MATHEMATICS B.A.

This degree is the BA in Mathematics without a concentration. Students can add one or more of the concentrations in Applied Mathematics, Combinatorics & Optimization, Pure Mathematics, or Statistics and Data Science to this degree by fulfilling the respective Concentration Requirements (achieved by taking specific Upper-Division Elective Courses). Typically, students declare one of these four concentrations during their sophomore or junior year. Note that the requirements for the Mathematics Education concentration are extensive and differ substantially from the requirements for the other concentrations. Students interested in Mathematics Education are encouraged to declare this concentration as early as possible, preferably during their first year at UM.

General Degree Requirements

To earn a baccalaureate degree, all students must complete successfully, in addition to any other requirements, the University of Montana General Education Requirements. Please refer to the General Education Requirements page (https://catalog.umt.edu/academics/general-education-requirements/) for more information.

Additional requirements for graduation can be found on the Degree/Certificate Requirements for Graduation page (https://catalog.umt.edu/academics/graduation-requirements/).

Unless otherwise noted in individual program requirements, a minimum grade point average of 2.00 in all work attempted at the University of Montana-Missoula is required for graduation. Please see the Academic Policies and Procedures page (https://catalog.umt.edu/academics/policies-procedures/) for information on how your GPA is calculated.

Courses taken to satisfy the requirements of a major, minor, or certificate program must be completed with a grade of C- or better unless a higher grade is noted in the program requirements.

Bachelor of Arts - Mathematics

Credit Requirements

The major specific credits are much lower for double-majors and for students completing a minor in another subject:

- 41 credits for students completing a second major, and
- 46 credits for students completing a minor.

GPA Requirement

- A cumulative GPA of 2.0 is required for all courses used to fulfill major requirements.
- In addition, a cumulative GPA of 2.0 is required for all mathematical sciences courses used to fulfill major requirements. (Mathematical sciences courses are those with a prefix of M or STAT.)

Course Requirements

Code	Title	Hours
Core Courses		
Complete all of the following courses:		
M 171	Calculus I	4
or M 181	Honors Calculus I	
M 172	Calculus II	4
or M 182	Honors Calculus II	
M 210	Introduction to Mathematical Software	3
M 221	Introduction to Linear Algebra	4
M 273	Multivariable Calculus	4
M 300	Undergraduate Mathematics Seminar	1
M 307	Introduction to Abstract Mathematics	3
Electives [1]		
Complete 18-23 credits (6-7 courses) of the following courses. At least three courses must be at the 400 level. See note below about the elective credit requirement.		18-23
M 274	Introduction to Differential Equations	
M 301	Teaching Mathematics with Technology	
M 325	Discrete Mathematics	
M 326	Number Theory	
M 361	Discrete Optimization	
M 362	Linear Optimization	
M 381	Advanced Calculus I	
M 412	Partial Differential Equations	
M 414	Deterministic Models	
M 429	History of Mathematics [2]	
M 431	Abstract Algebra I	
M 432	Abstract Algebra II	
M 439	Euclidean and NonEuclidean Geometry	
M 440	Numerical Analysis	
M 445	Statistical, Dynamical, and Computational Modeling	
M 461	Data Science Analytics	
M 462	Theoretical Basics of Big Data Analytics and Real Time Computation Algorithms	
M 472	Introduction to Complex Analysis	
M 473	Introduction to Real Analysis	
M 485	Graph Theory	
STAT 342	Probability and Simulation	
STAT 421	Probability Theory	
STAT 422	Mathematical Statistics	
STAT 452	Statistical Methods II	
Science Requirement [3]		
Complete 18 credits in at most 3 areas selected from astronomy (ASTR), biology (BIO*), chemistry (CHMY), computer science (CSCI, except CSCI TR*), economics (ECNS), forestry (FORS, WILD), geosciences (GEO), management information systems (BMIS), and physics (PHSX).		18
Language/Computer Science Requirement [4]		
Complete either the General Education Language Requirement or complete one of the following courses:		3
CSCI 150	Introduction to Computer Science	
CSCI 151	Interdisciplinary Computer Science I	
CSCI 152	Interdisciplinary Computer Science II	
Total Hours		**62-67**

[1] Students completing a second major need take only 18 credits. Students completing a minor in another subject need take only 20 credits. All other students must complete 23 credits and 7 courses. At

least 4 of the courses in this category must be taken at UM-Missoula (only 3 if M 307 is taken at UM-Missoula).

