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 Humanities & Sciences

Degree Specific Credits: 67

Required Cumulative GPA: 2.0

Catalog Year: 2017-2018

Note: 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.

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

Mathematics Core Courses	23
Upper-Division Mathematics Requirement	23
Upper-Divsion Elective Courses	
Upper-Division Elective Computer Labs	
Science Requirement	18
Advanced College Writing Requirement (usually fulfilled with a course that counts towards the Upper-Division Mathematics Requirement)	
Foreign Language/Computer Science Requirement	3
Total Hours	67

Mathematics Core Courses

Rule: Take 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
Total Hours		23

Minimum Required Grade: C-

Upper-Division Mathematics Requirement

Rule: Take 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-

23 Total Credits Required

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.

Take 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 Non?Euclidean Geometry
M 440	Numerical Analysis
M 445	Statistical, Dynamical, and Computational Modeling
M 461	Practical Big Data 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.

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: Take 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-

18 Total Credits Required

Advanced College Writing Requirement
Rule: Take 1 of the following 2 courses, or any other approved Advanced College Writing course.

M 429	History of Mathematics	3
or M 499	Senior Thesis	
Total Hours		3

Minimum Required Grade: C-

GPA Requirement
Note:

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.)

Foreign 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.

Select one from the following:		3
CSCI 100	Intro to Programming	
CSCI 135	Fund of Computer Science I	
CSCI 136	Fund of Computer Science II	
CSCI 250	Computer Mdlng/Science Majors	
Total Hours		3

Minimum Required Grade: C-