands-on Learning

Through the master's thesis or master's project, graduate students work one-on-one with a faculty member to explore an area of mathematics, statistics or operations research outside of the usual coursework. Mathematics and statistics faculty have also sponsored several students through grants. Some students have co-authored papers with faculty and have presented their research at regional, national and international conferences.

Global Experience

With a diverse group of faculty members from China, Greece, Japan, Korea, Malaysia, the Philippines, and the United States, SIUE is an ideal place for an international student to receive individual attention from faculty members that will help propel them toward graduate school or their chosen career.

Admission Requirements

- Graduate School application and \$40 fee
- Submission of all post-secondary academic transcripts
- Undergraduate background that includes MATH 150, 152, 223, 250 and 321 or their equivalents.
- Grade point average of at least 2.7 (A=4.0) in mathematics and statistics courses.
- International Applicants: Proof of English Proficiency, minimum requirements are TOEFL (79), IELTS (6.5) or equivalent
- A brief statement of educational and career goals and interests, together with any supporting documents
- A description of any special qualifications or relevant professional experience.

Graduate Faculty**Graduate Program Director****Junvie M. Pailden, PhD****Assistant Professor**

2013, Bowling Green State University

Research Interest: Statistics

Marcus Agustin, PhD**Professor**

1997, Bowling Green State University

Research Interest: Statistics, Reliability and Survival Analysis

Ma. Zenia Agustin, PhD**Professor**

1997, Bowling Green State University

Research Interest: Statistics

Greg Budzban, PhD**Dean and Professor**

1991, University of South Florida

Research Interest: Probability on Algebraic Structures and Math Education

Song Foh Chew, PhD**Associate Professor**

1995, Purdue University

Research Interest: Operations Research

Cheryl Eames, PhD**Assistant Professor**

2014, Illinois State University

Research Interest: Mathematics Education

Koung Hee Leem, PhD**Professor**

2003, University of Iowa

Research Interest: Numerical Analysis and Scientific Computing

Jun Liu, PhD**Assistant Professor**

2015, Southern Illinois University Carbondale

Research Interest: PDE-Constrained Optimization and Optimal Control, Numerical PDEs, Numerical Linear Algebra

Jireh Loreaux, PhD**Assistant Professor**

2016, University of Cincinnati

Research Interest: Operator Theory

Andrew A. Neath, PhD**Professor**

1994, University of California-Davis

Research Interest: Statistics

James L. Parish, PhD**Associate Professor**

1985, University of Chicago

Research Interest: Algebra, Geometry and the Interface between the two

George Pelekanos, PhD**Distinguished Research****Professor and Chair**

1997, University of Delaware

Research Interest: Inverse Scattering

Beidi Qiang, PhD**Assistant Professor**

2017, University of South Carolina

Research Interest: Statistics, Reliability Analysis with Dynamic System Modeling, Nonparametric and Bayesian Methods

Edward C. Sewell, PhD**Distinguished Research****Professor**

1990, Cornell University

Research Interest: Operations Research

Myung Sin Song, PhD**Professor**

2005, University of Iowa

Research Interest: Functional and Harmonic Analysis of Wavelets

G. Stacey Staples, PhD**Professor**

2004, Southern Illinois University Carbondale

Research Interest: Clifford Algebras, Combinatorics, Probability on Algebraic Structures

Tammy Voepel, PhD**Associate Professor**

1997, University of Missouri

Research Interest: Mathematics Education

Program application materials may be uploaded during the application process, but official transcripts must be sent directly from the school attended, and test scores must be verifiable with the appropriate testing service. Please contact the Graduate Admissions office with questions regarding the application submission process at graduateadmissions@siue.edu.

In some cases, applicants who meet the requirements for admission to the Graduate School, but do not have the required background in mathematics as indicated above, may register as unclassified graduate students until deficiencies have been satisfied to permit admission to degree-seeking status. It is recommended that students in the computational and applied mathematics or statistics and operations research specializations have a working knowledge of algorithmic programming language. It is also recommended that students in the theoretical mathematics or computational and applied mathematics specializations have a course in real analysis equivalent to MATH 350 at SIUE.

Review the SIUE Admissions Policy for more information.

Graduation Requirements

For students who complete a thesis or research paper, the final examination consists of an oral presentation based on the content of the thesis or research paper. The examination is administered by the student's advisory committee, which includes the student's research advisor and two other members of the graduate faculty. For those students who select additional course work in lieu of a thesis or research paper, the final exam covers the content from three 500-level MATH, STAT or OR courses chosen jointly by the student and advisor.

Review the graduation policy for more information.

Curriculum

The program of study requires a minimum of 30 semester hours of graduate credit, at least 15 of which must be at the 500-level. Students must maintain an overall grade point average of 3.0 for all courses taken in the program. Students pursuing a double major must complete all required courses in one of the options below. Six to nine hours of the electives may be waived for students who complete a double major. These students must complete at least nine hours of 500-level mathematics, statistics or operations research courses, not counting the thesis or research paper.

Students may choose from four specializations:

- Pure Mathematics
- Computational & Applied Mathematics
- Statistics & Operations Research
- Postsecondary Mathematics Education

Pure Mathematics Specialization

Required courses (18 hours): MATH 421, 430 or 437, 450, 451 or 552, 555 or 565 and 520 or 545.

