Department of Mathematics and Statistics

Major in Mathematics with a Concentration in Applied Mathematics

Effective Fall 2024

Purposes of the Major

The Department of Mathematics and Statistics offers a major in Mathematical Sciences with a concentration in **Applied Mathematics**. The goals of this program are to provide students with

- broad-based and coherent preparation in the various disciplines that constitute the mathematical sciences and
- the specialized training necessary to begin a career in applied mathematics used by engineering and other technically based companies.

This concentration also prepares students for continued study of the mathematical sciences at the graduate level.

The department also offers a **minor** in Mathematics.

Advising Information

This document, **Major Requirements**, summarizes the departmental course requirements for graduating with a Bachelor of Science degree in mathematics with applied mathematics concentration.

You are strongly encouraged to talk to one or more of the **faculty advisors** in the area of applied mathematics (listed below) as you plan your academic program.

Further information about current course offerings, as well as email addresses and office hours for faculty advisors, is available through the Department's Web site at:

https://msudenver.edu/math

Faculty Advisors in Applied Mathematics

Dr. Henc Bouwmeester	SI 3016	303-615-0758	hbouwmee@msudenver.edu
Dr. Brendan Fry	SI 1054	303-615-0729	bfry2@msudenver.edu
Dr. Chris Harder	SI 3028	303-615-0748	harderc@msudenver.edu
Dr. Rob Niemeyer	SI 1036	303-605-7192	niemeye1@msudenver.edu
Dr. Shelley Poole	SI 3034	303-615-0756	srohde2@msudenver.edu
Dr. Linda Sundbye	SI 3022	303-615-0746	sundbyel@msudenver.edu

Declaring a Major

To declare a major in mathematics with concentration in applied mathematics, visit the Department of Mathematics and Statistics in SI 1022, or call (303) 615-0299. You should declare your major/concentration at least by the time you have finished the core requirements (listed below), and you absolutely must do this by the time you have completed 60 credit hours toward the degree.

Requirements for the Major [1]

Core Mathematics Courses	Semester Hours
MTH 1410 Calculus I	4
MTH 2410 Calculus II	4
MTH 2420 Calculus III	4
MTH 3100 Introduction to Mathematical Proofs	3

Required Mathematics Courses		
MTH 3140[3]	Linear Algebra	4
MTH 3210	Probability and Statistics	4
MTH 3420	Differential Equations	4
MTH 4480	Numerical Analysis I (Senior Experience)	4

One course selected from:		
MTH 2540	Scientific Computing with Python	4
MTH 2520	R Programming	4
CS 1050	Computer Science 1	4

Two courses selected from:		
MTH 3400	Chaos and Nonlinear Dynamics	4
MTH 3430	Mathematical Modeling	4
MTH 3450	Complex Variables	4
MTH 4410[2]	Real Analysis I	4
MTH 4440	Partial Differential Equations	4
MTH 4490	Numerical Analysis II	4

Total hours required **43**

At least 26 of the total 43 hours must be at the level of 3000 or above, and at least 7 of the total 43 hours must be at the level of 4000 or above.

[1] A grade of "C-" or better is required in each course included in the major.

[2] Students considering graduate school in mathematics are strongly encouraged to take MTH 4410.

[3] MTH 3130 and one of the following (MTH 3110 or MTH 3650 or MTH 4110 or MTH 4150 or MTH 4410 or MTH 4660) may substitute for MTH 3140.

General Advising Guidelines

The suggestions below will help you complete your course of study in a timely manner. You should make every effort to follow them:

- Note that many mathematics courses are not offered every semester. Also note that, in the semesters in which they are offered, a course may only be offered during the day or in the evening. Course rotations can be found at: https://www.msudenver.edu/math/
- Complete the core mathematics courses and courses needed to satisfy the General Studies requirements as quickly as possible.
- Declare the major/concentration by the time you complete the core courses.
- Plan your sequence of courses with prerequisites in mind. Note that MTH 3100 is a prerequisite for most upper-division courses.
- Take no more than two upper-division mathematics courses in the same semester. To do otherwise may jeopardize your grades and content understanding.

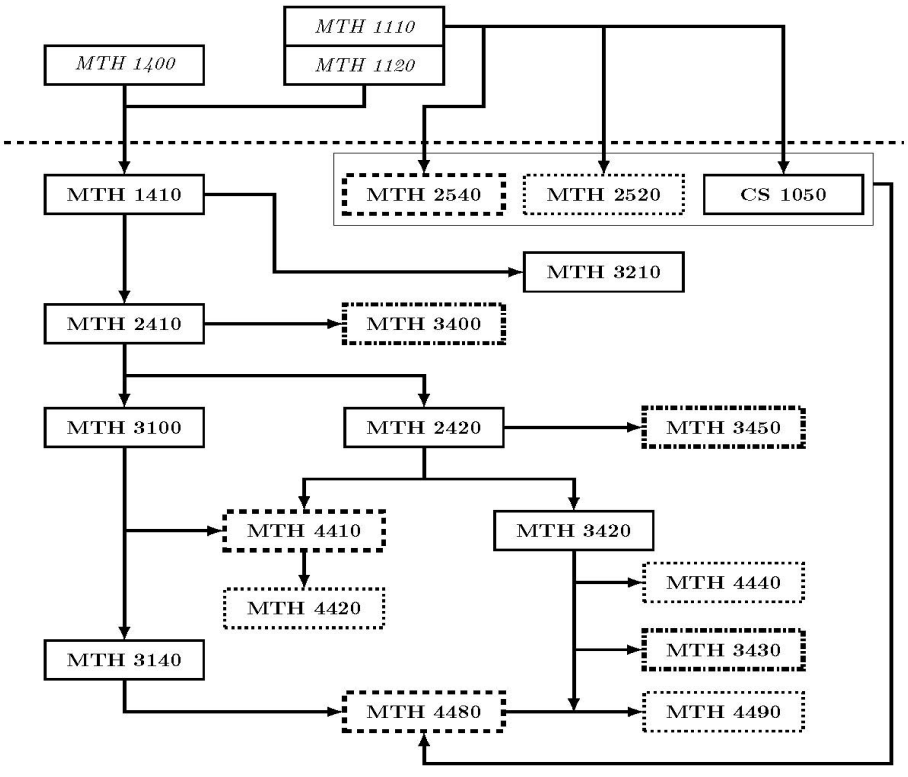
Requirements for Transfer Students

- In order for mathematics courses from another institution to satisfy a requirement for the major, the content must match, not just the name of the course.
- You must meet all the requirements for the program based on all courses taken both at other institutions and at MSU Denver.
- You must take at least eight hours of upper-division mathematics courses at MSU Denver.
- The last 12 hours of coursework toward the degree must be taken at MSU Denver unless you have taken at least 45 hours of coursework at MSU Denver.

Prerequisite Chart for Courses in the Applied Mathematics Concentration

- *Italicized courses* are prerequisites that do not count towards the major.
- The flowchart shows required courses and all possible electives.

- Lined boxes indicate courses offered Spring & Fall
- Dashed boxes indicate courses offered Fall Only
- Dotted boxes indicate courses offered Spring Only
- Dot dash boxes indicate courses offered every 2 years



If you would like additional information on this program or other programs offered by the Department of Mathematics and Statistics, please visit the Department's Web site at:
https://msudenver.edu/math

Or write or call:
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(303) 615-0299

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