Mathematics

The study of mathematics and statistics is the gateway to many of the most demanded careers in the world. Rankings of careers routinely list Data Scientist, Statistician, Mathematician, Operations Research Analyst, and Actuary as five of the top ten, and our programs have graduates in all of these. Positions in K-12 teaching and, after graduate school, in the academic world, are also highly desireable and we send people to those, as well.

The School of Mathematical and Statistical Sciences offers a Bachelor of Science Degree in Mathematics, which can be taken either on its own, or with a specialization in either Actuarial Mathematics or Data Science. We also offer a Bachelor of Science in Mathematics Education, which leads to licensure as a high school mathematics teacher.

Undergraduate mathematics majors at SIUC can enter an accelerated master's program in which 9 hours of mathematics courses will satisfy requirements in both the bachelor's degree and the master's degree, allowing for completion of both degrees after 5 (4+1) years. Because the master's degree requires 30 hours of coursework, students in the accelerated master's program only need 21 graduate hours after their senior year thereby making it possible to complete the master's degree in only one year. To enter this program, must have at least a 3.0 GPA in all coursework. Please see the Director of Graduate Studies in the School of Mathematical and Statistical Sciences for more information.

High school students who plan to major in Mathematics or Mathematics Education should get the strongest preparation possible in algebra, geometry, and trigonometry, including a substantial study of functions and graphing. Precalculus courses are often good preparation where available. AP credit in Calculus or Computer Science is certainly not necessary to be successful, but is helpful if a student has those opportunities. Transfer students should plan to complete three semesters of calculus (covering single- and multivariable calculus), linear algebra, and a computer programming course within the first two years. Additional courses, such as differential equations, are helpful.

Faculty advisors within the School of Mathematical and Statistical Sciences are skilled in helping students choose appropriate courses for their individual ambitions and interests, and in connecting students with additional opportunities. A student should meet with both an academic advisor and a faculty advisor every semester.

A grade of C or better is required in every mathematics course used to satisfy program requirements. A student cannot repeat a course or its equivalent in which a grade of B or better was earned without the consent of the school. A math major is required to obtain the permission of the school for a second repeat (third attempt) of a course that is required or elective for the major.

Double majors in mathematics and related fields

Special provisions are made for students to earn a double major in mathematics and a field in which mathematics is extensively applied. The courses MATH 447, MATH 449, MATH 471, MATH 472, and MATH 475 carry credit hours in both mathematics and computer science. See Bachelor of Science Degree, School of Mathematical and Statistical Science for specific requirements in mathematics for students who also earn a major or minor in computer science.

For students pursuing a double major in math and engineering, physics, or chemistry, the mathematics requirements are MATH 150 or MATH 151, MATH 221, MATH 250, MATH 251, MATH 305 and five additional mathematics courses numbered above 300, including at least three courses above 400, and including two of the three areas of algebra, analysis, probability and statistics. A School of Mathematical and Statistical Science advisor must approve the courses.

Students majoring in business may obtain a second major in Mathematics. The requirements are MATH 150 or MATH 151, MATH 221, MATH 250, MATH 251, and five approved mathematics courses at the 300-400 level, of which at least four are at the 400-level. Recommended courses for this program include MATH 471, MATH 472, MATH 475, MATH 483, MATH 484.

Option in Statistics

A student majoring in Mathematics in the School of Mathematical and Statistical Science may choose to concentrate in statistics.
For this option, the 300- and 400-level course requirements include: MATH 302; either MATH 417 or MATH 421; either MATH 305 or MATH 472; one of MATH 352, MATH 450, or MATH 455; MATH 480; MATH 483; at least two of MATH 473, MATH 481, MATH 484, MATH 485 and one additional approved upper division Mathematics course.

