MATHEMATICS, B.S.

Saint Louis University's mathematics program combines the features of both small and large schools to create a compelling educational experience.

Students can expect a student-friendly environment, with math courses for majors being small in size and taught by regular faculty. Faculty get to know students and provide individual attention. Students are recruited for participation in math contests and other opportunities, including part-time positions as graders, tutors and learning assistants. Like a large school's program, math at SLU also has enough breadth to let students tailor their upper-division math courses to their interests and goals.

Program Highlights

- Students interested in pure mathematics can choose theoretical courses that provide solid preparation for graduate school. Exceptional undergraduate students can take graduate courses in mathematics due to SLU's graduate program.
- Students interested in applied mathematics, or science and engineering students interested in a second major in mathematics, can focus on a wide selection of applied courses.
- Students interested in statistics can select various statistics and probability theory courses.
- Students interested in secondary school teaching can select courses that fulfill the requirements of the major and a teaching certificate at the same time.

Curriculum Overview

All students majoring in mathematics start with a core of four required courses, including calculus and linear algebra. The Bachelor of Science in Mathematics is designed to provide a strong grounding in mathematics for students considering graduate school in mathematics or a closely allied field.

For the B.S. degree, the student builds on the fundamental core of required courses with a selection of nine upper-division courses, chosen to include pure mathematics courses in real analysis and algebra, an upper-level statistics course, two upper-division sequences including one in pure mathematics, and electives to complete the required nine upper-division courses. Students must also take at least one course in computer programming and one in another discipline with a strong mathematical or computational component.

The requirements for the B.S. in mathematics follow the recommendations of the Mathematics Association of America for degree programs in mathematics that prepare students for graduate work.

Fieldwork and Research Opportunities

The SLU Mathematics and Computer Science Club allows students interested in mathematics and computers to explore relevant topics outside of the classroom. The club holds weekly meetings that bring students and faculty together for various activities, including mathematical puzzles, integration bees, game beta testing and career-focused presentations by industry experts.

Careers

Mathematics emphasizes careful reasoning, along with the analysis and solution of problems. A major or minor in mathematics at Saint Louis University will appeal to students who like to develop their problem-solving and analytical thinking skills. For this reason, mathematics is also an appropriate major for students planning careers in law or medicine.

Graduates in mathematics and statistics are versatile. They enter jobs in business, industry, medicine, government and education. Mathematicians, statisticians, data scientists, actuaries, analysts and consultants are in high demand and lead rewarding and well-compensated careers.

Many of our graduates pursue advanced degrees in mathematics, statistics or other fields. Students with mathematics and statistics degrees are attractive to professional graduate schools in law, medicine, and business because these graduate programs value analytical skills and the ability to work in a problem-solving environment.

Some of the industry and government employers where our graduates have found success include:

- Allstate
- Ameren
- Boeing
- Booz Allen Hamilton Consulting
- Boston Scientific
- Cofactor Genomics
- Georgia-Pacific
- Kemper Insurance
- Mercer
- MetLife
- Milliman
- National Geospatial-Intelligence Agency
- National Security Agency
- NISA Investment Advisors
- Varsity Tutors

Admission Requirements

Begin Your Application (https://www.slu.edu/apply.php)

Saint Louis University also accepts the Common Application and the Coalition Application.

Freshman

All applications are thoroughly reviewed with the highest degree of individual care and consideration to all credentials that are submitted. Solid academic performance in college preparatory coursework is a primary concern in reviewing a freshman applicant's file.

To be considered for admission to any Saint Louis University undergraduate program, applicants must be graduating from an accredited high school, have an acceptable HiSET exam score or take the General Education Development (GED) test.

Transfer

Applicants must be a graduate of an accredited high school or have an acceptable score on the GED or HiSET.

Students who have attempted fewer than 24 semester credits (or 30 quarter credits) of college credit must follow the above freshmen admission requirements. Students who have completed 24 or more

semester credits (or 30 quarter credits) of college credit must submit transcripts from all previously attended college(s).

