Have you thought about Earning a Math Minor?

A math minor requires 23 credits in M or STAT courses subject to the following rules: ¹

   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) ²
      ○ Three 3– or 4– credit courses at the 300-level or above

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

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!

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). ²

The capstone of a math minor are the three courses at the 300/400 level. Have a look in the catalog at the variety of 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).

¹ 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. (From the 2016-2017 UM Catalog)
² Of course, Honors Calculus can be substituted for regular Calculus.
After completing Applied Calculus (or Calculus II), you are ready to take the following upper-division math courses (additional prerequisites in parentheses):

- M 326 – Number Theory (requires M 225 or 307)
- M 361 – Discrete Optimization
- M 362 – Linear Optimization
- M 414 – Deterministic Models (requires one of M 263, 274 or 311)
- STAT 341 – Introduction to Probability and Statistics
- STAT 451 – Statistical Methods I (requires one year of college mathematics including M 115)
- STAT 452 – Statistical Methods II (requires STAT 451)

Some 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 Math:** M 162, 263, 362, 414, STAT 341 + 7 additional credits
- **Applied Statistics:** M 162, STAT 341, 451 & 457, 452 & 458 + 8 additional credits
- **General Math:** M 162, 225, 326, STAT 341, one of M 361, 362 + 7 additional credits
- **Optimization & Probability:** M 162, 361, 362, STAT 341 + 10 additional credits

After completing Calculus II, you have even more options – here are a few particularly interesting ones.
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).

- In any of the above suggested curricula, you can replace Applied Calculus (M 162) by Calculus I/II (M 171/172); this reduces the number of “additional credits” by 4.
- **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, 311&317, and two of 412&418, 414, 440
- **Combinatorics and Optimization:** M 171, 172, 307, 361, 362, 485 + 3 additional credits
- **Data Science (Big Data Analytics):** M 171, 172, 221, 461, STAT 341, 451, and one of M 462, 467, and STAT 452.
- **Statistics:** M 171, 172, 273, STAT 341, 421, 422 + 2 additional credits

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