Department of Mathematics and Statistics
Major in Mathematics with Concentration in Probability and Statistics
Effective Fall 2024

Purposes of the Major

The Department of Mathematics and Statistics offers a major in Mathematical Sciences with a concentration in **Probability and Statistics**. 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 actuarial science, design of experiments, biostatistics, demography, and other areas related to probability and statistics.

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 Bachelor of Science degree in mathematics with probability and statistics concentration.

You are strongly encouraged to talk to one or more of the **faculty advisors** in the area of probability and statistics (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, are available through the Department's Web site at:
https://msudenver.edu/math

Faculty Advisors in Probability and Statistics

Dr. Shahar Boneh	SI 3018	303-615-0740	bonehs@msudenver.edu
Dr. Ben Dyhr	SI 3030	303-615-0749	bdyhr@msudenver.edu
Dr. Nels Grevstad	SI 1053	303-615-0728	ngrevsta@msudenver.edu
Dr. Yanxi Li	SI 1050	303-615-0436	yli7@msudenver.edu
Dr. Elizabeth Ribble	SI 1022	303-615-0299	emcclel3@msudenver.edu

Declaring a Major

To declare a major in mathematics with concentration in probability and statistics, 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
All of the following courses:
MTH 3210	Probability and Statistics	4
MTH 3220	Statistical Methods	4
MTH 4210[2]	Probability Theory	4
MTH 4230	Regression and Computational Statistics	4

One of the following two courses:
MTH 3130	Applied Methods in Linear Algebra	4
MTH 3140	Linear Algebra	4

One of the following four courses:
MTH 2520	R Programming	4
MTH 2540	Scientific Computing with Python	4
MTH 3510	SAS Programming	4
CS 1050	Computer Science 1	4

One of the following five courses:
MTH 3230	Stochastic Processes	4
MTH 3270	Data Science	4
MTH 3430	Mathematical Modeling	4
MTH 4250	Statistical Theory	4
MTH 4410	Real Analysis I	4

Total hours required **43**

[1] All courses in the major must be completed with a grade of "C-" or better

[2] This is the Senior Experience course

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://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.
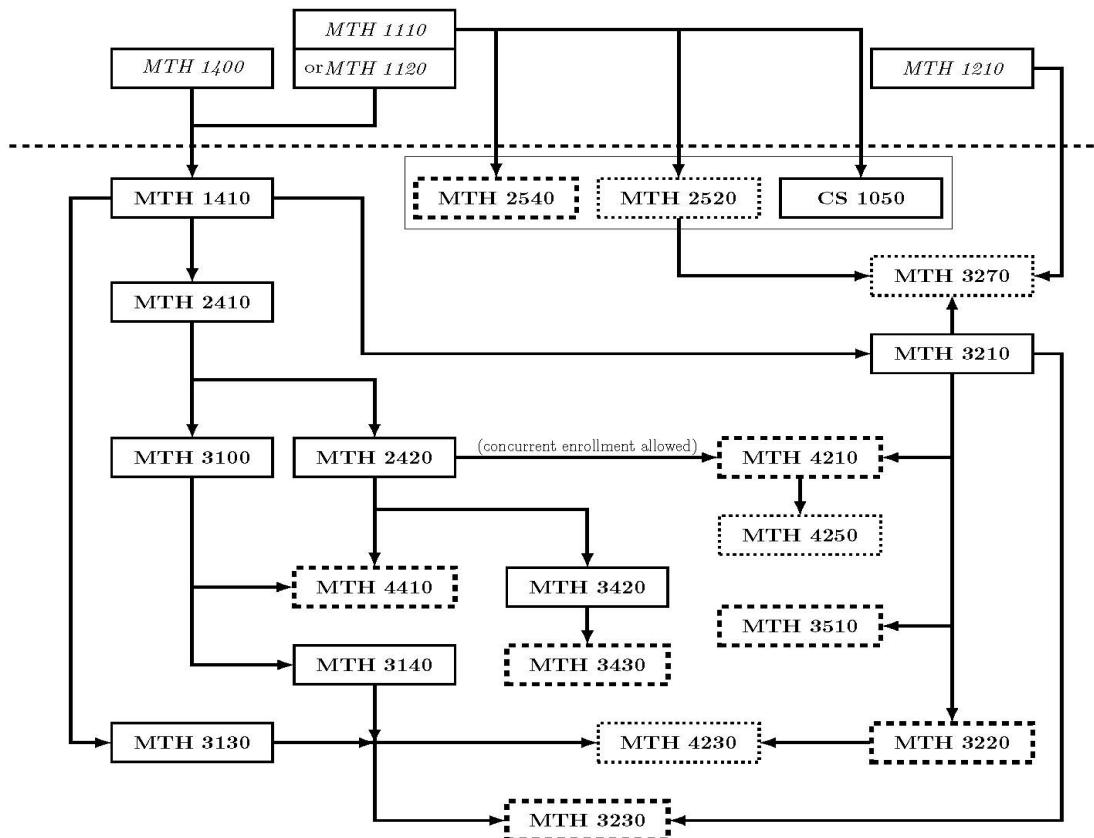
Requirements for Transfer Students

- 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 Probability and Statistics Concentration

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

- Lines boxes indicate courses offered Spring & Fall
- Dashed boxes indicate courses offered Fall Only
- Dotted boxes indicate courses offered Spring Only

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