

MATHEMATICS, 5 YEAR BS/ STATISTICS, MS

Introduction

Please click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/mathematical-statistical-sciences/>) to see Mathematical and Statistical Sciences department information.

This is a unique program where a student can obtain both a BS in Mathematics and MS in Statistics in five years through a specialized course sequence. The program requires 12 fewer credits than if both degrees were earned separately.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Delivery

- This is an on-campus program.

Declaring This Major

- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/registration/declare-change-major-minor/>) to go to information about declaring a major.

General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/general-graduation-requirements/>)
- CU Denver Core Curriculum (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/>)
- College of Liberal Arts & Sciences Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#graduationrequirementstext>)
- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>) for information about Academic Policies

Program Requirements for Mathematics BS

While students are completing a BS degree in Mathematics (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/mathematical-statistical-sciences/mathematics-bs/#degreerequirementstext>), they may also complete some of the requirements for an MS degree in Statistics (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/mathematical-statistical-sciences/statistics-ms/#degreerequirementstext>) by participating in the BS/MS program using the following guidelines:

sciences/statistics-ms/#degreerequirementstext) by participating in the BS/MS program using the following guidelines:

1. The student must apply and be accepted for participation in the BS/MS program prior to completion of the BS degree in consultation with both the undergraduate and graduate advisors. Students must complete a 4+1 intent form to formally declare this program, as they work very closely with undergraduate and graduate advisors to ensure they are on track and completing requirements as necessary.
2. Students should declare their intent to complete this program in their junior or senior year to the Director of the Program in Applied Mathematics after completing MATH 1401 Calculus I, MATH 2411 Calculus II, MATH 2421 Calculus III, MATH 3000 Introduction to Abstract Mathematics, MATH 3191 Applied Linear Algebra, MATH 4310 Introduction to Real Analysis I. A 3.0 grade point average (GPA) is required over all mathematics courses.
3. Students must complete a total of 45 credit hours, including a minimum of 42 MATH credit hours.
4. Students must complete at least 30 upper-division (3000-level and above) credit hours in the major.
5. Students must earn a minimum grade of C- (1.7) in all undergraduate courses taken at CU Denver and must achieve a minimum cumulative undergraduate GPA of 2.25. Students must earn a minimum grade of B- (2.7) in all graduate courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0, for all courses that will apply to the MS. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
6. Students must complete a minimum of 15 upper-division level MATH credit hours and all graduate level credit hours with CU Denver faculty.
7. Up to 12 semester hours of graduate-level course work may be taken as an undergraduate and applied toward the MS degree in Statistics (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/mathematical-statistical-sciences/statistics-ms/#degreerequirementstext>).
8. In the semester in which the student intends to complete their BS, students must apply for admission into MS degree in Statistics (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/mathematical-statistical-sciences/statistics-ms/#degreerequirementstext>).

Mathematics, BS Course Requirements Programming Courses

Code	Title	Hours
<i>Take one of the following programming requirements:</i>		3-4
CSCI 1410 & CSCI 1411	Fundamentals of Computing and Fundamentals of Computing Laboratory	4
Or		
MATH 1376	Programming for Data Science	3

Mathematics Courses

Code	Title	Hours
<i>Take all of the following Mathematics courses:</i>		24
MATH 1401	Calculus I	4
MATH 2411	Calculus II	4

MATH 2421	Calculus III	4
MATH 3000	Introduction to Abstract Mathematics	3
MATH 3191	Applied Linear Algebra	3
MATH 3382	Statistical Theory	3
MATH 4310	Introduction to Real Analysis I	3

mathematical-and-statistical-sciences/undergraduate-goals-and-objectives/).

To learn more about the graduate Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/ms-applied-mathematics-program-goals-objectives/>).

Electives

Code	Title	Hours
<i>Take two approved MATH electives (at least six semester hours) above the 3000 level, excluding 3195, 3511, 3800, 3999, and 4830.</i>		6
MATH 3200	Elementary Differential Equations	3
MATH 3301	Introduction to Optimization	3
MATH 3302	Simulation in Operations Research	3
MATH 3376	Data Wrangling & Visualization	3
MATH 3440	Introduction to Symbolic Logic	3
MATH 4010	History of Mathematics	3
MATH 4027	Topics in Mathematics	3
MATH 4110	Theory of Numbers	3
MATH 4140	Introduction to Modern Algebra	3
MATH 4320	Introduction to Real Analysis II	3
MATH 4337	Intro to Statistical and Machine Learning	3
MATH 4387	Applied Regression Analysis	3
MATH 4388	Machine Learning Methods	3
MATH 4390	Game Theory	3
MATH 4394	Experimental Designs	3
MATH 4408	Applied Graph Theory	3
MATH 4409	Applied Combinatorics	3
MATH 4450	Complex Variables	3
MATH 4650	Numerical Analysis I	3
MATH 4660	Numerical Analysis II	3
MATH 4733	Partial Differential Equations	3
MATH 4779	Math Clinic	3
MATH 4791	Continuous Modeling	3
MATH 4792	Probabilistic Modeling	3
MATH 4793	Discrete Math Modeling	3
MATH 4794	Optimization Modeling	3
MATH 4810	Introduction to Probability	3

MATH numbered 5000 or above

Note that these courses taken during the undergraduate career will be used for the B.S. and apply to the 30 hours of course work and satisfy the core requirement for the MS in Statistics.

Code	Title	Hours
<i>Take the following</i>		12
MATH 5310	Probability	3
MATH 5320	Statistical Inference	3
MATH 5387	Applied Regression Analysis	3
MATH 6330	Workshop in Statistical Consulting	3

To learn more about the undergraduate Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/>)