MATHEMATICS MAJOR

Students must also complete the Undergraduate Registration Requirement (https://catalogs.northwestern.edu/undergraduate/requirements-policies/undergraduate-registration-requirement) and the degree requirements of their home school.

Major Requirements

(Units depend on basic courses taken.)

The mathematics major consists of basic courses and 9 upper-level courses.

Basic Courses

Course	Title
MATH 220-0	Differential Calculus of One-Variable Functions
& MATH 224-0	and Integral Calculus of One-Variable Functions
or MATH 212-0	Single Variable Calculus I
& MATH 213-0	and Single Variable Calculus II
& MATH 214-0	and Single Variable Calculus III
MATH 230-0	Differential Calculus of Multivariable Functions
& MATH 234-0	and Multiple Integration and Vector Calculus
& MATH 240-0	and Linear Algebra
or MATH 281-1	Accelerated Mathematics for ISP. First Year
& MATH 281-2	and Accelerated Mathematics for ISP. First Year
& MATH 281-3	and Accelerated Mathematics for ISP. First Year
or MATH 285-1	Accelerated Mathematics for MMSS: First Year
& MATH 285-2	and Accelerated Mathematics for MMSS: First Year
& MATH 285-3	and Accelerated Mathematics for MMSS: First Year
or MATH 290-1	MENU: Linear Algebra and Multivariable Calculus
& MATH 290-2	and MENU: Linear Algebra and Multivariable Calculus
& MATH 290-3	and MENU: Linear Algebra and Multivariable Calculus
or MATH 291-1	MENU: Intensive Linear Algebra and Multivariable Calculus
& MATH 291-2	and MENU: Intensive Linear Algebra and Multivariable Calculus
& MATH 291-3	and MENU: Intensive Linear Algebra and Multivariable Calculus

Students may count basic courses toward the requirements of more than one major or minor.

Upper-level Courses

Upper-level courses are courses at the 300 level or above. Students must complete 9 upper-level mathematics courses.

- The upper-level courses must include at least 1 of the following course sequences:

Course	Title
MATH 310-1	Probability and Stochastic Processes
& MATH 310-2	and Probability and Stochastic Processes
& MATH 310-3	and Probability and Stochastic Processes
or MATH 311-1	MENU: Probability and Stochastic Processes
& MATH 311-2	and MENU: Probability and Stochastic Processes
& MATH 311-3	and MENU: Probability and Stochastic Processes
or MATH 320-1	Real Analysis
& MATH 320-2	and Real Analysis
& MATH 320-3	and Real Analysis
or MATH 321-1	MENU: Real Analysis
& MATH 321-2	and MENU: Real Analysis
& MATH 321-3	and MENU: Real Analysis
or MATH 330-1	Abstract Algebra
& MATH 330-2	and Abstract Algebra
& MATH 330-3	and Abstract Algebra
or MATH 331-1	MENU: Abstract Algebra
& MATH 331-2	and MENU: Abstract Algebra
& MATH 331-3	and MENU: Abstract Algebra

- The upper-level courses must include at least 1 of the following courses:

Course	Title
MATH 334-0	Linear Algebra: Second Course
or MATH 311-1	MENU: Probability and Stochastic Processes
or MATH 320-1	Real Analysis
or MATH 321-1	MENU: Real Analysis
or MATH 330-1	Abstract Algebra
or MATH 331-1	MENU: Abstract Algebra

- With the prior approval of the director of undergraduate studies, the upper-level courses may include as many as 3 courses offered by other departments with substantial mathematical content or that focus on serious applications of mathematics. No such course may count simultaneously toward the requirements of another major or minor.

Honors in Mathematics

The Department of Mathematics nominates outstanding mathematics majors for graduation with honors. Mathematics majors interested in pursuing honors should consult with the director of undergraduate studies before the end of junior year. To be eligible for nomination a student must:

- complete 1 of the following course sequences:

Course	Title
MATH 320-1	Real Analysis
& MATH 320-2	and Real Analysis
& MATH 320-3	and Real Analysis
or MATH 321-1	MENU: Real Analysis
& MATH 321-2	and MENU: Real Analysis
& MATH 321-3	and MENU: Real Analysis

- complete 1 of the following course sequences:

Course	Title
MATH 330-1	Abstract Algebra
& MATH 330-2	and Abstract Algebra
& MATH 330-3	and Abstract Algebra
or MATH 331-1	MENU: Abstract Algebra
& MATH 331-2	and MENU: Abstract Algebra
& MATH 331-3	and MENU: Abstract Algebra

- have a grade point average greater than or equal to 3.5 in courses which satisfy major requirements,*
- complete 2 quarters of MATH 399-0 Independent Study with distinction, or 2 quarters of a 400 level mathematics sequence with distinction, and
- complete a project culminating in a senior thesis of appropriate quality.

* Basic courses for the major do not count in this calculation.

For more information consult the department website (http://www.math.northwestern.edu/undergraduate/degree-requirements/

departmental-honors.html) and the director of undergraduate studies, and see Honors in the Major (https://catalogs.northwestern.edu/undergraduate/arts-sciences/#academicoptionstext).

Graduate Study in Mathematics

Students intending to pursue graduate study in mathematics should take at least the following courses and course sequences:

Course	Title
MATH 321-1	MENU: Real Analysis
& MATH 321-2	and MENU: Real Analysis
& MATH 321-3	and MENU: Real Analysis
or MATH 320-1	Real Analysis
& MATH 320-2	and Real Analysis
& MATH 320-3	and Real Analysis
MATH 331-1	MENU: Abstract Algebra
& MATH 331-2	and MENU: Abstract Algebra
& MATH 331-3	and MENU: Abstract Algebra
or MATH 330-1	Abstract Algebra
& MATH 330-2	and Abstract Algebra
& MATH 330-3	and Abstract Algebra
MATH 344-1	Introduction to Topology
& MATH 344-2	and Introduction to Topology
MATH 325-0	Complex Analysis

Well-prepared students should also consider taking the following graduate course sequences:

Course	Title
MATH 410-1	Analysis
& MATH 410-2	and Analysis
& MATH 410-3	and Introduction to Modern Analysis
MATH 470-1	Algebra
& MATH 470-2	and Algebra
& MATH 470-3	and Algebra

Secondary Teaching Licensure in Mathematics

To obtain an Illinois Professional Educator license in mathematics, a Weinberg student majoring in mathematics must apply to the Secondary Teaching program (https://catalogs.northwestern.edu/undergraduate/education-social-policy/secondary-teaching) in the School of Education and Social Policy (SESP) (https://catalogs.northwestern.edu/undergraduate/education-social-policy) by the fall of junior year and complete the requirements of that program as well as the degree requirements of Weinberg College.