

MATHEMATICS MAJOR

The Mathematics major provides students with the breadth of knowledge required to excel in a variety of careers including medicine, law, finance and technology-related industries. In addition, the mathematics major also provides excellent preparation for those students who want to pursue graduate studies. The flexibility in the curriculum allows students to emphasize core math, applied math, or statistics.

Requirements

A major in mathematics consists of:

Course ID	Title	Credits
Core Courses		
MATH 1210	Calculus I ¹	4
MATH 1220	Calculus II ²	4
MATH 2210	Calculus III	4
MATH 3050	Real Analysis I	3
MATH 3090	Linear Algebra	4
Select four additional mathematics courses at the 3000-level or above ³		12
Year-Long Senior Seminar ⁴		
MATH 3980	Senior Seminar (Capstone)	1
MATH 3990	Senior Seminar (Capstone)	3
Total Credit Hours		35

¹ MATH 1150 Long Calculus I (3 c.h.) and MATH 1160 Long Calculus II (3 c.h.) may be substituted for MATH 1210 Calculus I (4 c.h.)

² MATH 1310 Consolidated Calculus (4 c.h.) may be substituted for MATH 1220 Calculus II (4 c.h.)

³ Four additional mathematics courses at the 3000-level or above with the following provisos:

- one but not both of MATH 2170 Intro To Discrete Math (3 c.h.) and MATH 2240 Intro To Applied Math (4 c.h.) may be substituted for one of the 3000-level courses;
- at least one course must be at the 4000-level or above;
- an advanced course in another department, with a high mathematical content, may, with the approval of the departmental undergraduate studies committee, may be substituted for one of the 3000-level courses.

⁴ The year-long Senior Seminar is required of all mathematics majors who are not writing an Honors thesis within the department. Students planning to graduate in December should begin this course in the fall of the preceding year. The Senior Seminar does not count towards the additional 3000-level math courses in the previous section.

Suggested Curriculum

A freshman should take the appropriate calculus course. Students with no prior calculus course should normally take MATH 1210 Calculus I (4 c.h.) and MATH 1220 Calculus II (4 c.h.) during the freshman year. Students with one semester of calculus credit (or equivalent knowledge) should take MATH 1310 Consolidated Calculus (4 c.h.). Students with two semesters of calculus credit should start in MATH 2210 Calculus III (4 c.h.) and contact a mathematics major advisor during the first semester for major program planning advice. It is also recommended that a prospective mathematics major take PHYS 1310 General Physics I (4 c.h.) and PHYS 1320 General Physics II (4 c.h.) during either the freshman or sophomore year. Students should take the core courses as early as possible in their programs. After completing MATH 2210 Calculus III (4 c.h.), the most frequent courses taken next are usually selected from the core courses MATH 3050 Real Analysis I (3 c.h.), MATH 3070 Intro To Probability (3 c.h.), MATH 3090 Linear Algebra (4 c.h.). It is generally recommended to take MATH 3090 Linear Algebra (4 c.h.) before MATH 3050 Real Analysis I (3 c.h.), but they can be taken concurrently. Both MATH 3050 Real Analysis I (3 c.h.) and MATH 3090 Linear Algebra (4 c.h.) are offered every semester. Each introduces the student to more theoretical mathematics than has been encountered in the calculus courses, and these courses provide the foundation for many advanced courses. The course MATH 2240 Intro To Applied Math (4 c.h.) gives an introduction to applied mathematics, and can be counted toward the major (although both MATH 2170 Intro To Discrete Math (3 c.h.) and MATH 2240 Intro To Applied Math (4 c.h.) cannot both count). However, majors are advised to forego MATH 2240 Intro To Applied Math (4 c.h.) and instead take MATH 4240 Ordinary Differential Equations (3 c.h.) after taking MATH 3090 Linear Algebra (4 c.h.). There is considerable overlap in MATH 2240 Intro To Applied Math (4 c.h.) and MATH 4240 Ordinary Differential Equations (3 c.h.), and both may not be taken for credit. The course MATH 3070 Intro To Probability (3 c.h.) provides an introduction to probability, and MATH 3080 Intro to Statistical Inference (3 c.h.) provides an introduction to statistical inference. MATH 2210 Calculus III (4 c.h.) is a prerequisite for MATH 3070 Intro To Probability (3 c.h.), and MATH 3070 Intro To Probability (3 c.h.) is a prerequisite for MATH 3080 Intro to Statistical Inference (3 c.h.). The Math 3070-3080 sequence should be taken in the sophomore year by students interested in pursuing a concentration in statistics, which includes these four courses in addition to the core courses. All advanced probability and statistics course, including MATH 6020 Mathematical Statistics (3 c.h.),

MATH 6030 Stochastic Processes (3 c.h.), and MATH 6040 Linear Models (3 c.h.) require successful completion of MATH 3070 Intro To Probability (3 c.h.) and MATH 3080 Intro to Statistical Inference (3 c.h.).

Students considering a math major should arrange an appointment with the department chair early in their program. They will be assigned a major advisor who will advise them on course selection within the major. The major program is designed to provide the student with a solid foundation during the first two years and provide for a variety of programs of study during the junior and senior years. A major program in mathematics can provide a background for both graduate study and work in a variety of areas of the mathematical sciences such as mathematics, applied mathematics, computer science, and statistics as well as provide preparation for professional schools such as law, medicine, and business. The major program should be designed as early as possible with the student's goals in mind and with the help of the major advisor.