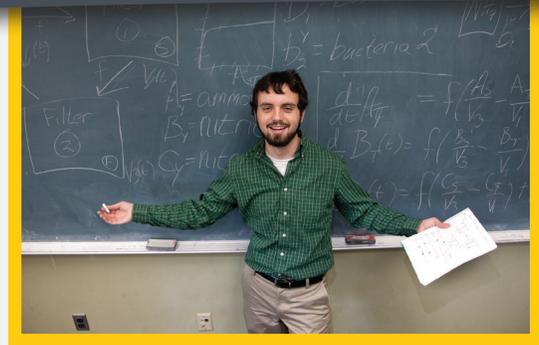


Interested in This Major?

Current Students: Visit us in the EMS Building, Room E403, call us at 414-229-4836, or email math-staff@uwm.edu

Not a UWM Student yet? Call our Admissions Counselor at 414-229-7711 or email let-sci@uwm.edu

web: uwm.edu/math



What is Mathematics?

Mathematics is an international language at the core of science, technology, and engineering. It is also utilized in social science research in fields such as sociology, economics, and psychology. It is one of the oldest and most fundamental sciences. The beauty of mathematics is reflected in patterns from the natural and man-made worlds.

Career Opportunities

Mathematicians work in a number of different fields such as astronomy and space exploration, climate study, medicine and biology, national security, robotics, animation, insurance, computer science, risk management, systems analysis, market research, finance, database management, and statistics. Teaching math at the high school or collegiate levels is also a common career track. Some professions require additional study beyond a bachelor's degree.

The fundamentals of mathematics underlie an endless number of processes in all types of businesses. For example, airlines schedule service and equipment based on past and predictive statistics, internet traffic is directed via mathematical algorithms, and insurance companies set prices based on mathematical analysis of risk. Career opportunities are very diverse for students with a degree in mathematics.

Is Mathematics Right For Me?

Mathematics is ideal for students who enjoy solving puzzles, who want to use mathematics to model the real world to answer questions and/or who want to understand the structure of mathematics. It requires strong abilities in logical reasoning and analysis and a natural curiosity about how mathematics can apply in an increasingly complex world.

Since mathematics courses build on each other, careful planning of when to take each course is required. Ideally, preparation will begin in high school.

There are many ways to tailor your degree at UWM to match your interests. The Mathematical Sciences department offers the following majors: Actuarial Science, Atmospheric Sciences, and Mathematics. A related degree program – Applied Mathematics and Computer Science (AMCS) – is offered and awarded jointly by the College of Letters and Science Department of Mathematical Sciences and the College of Engineering and Applied Science Department of Computer Science. For more information on these programs, please see their Fact Sheets.

Preparatory Courses

For each Mathematics major, the core requirements include a minimum GPA of 2.5 in all classes in the major and at least 15 upper-level credits completed in residence at UWM. The following preparatory courses are required for all majors conferred by the department:

- Math 231 (or 213), 232, AND 233 (Calculus I/II/III) or their equivalents (must earn a minimum 2.5 GPA in the calculus sequence)
- Math 234 (Linear Algebra and Differential Equations) OR Math 240 (Matrices and Applications)
- One course in computer programming using a modern, high-level language

Beyond the preparatory courses, students have a lot of flexibility in choosing upper-division courses to complete a major appropriate to their goals and interests.

Mathematics Major

Every mathematics major must complete Math 341 (Intro to the Language and Practice of Mathematics) and 24 additional credits in upper-level Math or MthStat courses (courses numbered 300 and above). These upper-level courses must include at least 6 credits from Math or MthStat courses numbered 500 or above, excluding 591, 599, and 699. Finally, students must complete a capstone project near the end of their studies, Math 599 or 575.

Recommendations

Students with particular interests can choose courses that naturally fall into certain groupings:

Applied Mathematics Group

Math 305, 320, 321, 322, 371, 405, 431, 581, 601, and 602

Computational Mathematics Group

Math 313, 315, 413, 415, 417, 615, and 617

Probability and Statistics Group

Math 571, MthStat 361, 362, 562, 563, 564, 565, 566, and 568

Pure Mathematics Group I

Math 521, 522, 531, 535, 551, 621, 622, 631, and 632

Pure Mathematics Group II

Math 423, 451, 453, 511, 537, and 553

For students planning to pursue graduate studies in mathematics, we recommend students take at least 36 credits of upper-division mathematics courses, with as many courses as possible from Pure Mathematics, Group I. Many PhD programs also require reading knowledge of French, German, or Russian.

For students planning to pursue graduate studies in statistics or economics, we recommend Math 521 and 522, and as many as possible of MthStat 361, 362, and 562–568.

For students seeking employment in statistics after the bachelor's degree, we recommend MthStat 361, 362, and as many as possible of MthStat 562–568, as well as courses in computer programming (Comp Sci 250, 251, etc.).

For students seeking general non-academic employment after the bachelor's degree, we recommend courses from: the Probability and Statistics group (including MthStat 362), the Applied Mathematics group (including both modeling and differential equations), the Computational Mathematics group, Linear Algebra (Math 535), and courses in computer programming (Comp Sci 240, 250, 251, etc.).