Bachelor of Science (B.S.) in Mathematics (School of Mathematical and Statistical Sciences) Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Requirements for Major in Mathematics	48
MATH 150 or MATH 151, MATH 221, MATH 250, MATH 251 (Three credit hours included in UCC mathematics credit hours)	11
CS 202 or approved substitute	4
MATH 302	3
At least one course from each of the following groups	12
(One group may be waived for students with a minor in CS) Group A: Algebra/Discrete Math/Linear Algebra: MATH 319, MATH 349, MATH 419, MATH 421 Group B: Analysis: MATH 352, MATH 450, MATH 455 At least two, from different groups, of the following: Group C: Applied Math/Numerical Analysis: MATH 305, MATH 471, MATH 472, MATH 475 Group D: Probability/Statistics: MATH 380, MATH 480, MATH 483 Group E: Geometry: MATH 335, MATH 433	
Six additional courses in mathematics numbered above MATH 299 (excluding MATH 300I, MATH 311A, MATH 311B, MATH 321, MATH 322, MATH 388, MATH 389, MATH 411, MATH 412)	18
A minimum of five 400-level math courses must be taken. Each student's program must be approved by a mathematics program advisor. Courses taken Pass/Fail will not count toward the major.	
Electives	33
Total	120

Degree Requirements	Credit Hours
The student must work with the Advisement Office to ensure that SIU'S 42 Senior-Credit-Hours requirement is met by appropriate choices of core, college, major and elective coursework.	

Actuarial Mathematics Specialization

Students pursuing the Bachelor of Science degree with a major in mathematics may choose to specialize in Actuarial Mathematics. Actuaries put a price on risk, and this career is often ranked as one of the most desireable. The actuarial program at Southern Illinois University provides course work in mathematics to prepare students to work as actuaries.

Students become actuaries by taking three Validation by Educational Experience (VEE) course sequences and by passing professional examinations given by the Society of Actuaries (www.soa.org) and the Casualty Actuarial Society (www.casact.org). This program offers specific courses designed to prepare students to pass Exams P, FM, FAM, ASTAM, and ALTAM, and to complete the three VEE course sequences. Additional courses lay the groundwork for success on additional SOA and CAS exams.

B.S. Mathematics - Actuarial Mathematics Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Requirements for Actuarial Specialization	68
(MATH 150), MATH 221, MATH 250, MATH 251 (Three credit hours included in UCC mathematics credit hours)	11
CS 202 or approved substitute	4
MATH 302 and MATH 483	7
At least one course from each of the following groups	9
Group A: Algebra/Discrete Math/Linear Algebra: MATH 319, MATH 349, MATH 421	
Group B: Analysis: MATH 352, MATH 450, MATH 455	
Group C: Applied Math/Numerical Analysis: MATH 305, MATH 471, MATH 472, MATH 475	
MATH 400, and courses selected from MATH 473, MATH 474, MATH 480, MATH 484, MATH 485, or MATH 486	10
Two courses selected from MATH 401 or MATH 402 or MATH 403 or MATH 404	6

Degree Requirements	Credit Hours
One additional course in mathematics numbered above MATH 299 (excluding MATH 300I, MATH 311A, MATH 311B, MATH 321, MATH 322, MATH 388, MATH 389, MATH 411, and MATH 412).	3
Additional courses required for VEE examinations:	
ECON 240 (if not already included in Core) and ECON 241	6
FIN 330 and FIN 361	6
Accounting courses required as prerequisites for FIN 330	
ACCT 220, ACCT 230	9
Electives if needed to make a total of 120 credit hours	10-13
Total	120

Data Science Specialization

Students pursuing the Bachelor of Science degree with a major in mathematics in the School of Mathematical and Statistical Science may choose to specialize in Data Science. Data scientists are among the most sought-after professionals in America, with the advent of ubiquitous data sources on all aspects of life. Business, industry, non-profits, and governments at all levels are being transformed by large data sets and their analysis.