In reviewing a transfer applicant's file, the Office of Admission holistically examines the student's academic performance in college-level coursework as an indicator of the student's ability to meet the academic rigors of Saint Louis University. Where applicable, transfer students will be evaluated on any courses outlined in the continuation standards of their preferred major.

International Applicants

All admission policies and requirements for domestic students apply to international students along with the following:

- Demonstrate English Language Proficiency (https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/)
- All academic records must include an English translation. An official course-by-course transcript evaluation may be required and accepted.

Tuition

Tuition/Fee	Cost Per Year
Undergraduate Tuition	$58,960
University Fees	$1,000

Additional charges may apply. Other resources are listed below:

Net Price Calculator (https://www.slu.edu/financial-aid/tuition-and-costs/calculator.php)

Cost of Attendance (https://www.slu.edu/financial-aid/tuition-and-costs/cost-of-attendance.php)

Information on Tuition and Fees (https://catalog.slu.edu/academic-policies/student-financial-services/tuition/)

Miscellaneous Fees (https://catalog.slu.edu/academic-policies/student-financial-services/fees/)

Information on Summer Tuition (https://catalog.slu.edu/academic-policies/student-financial-services/tuition-summer-current/tuition-summer-current.pdf)

Scholarships and Financial Aid

There are two principal ways to help finance a Saint Louis University education:

- **Scholarships:** Scholarships are awarded based on academic achievement, service, leadership and financial need.
- **Financial Aid:** Financial aid is provided through grants and loans, some of which require repayment.

Saint Louis University makes every effort to keep our education affordable. In fiscal year 2025, 99.6% of first-time freshmen and 92% of all students received financial aid (https://www.slu.edu/financial-aid/) and students received more than $517 million in aid University-wide.

For priority consideration for merit-based scholarships, apply for admission by Dec. 1 and complete a Free Application for Federal Student Aid (FAFSA) by Feb. 1.

For more information on scholarships and financial aid, visit the Office of Student Financial Services (https://www.slu.edu/financial-aid/).

Learning Outcomes

1. Graduates will be able to demonstrate conceptual competency in foundational areas of mathematics by developing problem-solving skills and solving problems in these areas of mathematics.
2. Graduates will be able to demonstrate an ability to write and comprehend mathematical proofs using both direct and indirect methods.
3. Graduates will be able to demonstrate an ability to analyze data and perform appropriate statistical analyses.
4. Graduates will be able to demonstrate an ability to write computer programs that implement mathematical or statistical algorithms.
5. Graduates will be able to demonstrate an ability to communicate mathematical ideas and concepts both orally and in writing.
6. Graduates will be able to demonstrate an understanding of at least two advanced, in-depth topics in mathematics or statistics, including at least one topic in pure mathematics.

Requirements

Mathematics students must complete a minimum total of **47 credits** for the major.

Code	Title	Credits
University Undergraduate Core (https://catalog.slu.edu/academic-policies/academic-policies-procedures/university-core/)		**32-35**
Major Requirements		**47**
MATH 1520	Calculus II	4
MATH 2530	Calculus III	4
MATH 2660	Principles of Mathematics	3
MATH 3120	Introduction to Linear Algebra	3
Computer Programming Requirement		*3-4*
CSCI 1060	Introduction to Computer Science: Scientific Programming	
or CSCI 1300	Introduction to Object-Oriented Programming	
Upper Division Requirements		
Students will take an additional nine upper division mathematics courses (including two sequences) and an allied elective for 30 total credits.		
Pure Mathematics Requirements		
MATH 4110	Introduction to Abstract Algebra	3
MATH 4210	Introduction to Analysis	3
Statistics Requirement		
STAT 3850	Foundation of Statistics	3
Sequence Requirement		*6-9*
Students must complete two sequences, one of which must be either the algebra sequence or the analysis sequence.		
Differential Equations Sequence		
MATH 3550	Differential Equations	
MATH 4550	Nonlinear Dynamics and Chaos	
or MATH 4570	Partial Differential Equations	
Statistics Sequence		
STAT 3850	Foundation of Statistics	

