MATHEMATICS, BS

Contact

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As a preliminary requirement for the mathematics major, students complete 18 credits in the following classes with no grade below a C: MAT 295 Calculus I, MAT 296 Calculus II, MAT 331 First Course in Linear Algebra, MAT 397 Calculus III, and MAT 375 Introduction to Abstract Mathematics. These courses are prerequisites for most upper-division courses. The following sequence is recommended: MAT 295 Calculus I in the first semester; MAT 296 Calculus II in the second semester; MAT 331 First Course in Linear Algebra, MAT 397 Calculus III in the third semester; and MAT 375 Introduction to Abstract Mathematics when appropriate. However, students with knowledge of trigonometry and a year of high school calculus may be able to enter the sequence at MAT 296 Calculus II or even MAT 397 Calculus III; students with less preparation may be advised to complete MAT 194 Precalculus before beginning the calculus sequence. Students considering becoming mathematics majors are strongly encouraged to talk to a mathematics major advisor as soon as possible. Computer science students (only) who have credit for CIS 375 Introduction to Discrete Mathematics, and are pursuing a dual major in mathematics, need not take MAT 375 Introduction to Abstract Mathematics.

Students who plan to pursue graduate study in mathematics should obtain the B.S. degree and consider taking at least one first-year graduate (600-level) course.

Student Learning Outcomes

1. Demonstrate facility with the techniques of single and multivariable Calculus and Linear Algebra
2. Effectively communicate mathematical ideas
3. Make accurate calculations by hand and with technological assistance
4. Reproduce essential assumptions, definitions, examples, and statements of important theorems
5. Describe the logical structure of the standard proof formats, reproduce the underlying ideas of the proofs of basic theorems, and create simple original proofs
6. Solve problems using advanced undergraduate methods from each of the core areas of pure mathematics: Algebra, Analysis, and Probability

B.S. Degree Requirements

Students interested in pursuing the B.S. degree in mathematics obtain, in advance, the approval of a mathematics major advisor and the department chair of a petition to the effect that the upper-division courses to be taken satisfy the requirement for a B.S. degree.

In Addition to the Preliminary Requirement

In addition to the preliminary requirement described above, the student is required to complete the following coursework with an average of at least 2.0 and no grade below a D:

Code	Title	Credits
MAT 412	Introduction to Real Analysis I (analysis sequence)	3
MAT 512	Introduction to Real Analysis II (analysis sequence)	3
MAT 531	Second Course in Linear Algebra (algebra sequence)	3
MAT 534	Introduction to Abstract Algebra (algebra sequence)	3
MAT 521	Introduction to Probability (probability and statistics)	3
And at least one of these:		
MAT 414	Introduction to Ordinary Differential Equations (differential equations)	
MAT 551	Fundamental Concepts of Geometry (geometry)	

12 Additional Credits in Mathematics

And 12 additional credits in mathematics (MAT) courses numbered 490 or higher, except MAT 503 Matrix Methods for Data Science. With prior approval of the mathematics major advisor, a student may substitute another MAT course numbered 490 or higher for the MAT 412 Introduction to Real Analysis I requirement. Up to 6 credits in advanced courses in other departments that have been approved in advance by the student's major advisor may be included in the 12 credits.

Distinction in Mathematics

Distinction in Mathematics is awarded by the Mathematics Department upon completion of a B.S. in mathematics with a minimum cumulative GPA of 3.4, a minimum GPA of 3.6 in mathematics (MAT) courses at the 300+ level, and either an A or A- in the Senior Seminar or a high-quality Capstone Thesis. See the Mathematics Department undergraduate advisor for additional requirements.

College of Arts and Sciences Requirements

For all Arts and Sciences|Maxwell students, successful completion of a bachelor's degree in this major requires a minimum of 120 credits, 96 of which must be Arts and Sciences|Maxwell credits, completion of the Liberal Arts Core (https://coursecatalog.syracuse.edu/undergraduate/arts-sciences/#text) requirements, and the requirements for this major (30 credits) that are listed above.

Dual Enrollments:

Students dually enrolled in **Newhouse*** and Arts and Sciences|Maxwell will complete a minimum of 122 credits, with at least 90 credits in Arts and Sciences|Maxwell coursework and an Arts and Sciences|Maxwell major.

*Students dually enrolled in the College of Arts and Sciences|Maxwell as first year students must complete the Liberal Arts Core (https://coursecatalog.syracuse.edu/undergraduate/arts-sciences/#text). Students who transfer to the dual program after their first year as singly enrolled students in the Newhouse School will satisfy general requirements for the dual degree program by completing the Newhouse Core Requirements.

Undergraduate University Requirements
The following requirements and experiences apply to all Syracuse University Undergraduate matriculated degree programs.

- IDEA Course Requirement (https://coursecatalog.syracuse.edu/undergraduate/idea-course-requirement/)
- First Year Seminar (https://coursecatalog.syracuse.edu/undergraduate/courses/fys/)