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. 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.
<table>
<thead>
<tr>
<th>Degree Requirements</th>
<th>Credits</th>
<th>Notes</th>
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<tbody>
<tr>
<td>CU Denver Core Curriculum Requirements</td>
<td>34 - 40</td>
<td>CU Denver Core Curriculum Requirements</td>
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<tr>
<td>CLAS Graduation Requirements</td>
<td>15 - 29</td>
<td>CLAS Graduation Requirements</td>
</tr>
<tr>
<td>MATH Major Requirements</td>
<td>54</td>
<td>30 MATH credit hours must be upper-division</td>
</tr>
<tr>
<td><strong>MATH Required Courses</strong></td>
<td></td>
<td></td>
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<tr>
<td>MATH 1376 Programming for Data Science or</td>
<td>3-4</td>
<td>*Prerequisite: C- or higher in MATH 1109 or MATH 1110 or MATH 1200 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</td>
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<tr>
<td>CSCI 1410 &amp; 1411 Fundamentals of Computing with Lab*</td>
<td></td>
<td></td>
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<tr>
<td>MATH 1401 Calculus I</td>
<td>4</td>
<td>*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</td>
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<tr>
<td>MATH 2411 Calculus II</td>
<td>4</td>
<td>*Prerequisite: C- or higher in MATH 1401 Course can fulfill CU Denver Core Mathematics</td>
</tr>
<tr>
<td>MATH 2421 Calculus III</td>
<td>4</td>
<td>*Prerequisite: C- or higher in MATH 2411 Course can fulfill CU Denver Core Mathematics</td>
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<tr>
<td>MATH 3000 Introduction to Abstract Mathematics</td>
<td>3</td>
<td>*Corequisite: MATH 2421 or MATH 3191</td>
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<tr>
<td>MATH 3191 Applied Linear Algebra</td>
<td>3</td>
<td>*Prerequisite: C- or higher in MATH 1401</td>
</tr>
<tr>
<td>MATH 3310 Introduction to Real Analysis I</td>
<td>3</td>
<td>*Prerequisite: C- or higher in MATH 2411 or A- or higher in MATH 1401</td>
</tr>
<tr>
<td>MATH 3376 Data Wrangling &amp; Visualization</td>
<td>3</td>
<td>*Prerequisite: C- or higher in MATH 1376 or MATH 4376 or CSCI1410/1411 and C- or higher in MATH 2830 or MATH 3382</td>
</tr>
<tr>
<td>MATH 3382 Statistical Theory</td>
<td>3</td>
<td>*Prerequisite: C- or higher in MATH 2421</td>
</tr>
<tr>
<td>MATH 4387 Applied Regression Analysis</td>
<td>3</td>
<td>*Prerequisite: C- or higher MATH 3191 and MATH 3382, 3800, or 4820</td>
</tr>
<tr>
<td>MATH 4779 Math Clinic</td>
<td>3</td>
<td>*Prerequisite: C- or higher in MATH 3191 and MATH 1376 or CSCI 1410/1411 and 6 additional credit hours in upper-division MATH courses</td>
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<tr>
<td><strong>Complete one of the following Machine Learning courses:</strong></td>
<td></td>
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<tr>
<td>MATH 4337 Intro to Statistical and Machine Learning</td>
<td>3</td>
<td>*Prerequisite: C- or higher in MATH 4376 or MATH 5387 or MATH 4830 or MATH 5830 or BIOL 376.</td>
</tr>
<tr>
<td>MATH 4388 Machine Learning Methods</td>
<td></td>
<td>*Prerequisite: C- or higher in MATH 1376 and MATH 3250 and MATH 3382 or MATH 3800 and MATH 3191 or MATH 3195</td>
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<tr>
<td><strong>MATH Major Electives</strong></td>
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<tr>
<td>Choose two approved upper-division (3000- to 4000-level) MATH electives excluding MATH 3041, 3195, 3511, 3800, 4015 and 4830</td>
<td>6</td>
<td>*See Department for Approved List; Check individual courses for prerequisites.</td>
</tr>
<tr>
<td><strong>Required Application Area Electives</strong></td>
<td></td>
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<tr>
<td>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.</td>
<td>9</td>
<td>*Check individual courses for prerequisites Consult with major advisor; other areas are allowed on case-by-case basis.</td>
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<tr>
<td><strong>Estimated General Electives</strong></td>
<td>0 - 17</td>
<td>General Elective credits will vary based on Core &amp; CLAS Requirements. Consult with CLAS Advisor.</td>
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<tr>
<td><strong>Total Minimum Credit Hours:</strong></td>
<td>120</td>
<td>45 credit hours must be upper-division</td>
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</table>
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 | ENGL 1020 – Core Composition I | 3  |
|          |      | MATH 1401                      | 4  |
|          |      | CU Denver Core Social Science  | 3  |
|          |      | CU Denver Core Humanities / First-Year Seminar | 3 |
|          | Total Credit Hours | 13 |

| Spring | ENGL 2030 – Core Composition II | 3  |
|        | MATH 2411                      | 4  |
|        | CU Denver Core Behavioral Science | 3 |
|        | MATH 1376 or CSCI 1410 & CSCI 1411 | 3-4 |
|        | Total Credit Hours | 13-14 |

| Year Two | Fall | MATH 2421                      | 4  |
|          |      | MATH 3000                      | 3  |
|          |      | CU Denver Core Nat/Phys Science with Lab | 4 |
|          |      | CU Denver Core Arts            | 3  |
|          | Total Credit Hours | 14 |

| Spring | MATH 3191                      | 3  |
|        | MATH 3382                      | 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 | MATH 3376                      | 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 | 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 | MATH 3310                      | 3  |
|           |      | MATH 4387                      | 3  |
|           |      | Application Area Elective      | 3  |
|           |      | CLAS Behavioral Science        | 3  |
|           |      | Upper-Division General Elective | 3  |
|           | Total Credit Hours | 15 |

| Spring | 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 |

* Major Course Available  
* CU Denver Core Course  
* Prerequisite Enforced  
* Prerequisite Recommended