

PROGRAM OVERVIEW

Apart from the specialized mathematical skills that students acquire, the degree also reflects general skills that are valued by many employers. These skills include problem solving, critical thinking, analysis, facility with data, the ability to process quantitative information, and perhaps most important of all, the ability to learn new skills and concepts quickly.

The Probability and Statistics (STA) option provide training over three complementary and crucial facets of statistics: 1) the mathematical foundations of statistics, 2) classical and modern methods of statistical analysis, including data mining in the context of big data, and 3) consulting and analysis through the use of real data.

ACADEMIC ADVISING

The College of Liberal Arts and Sciences (CLAS) supports students to graduation using a shared advising system. CLAS students have two academic advisors with whom they should meet regularly to discuss academic and degree progress: a CLAS Academic Advisor and a major advisor.

For questions related to CU Denver Core Curriculum, CLAS, general graduation requirements, university/college academic policies, or campus resources contact:

CLAS Academic Advising

clas_advising@ucdenver.edu

Visit the CLAS Advising website [here](#)

North Classroom (NC) 1030

303-315-7100

For questions related to major requirements, major course prerequisites, or evaluation of transfer coursework in your major contact:

Mathematics Major Advising

[CLAS Major Advisor Contact Information](#)

Visit the department website [here](#)

Student Commons Building (SCB) 4000

303-315-1700

GENERAL GRADUATION REQUIREMENTS & POLICIES

All CU Denver CLAS students are required to complete the following minimum general graduation requirements to be eligible to apply for graduation:

1. Complete a minimum of 120 credit hours
2. Achieve a minimum 2.0 CU cumulative grade point average (GPA)
3. Complete a minimum of 45 upper-division (3000- to 4000-level) credit hours
4. Complete all CU Denver Core, CLAS, and major requirements
5. Complete a minimum of 30 CLAS credit hours with letter grades at CU Denver

*The following are **maximum** credit hours that can apply toward the minimum 120 hours required for graduation:*

- 16 credit hours Pass/Fail
- 12 credit hours of Independent Study/Directed Research
- 12 credit hours of internship credit
- 8 credit hours of physical education credit

PROGRAM REQUIREMENTS & POLICIES

Students are responsible for meeting with the major advisor to confirm major requirements. In addition to completing all CU Denver Core and CLAS requirements, students completing the Mathematics Data Science B.S. Degree are required to complete the following minimum program requirements:

1. Students must complete a total of 54 credit hours, including a minimum of 42 MATH credit hours and 9 credit hours in ancillary coursework.
2. Students must complete at least 30 upper-division (3000-level and above) credit hours in the major.
3. Students must earn a minimum grade of C- (1.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.25. All graded attempts in required and elective courses are calculated in the major GPA. Courses taken using P+/P/F or S/U grading cannot apply to major requirements.
4. Students must complete a minimum of 15 upper-division level MATH credit hours with CU Denver faculty.
5. Students may not use any of the following MATH courses to count toward major requirements: MATH 3041, 3195, MATH 3511, MATH 3800, and MATH 4830.

LYNXCONNECT RESOURCES

Are you interested in learning about internship, study abroad, career, and research opportunities for this major? Visit the CU Denver LynxConnect, located in Tivoli Student Union (TV) Suite 339, and browse the LynxConnect [website](#) for more information.