B.S. Mathematics - Data Science Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Requirements for Math Major with Data Science Specialization	67
MATH 150, MATH 221, MATH 250, MATH 251	11
(Three credit hours included in UCC mathematics)	
CS 202	4
MATH 302, MATH 349, MATH 421, MATH 483, and MATH 492	16
At least one course from each of the following groups	6

Degree Requirements	Credit Hours
Group B: Analysis: MATH 352, MATH 450, MATH 455	
Group C: Applied Math/Numerical Analysis: MATH 305, MATH 471, MATH 472, MATH 475	
At least two of MATH 473, MATH 474, MATH 480, MATH 484, MATH 485, MATH 486	6
Two additional courses in mathematics numbered above MATH 299 (excluding MATH 300I, MATH 311A, MATH 311B, MATH 321, MATH 322, MATH 388, MATH 389, MATH 411, and MATH 412).	6
Eighteen additional credit hours selected from the following technical electives, at least twelve credit hours of which are at the 400-level. The courses counted toward this requirement must be approved by the mathematics program.	18
Technical Elective options are: CS 220, CS 330, CS 430, CS 434, CS 438, ECE 476, GEOG 401, GEOG 404, GEOG 406, GEOG 408, GEOG 417, GEOG 420, GEOG 458, IMAE 386, IMAE 465, IMAE 470A, IMAE 470B, IMAE 480, ITEC 334, ITEC 370, ITEC 470, ITEC 471, ITEC 472, ITEC 473, ITEC 474, PLB 471	
Electives, if needed to make a total of 120 credit hours	14
Total	120

Bachelor of Science (B.S.) in Mathematics (School of Education)

Admission into the Teacher Education Program requires a 2.5 average in MATH 150 or MATH 151, MATH 221, MATH 250; and MATH 251 or MATH 305 in addition to School of Education requirements for admission to the TEP.

Retention in the Teacher Education Program and approval for student teaching requires a 2.75 average in the major and school approval.

Mathematics majors are required to meet with a program advisor for approval of their courses prior to registering each semester.

B.S. Mathematics (School of Education) Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements to include ENGL 101 & ENGL 102, PSYC 102, MATH 300I, EDUC 211, EDUC 214	39

Degree Requirements	Credit Hours	
Requirements for major in Mathematics		46
Content Courses	40	
MATH 150 or MATH 151, MATH 221, MATH 250, and MATH 251 or MATH 305 (Three credit hours included in UCC mathematics credit hours)	11	
CS 202 or approved substitute	4	
MATH 302, MATH 319, MATH 335 or MATH 433, MATH 349, MATH 352, MATH 483	19	
At least two additional approved 400-level mathematics courses excluding MATH 411, MATH 412	6	
Methods Course, MATH 311A, MATH 311B	6	
Professional Education and Licensure Requirements		24
EDUC 301, EDUC 302, EDUC 303, EDUC 308, EDUC 313, EDUC 319, EDUC 401A Other requirements for licensure CI 360	3	
Electives to make 120 credit hours		8
Total		120

Mathematics Minor

A minor in Mathematics consists of MATH 150 or MATH 151 and 12 credit hours of mathematics courses at the 200 level or above, including at least three credit hours at the 400 level (excluding MATH 220, MATH 257, MATH 282, MATH 300I, MATH 311A, MATH 311B, MATH 321, MATH 322, MATH 388, MATH 389, MATH 411, MATH 412). All courses used for the minor must be completed with a grade of C or better. The 400-level mathematics courses must be taken at SIU Carbondale.

The school advisor must approve the student's minor program.

Additional Educator Endorsements in Mathematics

Students pursuing a teaching license in another discipline and interested in adding an endorsement in Mathematics should see a School of Mathematical and Statistical Science advisor to obtain a list of specific requirements.

Placement

In addition to having taken the prerequisite mathematics courses, students are required to present a satisfactory placement score as a condition for registration in mathematics courses. Contact the School of Mathematical and Statistical Science for current information regarding placement.

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