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 Probability and Statistics 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, MATH 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.
<table>
<thead>
<tr>
<th>Degree Requirements</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU Denver Core Curriculum Requirements</td>
<td>34 - 40</td>
<td><strong>CU Denver Core Curriculum Requirements</strong></td>
</tr>
<tr>
<td>CLAS Graduation Requirements</td>
<td>15 - 29</td>
<td><strong>CLAS Graduation Requirements</strong></td>
</tr>
<tr>
<td>MATH Major Requirements</td>
<td>54</td>
<td>30 MATH credit hours must be upper-division</td>
</tr>
</tbody>
</table>

### 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, 1107, 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 3382 Statistical Theory**
  - 3
  - Prerequisite: C- or better in MATH 2421

- **MATH 3810 Introduction to Probability**
  - 3
  - Corequisite: 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 in MATH 3191 and MATH 3382, 3800, or 4820

- **MATH 4779 Math Clinic** or **MATH 6330 Workshop in Statistical Consulting**
  - 3
  - Check individual courses for prerequisites

Choose ONE of the following Probability or Statistics courses:

- **MATH 4337 Intro to Statistical and Machine Learning** or **MATH 4388 Machine Learning Methods** or **MATH 4390 Game Theory** or **MATH 4394 Experimental Designs** or **MATH 4792 Probabilistic Modeling** or **ECON 4030 Data Analysis with SAS**
  - 3
  - Check individual courses for prerequisites.

### 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 - 16
- 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.

<table>
<thead>
<tr>
<th>Year One</th>
<th>CRS</th>
<th>Year Two</th>
<th>CRS</th>
<th>Year Three</th>
<th>CRS</th>
<th>Year Four</th>
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<tbody>
<tr>
<td><strong>Fall</strong></td>
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<td><strong>Fall</strong></td>
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<td><strong>Spring</strong></td>
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<tr>
<td>ENGL 1020 – Core Composition I</td>
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<td>ENGL 2030 – Core Composition II</td>
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<td>MATH 2421</td>
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<td>MATH 3000</td>
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<td>MATH 1401</td>
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<td>MATH 2411</td>
<td>4</td>
<td>MATH 3810</td>
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<td>MATH 3191</td>
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<td>CU Denver Core Social Science</td>
<td>3</td>
<td>CU Denver Core Behavioral Science</td>
<td>3</td>
<td>CU Denver Core Nat/Phys Science with Lab</td>
<td>4</td>
<td>CLAS Communicative Skills</td>
<td>3</td>
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<tr>
<td>CU Denver Core Humanities / First-Year Seminar</td>
<td>3</td>
<td>CU Denver Core Cultural Diversity</td>
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<td>CU Denver Core Arts</td>
<td>3</td>
<td>CLAS Nat/Phys Science with Lab</td>
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<td>MATH 3382</td>
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<td>Upper-Division MATH Elective</td>
<td>3</td>
<td>MATH 4310</td>
<td>3</td>
<td>MATH 4779 or MATH 6330</td>
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<td>Application Area Elective</td>
<td>3</td>
<td>Upper-Division MATH Elective</td>
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<td>MATH 4387</td>
<td>3</td>
<td>Upper-Division Probability/Statistics Course</td>
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<td>CLAS Second Language Semester I</td>
<td>5</td>
<td>CLAS Second Language Semester II</td>
<td>5</td>
<td>CLAS Behavioral Science</td>
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<td>CLAS Social Science</td>
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<td>CU Denver Core International Perspectives</td>
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<td>CLAS Humanities</td>
<td>3</td>
<td>Upper-Division General Elective</td>
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*Major Course Available  CU Denver Core Course  Prerequisite Enforced  Prerequisite Recommended*