Degree Requirements	Credits	Notes
* Course prerequisites change regularly. Students are responsible for consulting advisors and the class schedule in the student portal for prerequisite information. *		
CU Denver Core Curriculum Requirements	34 - 40	CU Denver Core Curriculum Requirements
CLAS Graduation Requirements	15 - 29	CLAS Graduation Requirements
MATH Major Requirements	54	30 MATH credit hours must be upper-division
MATH Required Courses		
MATH 1376 Programming for Data Science or CSCI 1410 & 1411 Fundamentals of Computing with Lab*	3-4	*Prerequisite: C- or higher in MATH 1109 or MATH 1110 or MATH 1120 or MATH 1130 or MATH 1401 or MATH 2830 OR entry into the MA30 or MA01 Student Group OR ALEKS PPL score 61-100 (for MATH 1376) *Corequisite: CSCI 1410/1411
MATH 1401 Calculus I	4	*Prerequisite: C- or higher in MATH 1109, 1070, or 1110 and MATH 1120; or C- or higher in MATH 1130; or C- or higher in MATH 1401; or entry into the MA01 Student Group OR ALEKS PPL score 76-100. Course can fulfill CU Denver Core Mathematics
MATH 2411 Calculus II	4	*Prerequisite: C- or better in MATH 1401 Course can fulfill CU Denver Core Mathematics
MATH 2421 Calculus III	4	*Prerequisite: C- or better in MATH 2411 Course can fulfill CU Denver Core Mathematics
MATH 3000 Introduction to Abstract Mathematics	3	*Corequisite: MATH 2421 or MATH 3191
MATH 3191 Applied Linear Algebra	3	*Prerequisite: C- or better in MATH 1401
MATH 3376 Data Wrangling & Visualization	3	*Prerequisite: C- higher in MATH 1376 or MATH 4387 or CSCI1410/1411 and C- or higher in MATH 2830 or MATH 3382
MATH 3382 Statistical Theory	3	*Prerequisite: C- or better in MATH 2421
MATH 4310 Introduction to Real Analysis I	3	*Prerequisite: C- or better in MATH 2421 and MATH 3000
MATH 4387 Applied Regression Analysis	3	*Prerequisite: C- or better MATH 3191 and MATH 3382, 3800, or 4820
MATH 4779 Math Clinic	3	
Complete one of the following Machine Learning courses:		
MATH 4337 Intro to Statistical and Machine Learning	3	*Prerequisite: C- or better in MATH 4387 or MATH 5387 or MATH 4830 or MATH 5830 or BIOL 3763.
MATH 4388 Machine Learning Methods		*Prerequisite: C- or better in MATH 1376 or MATH 3250 and MATH 3382 or MATH 3800 and MATH 3191 or MATH 3195, all with a C- or higher.
MATH Major Electives		
Choose two approved upper-division (3000- to 4000-level) MATH electives excluding MATH 3041, 3195, 3511, 3800, 4015 and 4830	6	*See Department for Approved List; Check individual courses for prerequisites.
Required Application Area Electives		
Complete 9 additional credit hours (typically 3 courses), countable towards a major in one of the following subjects, at any level: Business, Biology, Chemistry, Computer Science, Economics, Geography and Environmental Science, Health and Behavioral Science, Physics, or Sociology. All courses must be in the same subject.	9	*Check individual courses for prerequisites Consult with major advisor; other areas are allowed on case-by-case basis.
Estimated General Electives	0 - 17	General Elective credits will vary based on Core & CLAS Requirements. Consult with CLAS Advisor.
Total Minimum Credit Hours:	120	45 credit hours must be upper-division

SAMPLE ACADEMIC PLAN OF STUDY

The following academic plan is a *sample* pathway to completing degree requirements for this major. Students should tailor this plan based on previously completed college coursework (e.g., AP, IB, CLEP, dual/concurrent enrollment, and transfer credit), course availability, and individual preferences related to course load, schedules, or add-on programs such as minors or double-majors.

Year One	Fall	CRS
	ENGL 1020 – Core Composition I	3
	MATH 1401 ^{PE C}	4
	CU Denver Core Social Science	3
	CU Denver Core Humanities / First-Year Seminar	3
	Total Credit Hours	13

Spring	CRS
ENGL 2030 – Core Composition II	3
MATH 2411 ^{PE C}	4
CU Denver Core Behavioral Science	3
MATH 1376 ^{PE} or CSCI 1410 & CSCI 1411	3-4
Total Credit Hours	13-14

Year Two	Fall	CRS
	MATH 2421 ^{PE C}	4
	MATH 3000 ^{PE}	3
	CU Denver Core Nat/Phys Science with Lab	4
	CU Denver Core Arts	3
	Total Credit Hours	14

Spring	CRS
MATH 3191 ^{PE}	3
MATH 3382 ^{PE}	3
CU Denver Core Cultural Diversity	3
CLAS Communicative Skills	3
CLAS Nat/Phys Science with Lab	4
Total Credit Hours	16

Year Three	Fall	CRS
	MATH 3376 ^{PE}	3
	Application Area Elective	3
	CLAS Second Language Semester I	5
	CU Denver Core International Perspectives	3
	Upper-Division General Elective	3
Total Credit Hours	17	

Spring	CRS
Upper-Division MATH Elective	3
Upper-Division MATH Elective	3
CLAS Second Language Semester II	5
CLAS Humanities	3
Application Area Elective	3
Total Credit Hours	17

Year Four	Fall	CRS
	MATH 4310 ^{PE}	3
	MATH 4387 ^{PE}	3
	Application Area Elective	3
	CLAS Behavioral Science	3
	Upper-Division General Elective	3
Total Credit Hours	15	

Spring	CRS
MATH 4779	3
MATH 4337 or MATH 4388	3
CLAS Social Science	3
Upper-Division General Elective	3
Upper-Division General Elective	3
Total Credit Hours	15

^M Major Course Available ^C CU Denver Core Course ^{PE} Prerequisite Enforced ^{PR} Prerequisite Recommended