MATH 4800	Probability Theory	
or STAT 4840	Time Series	
or STAT 4870	Applied Regression	
Algebra Sequence		
MATH 4110	Introduction to Abstract Algebra	
MATH 4120	Linear Algebra	
or MATH 4150	Number Theory	
Analysis Sequence		
MATH 4210	Introduction to Analysis	
MATH 4220	Metric Spaces	
or MATH 4230	Multivariable Analysis	
Complex Analysis Sequence		
MATH 4310	Introduction to Complex Variables	
MATH 4320	Complex Variables II	
Upper Division Mathematics Elective Courses		*9-12*
Students choose 9-12 credits of 3000/4000-level MATH/STAT courses. If students completed the sequence requirement with 6 credits, they must take 12 credits of upper level MATH/STAT courses. [1]		
Allied Elective		*3-4*
An additional course in another discipline that has a strong mathematical or computational component. Approved courses are:		
BIOL 4030	Introduction to Genomics	
CHEM 4300	Mathematical Techniques in Chemistry	
Any 3 or 4-credit CSCI course other than the one used to satisfy the programming requirement for the B.S. in mathematics.		
EAS 3330	Atmospheric Thermodynamics	
or EAS 3500	Numerical Modeling Applications	
Any 3000 or 4000 level ECON course (paying attention to prerequisites). [2]		
Any 3 or 4-credit PHYS course numbered 1610 or higher [3, 4]		
Any 3 or 4-credit course in Engineering [5, 6]		
University Electives		**35-38**
Total Credits		**120**

1. Except for MATH 3270 Advanced Mathematics for Engineers and MATH 4050 History of Mathematics.
2. Excluding ECON 3010 Introduction to Econometrics.
3. Noting that PHIL 4040 Symbolic Logic is its prerequisite.
4. PHYS 1610 University Physics I should not be taken for credit if the student already has taken PHYS 1310 College Physics I or its equivalent for credit.
5. That has at least MATH 1510 Calculus I or PHYS 1610 University Physics I as a prerequisite (paying attention to other prerequisites).
6. AENG 2000 Intro to Aeronautics & Astron (or a higher numbered course with AENG 2000 Intro to Aeronautics & Astron in the prerequisite sequence), BME 3100 Signals, BME 3200 Mechanics, BME 3300 Transport Fundamentals, ECE 3140 Electromagnetic Fields, ECE 3150 Linear Systems, ECE 4120 Automatic Control Systems, ECE 4153 Image Processing, MENG 2150 Dynamics (3 cr), MENG 2310 Thermodynamics (3 cr) (or a higher numbered SE, MENG, CVNG, or other engineering course code in the prerequisite sequence), and MENG 2000 Foundation to Engineering Design.

Continuation Standards

Students must have a minimum of a 2.00 cumulative GPA in their mathematics major or minor courses by the conclusion of their sophomore year, must maintain a minimum of 2.00 cumulative GPA in these courses at the conclusion of each semester thereafter, and must be registered in at least one course counting toward their major or minor in each academic year (until all requirements are completed). A 2.00 or "C" GPA is required in upper division mathematics courses counting toward the major.

Roadmap

This roadmap is just one example of a semester-by-semester plan of study for this program. There are other plans students can and do take. The plan of study for each particular student is established in consultation with each student's academic advisor; *this roadmap does not replace academic advising appointments.*

Roadmap notes:

- This Roadmap assumes full-time enrollment unless otherwise noted.
- Courses/Milestones marked with an "!" are critical and must be completed in the semester listed in the Roadmap to ensure a timely graduation.
- Course availability and sequencing are subject to change.