Electives (6 to 9 hours): Electives may be selected from 400- or 500-level mathematics, statistics, or operations research courses.

Thesis or research paper (3 to 6 hours): MATH 599 (Thesis) or MATH 595 (Special Project). Students in the pure mathematics specialization may substitute additional 500-level course work for the thesis or research paper to complete the 30-hour requirement for the degree. Students who select this course option must pass a comprehensive exam covering three 500-level MATH, STAT, or OR courses chosen jointly by the student and advisor.

Statistics and Operations Research Specialization

Required courses (18 hours): Stat 480a, 480b, one of OR 440, OR 587a, Math 423 and one of: OR 441, OR 442, OR 585.

One of the following two semester sequences is required: Stat 581, Stat 582; Stat 584, Stat 588; Stat 579, Stat 589; OR 587a, OR 587b; OR 585, OR 586. A student taking the OR 587a and OR 587b sequence will be required to take either OR 440 or Math 423. A student taking the OR 585/ OR 586 sequence will be required to take either OR 441 or OR 442.

Electives (6 to 9 hours): Electives may be selected from 400- or 500-level mathematics, statistics, or operations research courses.

Thesis or Research Paper (3 to 6 hours): STAT or OR 599 (Thesis), or STAT or OR 595 (Special Project). Students in the Statistics and Operations Research specialization may substitute additional course work for the thesis or research paper to complete the 30-hour requirement for the degree. Students who select this course option must pass a comprehensive exam

covering three 500-level MATH, STAT, or OR courses chosen jointly by the student and advisor.

Computational and Applied Mathematics Specialization

Required Courses (18 hours): MATH 421, 450, 464, either 465 or 466, either 555 or 565, and either 451 or 552.

Electives (6 to 9 hours): Electives may be selected from 400- and 500-level mathematics, statistics, or operations research courses. MATH 550 and 567, STAT 575, and OR 587ab are recommended.

Thesis or research paper (3 to 6 hours): MATH 599 (Thesis), or MATH 595 (Special Project). Students in the computational and applied mathematics specialization may substitute additional 500-level course work for the thesis or research paper to complete the 30-hour requirement for the degree. Students who select this course option must pass a comprehensive exam covering three 500-level MATH, STAT, or OR courses chosen jointly by the student and advisor.

The 400-level required courses are waived for students who have completed these courses as undergraduates, although graduate credit cannot be given for courses taken as an undergraduate.

Statistics and Operations Research Specialization

Required courses (18 hours): Stat 480a, 480b, one of OR 440, OR 587a, Math 423 and one of: OR 441, OR 442, OR 585.

One of the following two semester sequences is required: Stat 581, Stat 582; Stat 584, Stat 588; Stat 579, Stat 589; OR 587a, OR 587b; OR 585, OR 586. A student taking the OR 587a and OR 587b sequence will be required to take either OR 440 or Math 423. A student taking the OR 585/ OR 586 sequence will be required to take either OR 441 or OR 442.

Electives (6 to 9 hours): Electives may be selected from 400- or 500-level mathematics, statistics, or operations research courses.

Thesis or Research Paper (3 to 6 hours): STAT or OR 599 (Thesis), or STAT or OR 595 (Special Project). Students in the Statistics and Operations Research specialization may substitute additional course work for the thesis or research paper to complete the 30-hour requirement for the degree. Students who select this course option must pass a comprehensive exam covering three 500-level MATH, STAT, or OR courses chosen jointly by the student and advisor.

Post-secondary Mathematics Education Specialization

Students must complete the requirements in Groups A, B, C, D, and E.

Group A: Three courses selected from the following:

MATH 420, 421, 423, 430, 435, 437, 450, 451, 464, 465, 466, OR 440, STAT 478, 480A, 480B, 481, 482.

Group B: Two courses selected from the following:

MATH 531 - Algebraic Content, Pedagogy and Connections
MATH 532 - Geometric Content, Pedagogy and Connections
MATH 533 - Discrete Mathematics Content, Pedagogy and Connections
MATH 534 - Calculus Content, Pedagogy and Connections
STAT 535 - Statistics Content, Pedagogy and Connections

Group C: Two MATH/STAT/OR electives selected from 500-level MATH, STAT, or OR courses, excluding courses from Group B above.

Group D: Two courses selected from the following:

ADED 522 - Program Planning in Adult and Continuing Education
ADED 523 - Curriculum and Instruction in ADult and Continuing Education
EPFR 501 - Research Methods
EPFR 515 - Advanced Educational Psychology
CI 510 - Analysis of Instruction (choose either CI 510F or CI 510J)
CI 563 - Curriculum Models (choose either CI 563 F, J, K, or L)
IT 540 - Distance Education

GROUP E: MATH, STAT, or OR 599 (Thesis), or MATH, STAT or OR 595 (Special Project), or option of substituting additional 500-level course work in MATH, STAT or OR, excluding courses from Group B. Students who select this option must pass a final exam covering two 500-level MATH, STAT, or OR courses from Group C and the additional course from Group E.

Contact Information

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Southern Illinois University Edwardsville
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