For students intending to become high school mathematics teachers, we recommend courses in algebra (Math 431, 531), geometry (451, 453), linear algebra (535), numerical methods (413), advanced calculus (521, 522), the math education capstone (575), and probability and statistics (MthStat 361 & 362).

For students pursuing a major in mathematics as a liberal art, for general logical and critical thinking skills, we recommend the Pure Mathematics courses.

Honors in the Major

Students who have achieved a high enough GPA in their overall UWM studies and in their Mathematics courses, and who have distinguished themselves through advanced coursework or research experiences, may be awarded honors in the major upon graduation. See our website for more specific requirements. Students who believe they may qualify for honors should apply with the Mathematical Sciences Department during their last semester of study.

Scholarships and Awards

The department offers a number of scholarships for outstanding undergraduates:

- Alice Siu-Fun Leung Awards in Mathematics
- Morris and Miriam Marden Award in Mathematics

Events

Each Spring, the Marden Lecture brings a distinguished mathematician to campus to give a general audience presentation. The Marden Lecture honors Morris Marden (1905 - 1991), who founded the graduate program and made the department into a research department.

Colloquia are held many Fridays during the semester and feature noted guest lecturers on a range of mathematical and atmospheric science topics.

The department also periodically sponsors social activities for students.

Revised 10/2017





This sample four-year plan shows just one possible pathway to earning a BS degree with this major in four years. This plan **does not** replace the advice of your advisor, and students are cautioned to meet regularly with their advisor to create a personalized plan that matches their particular circumstances. A BA in mathematics is also available; the requirements for that degree are different from those shown below. This plan also follows the degree requirements for students who began their college education in Fall of 2013 or later. If you started at any college or university prior to Fall of 2013, your degree requirements may be different.

Degree Requirements (brief summary):

1. English Proficiency and UWM Oral and Written Communication (OWC) GER - English 102 (OWC-A) and an additional OWC-B course
2. Math Proficiency, UWM Quantitative Literacy (QL) GER, and Formal Reasoning - two courses will satisfy all three requirements for students pursuing a Bachelor of Science. At a minimum, Math through the first semester calculus and at least one other 200-level Math class will fulfill the degree requirement for all BS students. Additional math courses are required to fulfill requirements for the major.
3. Foreign Language – 2 semesters of a single Foreign Language
4. L&S Humanities – 12 credits
5. L&S Social Sciences – 12 credits
6. L&S Natural Science – 12 credits including a laboratory course in three distinct natural science areas
7. L&S International – 9 credits usually accomplished in conjunction with Humanities and/or Social Science courses
8. UWM Arts GER – 3 credits
9. UWM Cultural Diversity GER – 3 credits usually accomplished in conjunction with a Humanities or Social Science course
10. 120 credits including 90 credits in L&S and with 36 of the 90 credits in L&S upper-level (numbered 300 and above) courses and 30 of those 36 in upper-level Natural Science
11. Complete the Mathematics major
 - All of Math 231 (or 213), 232, 233 or equivalents with at least a 2.5 GPA
 - Math 234 or 240
 - Math 341
 - at least 24 additional credits in Math or MthStat numbered 300 or above; 6 credits of these 24 must be numbered 500 or above, excluding 591, 599, and 699
 - One course in computer programming in a modern, high-level language
 - Math 599 or 575
 - At least 15 upper-level credits completed at UWM

quantitative literacy/formal reasoning requirement. (This sample assumes no high school Foreign Language was taken and that the student placed into college-level Math and English.)

	Semester 1	Semester 2
Year 1	Math 115 or 116/117 (depending on placement test)	Math 231
	L&S Natural Science with lab	CompSci 250 or L&S Natural Science with lab
	English 101	English 102 (OWC-A)
	1st semester Foreign Language	2nd semester Foreign Language
	Elective	Elective
Year 2	Math 232	Math 233
	Math 341	Math 234 or 240
	CompSci 250 or 251, or L&S Natural Science with lab	L&S Natural Science with lab or CompSci 250 or Elective
	Arts GER	OWC-B course
	Elective	L&S Social Science/ International
Year 3	Math/MthStat upper-level	Math/MthStat upper-level
	Math/MthStat upper-level	Math/MthStat upper-level
	L&S Natural Science with lab or CompSci 250 or Elective	any L&S upper-level / can be Math or MthStat
	L&S Humanities/Cultural Diversity	L&S Social Science
	L&S Social Science/ International	L&S Humanities/ International
Year 4	Math/MthStat upper-level	Math 599 or 575
	Math 500 or above (but not 591, 599 or 699)	Math 500 or above (but not 591, 599 or 699)
	any L&S upper-level / can be Math or MthStat	any L&S upper-level / can be Math or MthStat
	L&S natural science upper-level / can be Math or MthStat	any L&S upper-level / can be Math or MthStat
	L&S Humanities	L&S Social Science
		L&S Humanities

Sample Four Year Plan for a Bachelor of Science:

There are hundreds of courses that satisfy various requirements (uwm.edu/letters-science/advising/degree-requirements/), and courses in the major can be used. For example, Math 231 counts towards the major, the natural science GER, and the math/