Department of Mathematical Sciences
University of Montana
September 2023

Have you thought about Earning a Math Minor?

If you like math, it doesn't take that much extra work to earn a math minor.

For some majors (e.g., computer science and physics majors), it takes only 2-3 additional courses beyond the courses required by the major!

And there are quite a few advantages:

- A math minor looks good on your resume.
- It demonstrates you know quite a bit of mathematics or statistics.
- It demonstrates that you have rigorous reasoning and problem solving skills.
- Graduate programs in the quantitative sciences like it. And so do Medical Schools and Law Schools.
- It makes you more marketable.
- But most importantly: Earning a math minor is a challenge and it is fun!

A math minor requires 23 credits in M or STAT courses subject to the following rules:*

a) Courses must be listed in a UM-Missoula Catalog. (Transfer courses not equivalent to courses listed in a UM-Missoula Catalog will be evaluated on an individual basis.)
b) M courses must be numbered 115 or higher (excluding M 118).
c) The 23 credits must include:
    - One of M 162 (Applied Calculus) or M 172 (Calculus II)
    - Three advanced math courses, chosen from M 274 and the 3– or 4– credit courses at the 300-level or above. Two of these three courses must be taken at UM-Missoula.

(Details are in the UM Catalog. Note that there are different requirements for a teaching minor in mathematics.)

Planning for a Math Minor

There are many ways to earn a math minor – on the back of this sheet are quite a few suggested curricula.

The basis for a math minor is calculus: either Applied Calculus (M 162) or both Calculus I and Calculus II (M 171/172).

The capstone of a math minor are the three advanced courses. Have a look in the catalog at the variety of upper-division courses we offer. If you want to end up taking a particular upper-division math course, make sure you take the prerequisites. This is easy if you follow one of the suggested curricula. But you do not need to follow any of the suggested curricula – you can design your own math minor.

If you have any questions, please contact Nikolaus Vonessen (Room 207 in the Math Building; (406) 243-6222; nikolaus.vonessen@umontana.edu).

* In addition, all courses counted toward the minor must be passed with a grade of C- or better, and a 2.00 grade average is required.

After completing Applied Calculus (or Calculus II),

You are ready to take the following upper-division math courses (additional prerequisites in parentheses):

- M 301 – Teaching Mathematics with Technology (*offered fall odd-numbered years*)
- M 326 – Number Theory (*offered spring; prereq., M 225 or 307*)
- M 361 – Discrete Optimization (*offered spring*)
- M 362 – Linear Optimization (*offered intermittently*)
- One of STAT 341 – Introduction to Probability and Statistics (*offered through Fall 2022*)
  or STAT 342 – Probability and Simulation (*offered fall and spring starting Spring 2023*)
  (*you can earn credit only for one of these two classes*)
- STAT 451 – Statistical Methods I (*offered fall; prereq., two M/STAT courses numbered ≥ 115*)
- STAT 452 – Statistical Methods II (*offered spring; prereq., STAT 451*)

Suggested curricula leading to a Math Minor based on Applied Calculus:

The "additional credits" can be in most M or STAT courses (but look at the restrictions under a) and b) on page 1).

- **Applied Statistics:**
  M 162, STAT 341 (or 342), 451 & 457, 452 & 458, and 8 additional M/STAT credits
- **General Math (e.g., for Software Engineers):**
  M 162, 225, 326, 361, STAT 341 (or 342), and 7 additional M/STAT credits

After completing Calculus II, you have even more options:

The "additional credits" can be in most M or STAT courses (but look at the restrictions under a) and b) on page 1). Honors Calculus I/II (M 181/182) can be substituted for Calculus I/II (M 171/172).

- **Algebra and Number Theory:** M 171, 172, 221, 300, 307, 326, 431
- **Analysis:** M 171, 172, 273, 300, 307, and two of 381, 472, 473
- **Applied Math:** M 171, 172, 273, 274, 412; one of 414, 440, 445; and 2 add. M/STAT credits.
- **Combinatorics and Optimization:**
  M 171, 172, 307, 361, 485 + 6 additional M/STAT credits
- **Data Science (Big Data Analytics):**
  M 171, 172, 221, 461, STAT 341 (or 342), 451, and one of M 462, 467, and STAT 452.
- **Statistics:**
  - **Applied Statistics:**
    M 171, 172, 341 (or 342), 451 & 457, 452 & 458, and 4 additional M/STAT credits
  - **Statistics:**
    M 171, 172, 273, STAT 341 (or 342), 421, 422 + 2 additional M/STAT credits

Any questions? Please contact Nikolaus Vonessen (Room 207 in the Math Building; (406) 243-6222; nikolaus.vonessen@umontana.edu).