2 M 429 is also an advanced college writing course. Most Mathematics majors use M 429 to meet the advanced college writing general education requirement.

3 Students completing a minor in another subject or a second major are exempt from this requirement. Transfer courses listed on the transcript as CSCI TR* may include course work in other areas such as Computer Applications (CAPP) and therefore do not count towards this requirement unless a student successfully petitions the Department of Mathematical Sciences.

4 Students completing a second major are exempt from this requirement.

Code	Title	Hours
Elective Computer Labs and Independent Study Courses		
Computer labs and independent study courses from the following list are optional; if taken (0-2 credits), they count toward the total number of credits required for the Mathematics Elective requirement.		
M 363	Linear Optimization Laboratory	
M 392	Independent Study	
M 492	Independent Study	
STAT 457	Computer Data Analysis I	
STAT 458	Computer Data Analysis II	

Four Year Plan

Course	Title	Hours
Freshman		
Autumn		
M 171	Calculus I	4
Science Elective		3
General Education		6
HUSC 194	Seminar/Workshop	1
	Hours	**14**
Spring		
M 172	Calculus II	4
M 210	Introduction to Mathematical Software	3
Science Elective		3
General Education		6
	Hours	**16**
Sophomore		
Autumn		
M 221	Introduction to Linear Algebra	4
M 273	Multivariable Calculus	4
Science Elective		3
General Education		3
	Hours	**14**
Spring		
M 307	Introduction to Abstract Mathematics	3
Science Elective		3
General Education		9
	Hours	**15**
Junior		
Autumn		
M 300	Undergraduate Mathematics Seminar	1
M 274	Introduction to Differential Equations (Math Elective 300+)	6
or M 301	or Teaching Mathematics with Technology	
or M 325	or	
or M 326	or Number Theory	
or M 361	or Discrete Optimization	
or M 362	or Linear Optimization	
or M 381	or Advanced Calculus	
or M 412	or Partial Differential Equations	
or M 414	or Deterministic Models	
or M 429	or History of Mathematics	
or M 431	or Abstract Algebra I	
or M 432	or Abstract Algebra II	
or M 439	or Euclidean and NonEuclidean Geometry	
or M 440	or Numerical Analysis	
or M 445	or	
or M 461	or Data Science Analytics	
or M 462	or Theoretical Basics of Big Data Analytics and	
or M 472	Real Time Computation Algorithms	
or M 473	or Introduction to Complex Analysis	
or M 485	or Introduction to Real Analysis	
or STAT 342	or Graph Theory	
or STAT 421	or Probability and Simulation	
or STAT 422	or Probability Theory	
or STAT 452	or Mathematical Statistics	
	or Statistical Methods II	
Science Elective		3
Elective		6
	Hours	**16**
Spring		
M 274	Introduction to Differential Equations (Math Elective 300+)	6
or M 301	or Teaching Mathematics with Technology	
or M 325	or	
or M 326	or Number Theory	
or M 361	or Discrete Optimization	
or M 362	or Linear Optimization	
or M 381	or Advanced Calculus	
or M 412	or Partial Differential Equations	
or M 414	or Deterministic Models	
or M 429	or History of Mathematics	
or M 431	or Abstract Algebra I	
or M 432	or Abstract Algebra II	
or M 439	or Euclidean and NonEuclidean Geometry	
or M 440	or Numerical Analysis	
or M 445	or	
or M 461	or Data Science Analytics	
or M 462	or Theoretical Basics of Big Data Analytics and	
or M 472	Real Time Computation Algorithms	
or M 473	or Introduction to Complex Analysis	
or M 485	or Introduction to Real Analysis	
or STAT 342	or Graph Theory	
or STAT 421	or Probability and Simulation	
or STAT 422	or Probability Theory	
or STAT 452	or Mathematical Statistics	
	or Statistical Methods II	
Science Elective		3
Elective		6
	Hours	**15**

