

MATHEMATICS MAJOR

and MATH261 must be taken at Wesleyan to complete the major, and substitutions for these courses will not be approved.

MAJOR DESCRIPTION

The Major in Mathematics broadly explores the relationships between numbers, shapes, measurements, structures, and patterns. Students gain strong computational abilities, abstract mathematical reasoning skills, an understanding of how to apply mathematical theories in practice, and the ability to write and speak clearly and elegantly about mathematics.

Students who are interested in developing strong analytical reasoning and logical thinking skills, attention to detail, and persistence in tackling complex problems should consider majoring in mathematics.

Mathematics majors graduate with knowledge and skills that are valued in many fields, including data analysis, software development, accounting, finance, insurance, operations, statistics, quantitative research, business, the physical and biological sciences, engineering, and education.

ADMISSION TO THE MAJOR

Every student is welcome to major in mathematics. Students are advised to finish calculus up to MATH222 and linear algebra (either MATH221 or MATH223), and MATH228 before making the decision.

MAJOR REQUIREMENTS

- A year of differential and integral calculus (typically MATH121 and MATH122)
- MATH221 or MATH223
- MATH222
- An elementary knowledge of algorithms and computer programming. (Successful completion of either COMP112 or COMP211 satisfies this requirement.)
- MATH261 and MATH225 (recommended for juniors or seniors)
- A coherent selection of four additional electives, chosen in consultation with an advisor from the department. Any 1.0 credit **MATH** course at the **200+** level can be used as an elective for the major.

Notes:

- Students who have completed a year of calculus in high school may place out of one or both of MATH121 and MATH122.
- An AP score of 4 or 5 on the AB calculus exam indicates the student should begin in MATH122.
- An AP score of 4 or 5 on the BC calculus exam indicates the student should consider beginning in any of MATH221, MATH222, or MATH223.
- Students may not earn credit for both MATH221 and MATH223.
- Students must complete either MATH228 or MATH261 by the end of their junior year.
- With advance approval from the departmental advisory committee, mild adjustments are allowed. For example, a Wesleyan course with substantial mathematical content but that is not listed in **MATH** may be used toward the four-electives requirement. Please note, however, that both MATH225

STUDENT LEARNING GOALS

The department has the following learning goals for mathematics majors:

- Develop a basic understanding of, and computational facility with, major objects of mathematical and applied interest, such as differentiable functions, graphs, groups, manifolds, rings, or vector spaces.
- Understand abstract mathematical reasoning, e.g., understand an abstract system of rules, find examples of objects that satisfy those rules, conjecture theorems from those examples, and prove those theorems.
- Understand some mathematical applications and ways to use mathematics in practice, and be able to make connections to topics outside of the strict course content.
- Students should be able to write about and speak about mathematics, clearly and elegantly.

LANGUAGE REQUIREMENT

Undergraduate majors in mathematics are encouraged to study languages while at Wesleyan; majors who are considering graduate study in mathematics should note that graduate programs often require a reading knowledge of French, German, and/or Russian.

BA/MA PROGRAM

This program provides an attractive option for mathematics majors to enrich their course and research background. Students are advised to begin research by their junior year if they intend to pursue the BA/MA. Admission is competitive and based on GPA, faculty recommendations, and research experience. For more information, visit [wesleyan.edu/grad/degree-programs/bama.html](http://www.wesleyan.edu/grad/degree-programs/bama.html) (<http://www.wesleyan.edu/grad/degree-programs/bama.html>). Advanced undergraduates may enroll in graduate (**500-level**) courses.

ADDITIONAL INFORMATION

COLLOQUIA, SEMINARS, AND MATH CLUB

Lectures. The departmental colloquium series presents lectures on recent research by invited speakers from other institutions. Advanced undergraduates are welcome and encouraged to attend these colloquia and to participate in graduate seminars. All students interested in mathematics are invited to attend the annual Coven-Wood Lecture Series in Mathematics. The first talk in the series is accessible to students at all levels. The undergraduate Math Club hosts informal talks in mathematics and other mathematical activities.

HONORS

An undergraduate may achieve the BA with honors in mathematics via one of two routes:

- The honors thesis, written under the supervision of a faculty member under conditions monitored by the University Committee on Honors.

- A strong performance in a suitable sequence of courses, normally including some graduate courses, selected in consultation with a member of the department's advisory committee. The candidate also is expected to prepare a public lecture on a topic chosen together with a faculty advisor.

CAPSTONE

* SENIOR THESIS-two semesters

* HONORS PRESENTATION

* APPROVED GRADUATE COURSEWORK IN MATH

* TUTORIAL WITH FACULTY

Students pursuing the Mathematics major are not required to complete a capstone experience. However, there are several options available if they wish to pursue one. These include:

* **Graduate Coursework***: completing one or more approved graduate mathematics courses with a performance deemed satisfactory by the instructor(s). Students should consult with their major advisor or the department advisory committee to select appropriate coursework.

* **Honors Presentation***: satisfactorily completing the public presentation related to departmental Honors

* **Senior Thesis***: satisfactorily completing a Senior thesis under conditions monitored by the University Committee on Honors

* **Tutorial with Mathematics Faculty***: Students may register for a tutorial with a faculty member to pursue study or research on a topic that will deepen or broaden the student's knowledge.

Tutorials may involve independent research by the student, but this is not a requirement for the tutorial. To qualify as a capstone experience, the tutorial should culminate in a project or presentation by the student at the end of the semester.

In practice, students often complete more than one of the above experiences.

Sophomores and juniors who are considering adding a capstone experience during their senior year may enjoy participating in the department's directed reading program and attending events and talks in the departmental Math Club.