

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 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.

Bachelor of Arts - Mathematics

College of Humanities & Sciences

Degree Specific Credits: 67

Required Cumulative GPA: 2.0

Catalog Year: 2018-2019

Note on degree specific credits: The degree specific credits are much lower for double-majors and for students completing an additional minor (in another subject):

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

Note on the GPA requirement:

1. A cumulative GPA of 2.0 is required for all courses used to fulfill major requirements.
2. 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.)

General Education Requirements

Information regarding these requirements can be found in the General Education Section (<http://catalog.umt.edu/academics/general-education-requirements>) of the catalog.

Summary

Code	Title	Hours
	Mathematics Core Courses	23
	Upper-Division Mathematics Requirement	23
	Upper-Division Elective Courses	
	Science Requirement	18
	Foreign Language/Computer Science Requirement	3
	Total Hours	67

Mathematics Core Courses

Code	Title	Hours
Complete all of the following courses:		
M 171 or M 181	Calculus I Honors Calculus I	4

M 172 or M 182	Calculus II Honors Calculus II	4
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
Total Hours		23

Minimum Required Grade: C-

Upper-Division Mathematics Requirement

Rule: Complete 23 credits in this category.

Note:

1. Students completing a minor (in another subject) need take only 20 credits.
2. Students completing a second major need take only 18 credits.

Minimum Required Grade: C-

Upper-Division Elective Courses

Note:

1. Students completing a minor in another subject or a second major need take only 6 courses (totaling 18 credits or more).
2. Residency Requirement: 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).
3. Note that STAT 451 does not count toward this requirement.
4. In addition to counting towards this requirement, M 429 (History of Mathematics) is also an advanced college writing course. Most Mathematics majors use M 429 to meet the advanced college writing general education requirement.

Code	Title	Hours
Complete 7 courses from the following list; at least 3 of them must be at the 400 level		
M 301	Mathematics Technology for Teachers	
M 311	Ordinary Differential Equations and Systems	
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	
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 341	Introduction to Probability and Statistics
STAT 421	Probability Theory
STAT 422	Mathematical Statistics
STAT 452	Statistical Methods II

Minimum Required Grade: C-

Upper-Division Elective Computer Labs

Rule: Computer labs from the following list are optional; if taken (0-2 credits), they count toward the total number of credits required for the Upper-Division Mathematics Requirement.

Code	Title	Hours
M 317	Ordinary Differential Equations Computer Lab	1
M 363	Linear Optimization Laboratory	1
M 418	Partial Differential Equations Computer Lab	1
STAT 457	Computer Data Analysis I	1
STAT 458	Computer Data Analysis II	1

Minimum Required Grade: C-

Science Requirement

Rule: 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).

Note:

1. Students completing a minor (in another subject) or a second major are exempt from this requirement.
2. 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.

Minimum Required Grade: C-

Language/Computer Science Requirement

Rule: Either complete the General Education Requirement Group III: Modern and Classical Language or take one course from the following list.

Note: Students completing a second major are exempt from this requirement.

Code	Title	Hours
Complete one of the following courses:		3
CSCI 100	Intro to Programming	
CSCI 126	Computation in the Sciences with Calculus	
CSCI 135	Fund of Computer Science I	

CSCI 136	Fund of Computer Science II	
Total Hours		3

Minimum Required Grade: C-