

## 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](mailto: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. 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, MATH 3195, MATH 3511, MATH 3800, MATH 4015, 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
<b>* Course prerequisites change regularly. Students are responsible for consulting advisors and the class schedule in the student portal for prerequisite information. *</b>		
CU Denver Core Curriculum Requirements	34 - 40	<a href="#">CU Denver Core Curriculum Requirements</a>
CLAS Graduation Requirements	15 - 29	<a href="#">CLAS Graduation Requirements</a>
<b>MATH Major Requirements</b>	<b>54</b>	30 MATH credit hours must be upper-division
<b>MATH Required Courses</b>		
MATH 1376 Programming for Data Science <b>or</b> 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 higher in MATH 1401 Course can fulfill CU Denver Core Mathematics
MATH 2421 Calculus III	4	*Prerequisite: C- or higher 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 higher in MATH 1401
MATH 3310 Introduction to Real Analysis I	3	*Prerequisite: C- or higher in MATH 2411 or A- or higher 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 higher in MATH 2421
MATH 4387 Applied Regression Analysis	3	*Prerequisite: C- or higher MATH 3191 and MATH 3382, 3800, or 4820
MATH 4779 Math Clinic	3	*Prerequisite: C- or higher in MATH 3191 and MATH 1376 or CSCI 1410/1411 and 6 additional credit hours in upper-division MATH courses
<b>Complete one of the following Machine Learning courses:</b>		
MATH 4337 Intro to Statistical and Machine Learning	3	*Prerequisite: C- or higher in MATH 4387 or MATH 5387 or MATH 4830 or MATH 5830 or BIOL 3763.
MATH 4388 Machine Learning Methods		*Prerequisite: C- or higher in MATH 1376 or MATH 3250 and MATH 3382 or MATH 3800 and MATH 3191 or MATH 3195
<b>MATH Major Electives</b>		
Choose <b>two</b> approved upper-division (3000- to 4000-level) MATH electives <b>excluding</b> MATH 3041, 3195, 3511, 3800, 4015 and 4830	6	*See Department for Approved List; Check individual courses for prerequisites.
<b>Required Application Area Electives</b>		
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.
<b>Estimated General Electives</b>	<b>0 - 17</b>	General Elective credits will vary based on Core & CLAS Requirements. Consult with CLAS Advisor.
<b>Total Minimum Credit Hours:</b>	<b>120</b>	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	<b>Fall</b>	CRS	Year One	<b>Spring</b>	CRS
	ENGL 1020 – Core Composition I	3		ENGL 2030 – Core Composition II	3
	MATH 1401 <sup>PE C</sup>	4		MATH 2411 <sup>PE C</sup>	4
	CU Denver Core Social Science	3		CU Denver Core Behavioral Science	3
	CU Denver Core Humanities / First-Year Seminar	3		MATH 1376 <sup>PE</sup> or CSCI 1410 & CSCI 1411	3-4
	<b>Total Credit Hours</b>	<b>13</b>		<b>Total Credit Hours</b>	<b>13-14</b>
Year Two	<b>Fall</b>	CRS	Year Two	<b>Spring</b>	CRS
	MATH 2421 <sup>PE C</sup>	4		MATH 3191 <sup>PE</sup>	3
	MATH 3000 <sup>PE</sup>	3		MATH 3382 <sup>PE</sup>	3
	CU Denver Core Nat/Phys Science with Lab	4		CU Denver Core Cultural Diversity	3
	CU Denver Core Arts	3		CLAS Communicative Skills	3
	<b>Total Credit Hours</b>	<b>14</b>		<b>Total Credit Hours</b>	<b>16</b>
Year Three	<b>Fall</b>	CRS	Year Three	<b>Spring</b>	CRS
	MATH 3376 <sup>PE</sup>	3		Upper-Division MATH Elective	3
	Application Area Elective	3		Upper-Division MATH Elective	3
	CLAS Second Language Semester I	5		CLAS Second Language Semester II	5
	CU Denver Core International Perspectives	3		CLAS Humanities	3
	<b>Total Credit Hours</b>	<b>17</b>		<b>Total Credit Hours</b>	<b>17</b>
Year Four	<b>Fall</b>	CRS	Year Four	<b>Spring</b>	CRS
	MATH 3310 <sup>PE</sup>	3		MATH 4779	3
	MATH 4387 <sup>PE</sup>	3		MATH 4337 or MATH 4388	3
	Application Area Elective	3		CLAS Social Science	3
	CLAS Behavioral Science	3		Upper-Division General Elective	3
	<b>Total Credit Hours</b>	<b>15</b>		<b>Total Credit Hours</b>	<b>15</b>

<sup>M</sup> Major Course Available    <sup>C</sup> CU Denver Core Course    <sup>PE</sup> Prerequisite Enforced    <sup>PR</sup> Prerequisite Recommended