Course	Title	Credits
Year One		
Fall		
CORE 1500	Cura Personalis 1: Self in Community	1
MATH 1510	Calculus I	4
University Core and/or University Electives		8
	Credits	**13**
Spring		
MATH 1520	Calculus II	4
Programming Course [1]		3-4
University Core and/or University Electives		9
	Credits	**16-17**
Year Two		
Fall		
MATH 2530	Calculus III	4
MATH 2660	Principles of Mathematics	3
University Core and/or University Electives		9
	Credits	**16**
Spring		
MATH 3120	Introduction to Linear Algebra	3
STAT 3850	Foundation of Statistics	3
University Core and/or University Electives		9
	Credits	**15**
Year Three		
Fall		
MATH 4110	Introduction to Abstract Algebra	3
Mathematics or Statistics Elective [2]		3
University Core and/or University Electives		9
	Credits	**15**

Spring		
Pure Mathematics Elective [3]		3
Mathematics or Statistics Elective [2]		3
University Core and/or University Electives		9
	Credits	**15**
Year Four		
Fall		
Mathematics or Statistics Sequence [4]		3
MATH 4210	Introduction to Analysis	3
Allied Elective [5]		3
University Core and/or University Electives		6
	Credits	**15**
Spring		
Mathematics or Statistics Sequence [4]		3
Mathematics or Statistics Elective [2]		3
University Core and/or University Electives		9
	Credits	**15**
	Total Credits	**120-121**

1 See note below about the programming requirement.
2 See note below about mathematics and statistics electives.
3 See note below about the pure mathematics sequence requirement.
4 See note below about mathematics and statistics sequences.
5 See note below about allied electives.

Program Notes

Programming Requirement

CSCI 1060 Introduction to Computer Science: Scientific Programming (3 cr) or CSCI 1300 Introduction to Object-Oriented Programming (4 cr) (with attention paid to prerequisites).

Mathematics and Statistics Elective

Any 3000- or 4000-level MATH or STAT course numbered higher than MATH 3120 Introduction to Linear Algebra (3 cr).

Pure Mathematics Sequence

Students can satisfy the pure mathematics sequence requirement by completing either the algebra sequence or real analysis sequence, as defined below.

Mathematics and Statistics Sequences

Students must complete a second sequence in addition to the pure mathematics sequence, chosen from the following list.

1. **Algebra Sequence**: MATH 4110 Introduction to Abstract Algebra (3 cr) and either MATH 4120 Linear Algebra (3 cr) or MATH 4150 Number Theory (3 cr).
2. **Complex Analysis Sequence**: MATH 4310 Introduction to Complex Variables (3 cr) and either MATH 4320 Complex Variables II (3 cr) or MATH 4360 Geometric Topology (3 cr).
3. **Differential Equations Sequence**: MATH 3550 Differential Equations (3 cr) and either MATH 4550 Nonlinear Dynamics and Chaos (3 cr) or MATH 4570 Partial Differential Equations (3 cr).
4. **Real Analysis Sequence**: MATH 4210 Introduction to Analysis (3 cr) and one of either MATH 4220 Metric Spaces (3 cr) or MATH 4230 Multivariable Analysis (3 cr).
5. **Statistics Sequence**: STAT 3850 Foundation of Statistics (3 cr) and one of: MATH 4800 Probability Theory (3 cr), STAT 4840 Time Series (3 cr), or STAT 4870 Applied Regression (3 cr).

Allied Elective

A course in another discipline that has a strong mathematical or computational component. Appropriate courses are available in computer science, economics, physics and other science and engineering disciplines. This course cannot be used to satisfy any of the other requirements for a B.S. degree. See the course catalog for a list and description of acceptable courses.

2+SLU

2+SLU programs provide a guided pathway for students transferring from a partner institution.

Mathematics, B.S. (STLCC 2+SLU) (https://catalog.slu.edu/academic-policies/office-admission/undergraduate/2plusslu/stlcc/math-bs/)

Contact Us

For additional information about this program, please contact mathstat@slu.edu or call 314-977-2444.