Senior		
Autumn		
M 274	Introduction to Differential Equations (Math Elective	3 or 4
or M 301	300+)	
or M 325	or Teaching Mathematics with Technology	
or M 326	or	
or M 361	or Number Theory	
or M 362	or Discrete Optimization	
or M 381	or Linear Optimization	
or M 412	or Advanced Calculus	
or M 414	or Partial Differential Equations	
or M 429	or Deterministic Models	
or M 431	or History of Mathematics	
or M 432	or Abstract Algebra I	
or M 439	or Abstract Algebra II	
or M 440	or Euclidean and NonEuclidean Geometry	
or M 445	or Numerical Analysis	
or M 461	or	
or M 462	or Data Science Analytics	
or M 472	or Theoretical Basics of Big Data Analytics and	
or M 473	Real Time Computation Algorithms	
or M 485	or Introduction to Complex Analysis	
or STAT 342	or Introduction to Real Analysis	
or STAT 421	or Graph Theory	
or STAT 422	or Probability and Simulation	
or STAT 452	or Probability Theory	
	or Mathematical Statistics	
	or Statistical Methods II	
M 412	Partial Differential Equations (Math Elective 400+)	3
or M 414	or Deterministic Models	
or M 429	or History of Mathematics	
or M 431	or Abstract Algebra I	
or M 432	or Abstract Algebra II	
or M 439	or Euclidean and NonEuclidean Geometry	
or M 440	or Numerical Analysis	
or M 445	or	
or M 461	or Data Science Analytics	
or M 462	or Theoretical Basics of Big Data Analytics and	
or M 472	Real Time Computation Algorithms	
or M 473	or Introduction to Complex Analysis	
or M 485	or Introduction to Real Analysis	
or STAT 421	or Graph Theory	
or STAT 422	or Probability Theory	
or STAT 452	or Mathematical Statistics	
	or Statistical Methods II	
Elective		9
	Hours	**15-16**
Spring		
M 412	Partial Differential Equations (Math Elective 400+)	6
or M 414	or Deterministic Models	
or M 429	or History of Mathematics	
or M 431	or Abstract Algebra I	
or M 432	or Abstract Algebra II	
or M 439	or Euclidean and NonEuclidean Geometry	
or M 440	or Numerical Analysis	
or M 445	or	
or M 461	or Data Science Analytics	
or M 462	or Theoretical Basics of Big Data Analytics and	
or M 472	Real Time Computation Algorithms	
or M 473	or Introduction to Complex Analysis	
or M 485	or Introduction to Real Analysis	
or STAT 421	or Graph Theory	
or STAT 422	or Probability Theory	
or STAT 452	or Mathematical Statistics	
	or Statistical Methods II	
Elective		9
	Hours	**15**
	Total Hours	**120-121**

Last updated Autumn 2025

This degree template can be adapted for students who are not ready to take M 171 (Calculus I) in their first semester.

Up to 12 of the 18 credits in Science Electives can be replaced by a minor or a second major.

Student can add a concentration in Applied Mathematics (https://catalog.umt.edu/colleges-schools-programs/science/mathematical-sciences/ba-applied-mathematics/), Combinatorics & Optimization (https://catalog.umt.edu/colleges-schools-programs/science/mathematical-sciences/ba-combinatorics-optimization/), Pure Mathematics (https://catalog.umt.edu/colleges-schools-programs/science/mathematical-sciences/ba-pure-mathematics/) or Statistics & Data Science (https://catalog.umt.edu/colleges-schools-programs/science/mathematical-sciences/ba-statistics/) by choosing part of their Math Electives from the chosen area. Students interested in Mathematics Education must follow the degree template for Mathematics Education (https://catalog.umt.edu/colleges-schools-programs/science/mathematical-sciences/ba-mathematics-education/).

Details regarding the Math and Science Electives are in the Catalog and on Degree Works. Choose these courses in consultation with your math advisor.

Details regarding the General Education course work are in the Catalog and on Degree Works. Choose these courses in consultation with an advisor. In particular, take WRIT 101 as early as possible.

Students not completing the General Education language requirement must take one of several computer sciences courses as part of their Science Electives.

39 upper-division (300+ course) credits are required.