

## PROGRAM OVERVIEW

The explosive growth in data collection over the past 10 years is unlikely to slow any time soon. This has created a dramatic increase in demand for individuals who can understand how to make decisions and predictions in the context of uncertainty through use of experimental design, statistical methods, and programming, especially in the context of large data sets. This need spans many fields such as environmental applications of climate modeling over space and time, medical and genomic applications that use electronic medical records to correlate demographics, genetic data, and clinical outcomes over millions of individuals, national security applications (including real-time monitoring of internet trends), and manufacturing with real-time monitoring of features over a variety of processes to both troubleshoot and optimize manufacturing. Graduates of the BS in Data Science will be well-positioned to meet this need.

## 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:*

### Data Science Major Advising

[CLAS Major Advisor Contact Information](#)

Visit the program website [here](#)

Student Commons Building (SCB) 4213

303-315-1700

## GENERAL GRADUATION REQUIREMENTS & POLICIES

*All CU Denver 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 30 credit hours at CU Denver
4. Complete all CU Denver Core and major requirements

*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 requirements, students completing the Data Science B.S. Degree are required to complete the following minimum program requirements:

1. Students must complete a total of 66-68 major credit hours, from approved courses.
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 courses that apply to the major 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 (3000- to 4000-level) credit hours with CU Denver faculty.
5. Students must pick from one of the following concentration options: General, Business, Chemistry, Computer Science, Economics, Electrical Engineering and Sensors, Geography, or Mathematics. Please consult the Data Science Advisor for the academic requirements for each concentration.

## 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>		
<b>CU Denver Core Curriculum Requirements</b>	<b>34 - 40</b>	<a href="#">CU Denver Core Curriculum Requirements</a>
<b>Data Science Major Requirements: General Data Science Option*</b>	<b>66-68</b>	30 credit hours must be upper-division <i>*Note: Data Science Major Requirements will differ based on the concentration option students choose. Please consult the Data Science Advisor.</i>
<b>Complete the following BUSN courses:</b>		
BMIN 1000 Introduction to Business	3	
BMIN 2200 Career and Professional Development <b>or</b> BUSN 2110 Cultivating Emotional Intelligence and BUSN 3110 Career and Professional Development	2-3	<i>*Prerequisite: 45 or more credits (for BUSN 3110)</i>
ISMG 2050 Business Problem Solving Tools	3	
ISMG 3110 Data Governance, Ethics, and AI Accountability	3	
ISMG 3500 Business Data and Database Management	3	<i>*Prerequisite: C- or higher in ISMG 2050 and 45 or more credits</i>
BANA 4110, BANA 4120, BANA 6610, BANA 6620, BANA 6670, BANA 6710, <b>or</b> BANA 6770	3	<i>*Check prerequisites for individual courses</i>
<b>Complete the following CSCI courses:</b>		
CSCI 1410 Fundamentals of Computing <b>and</b> CSCI 1411 Fundamentals of Computing Lab	4	
CSCI 2980 Foundations of Data Science <b>or</b> MATH 2830 Introductory Statistics	3	
<b>Complete the following MATH courses:</b>		<i>*Check prerequisites for individual courses</i>
MATH 1401 Calculus I	4	<i>*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</i>
MATH 2411 Calculus II	4	<i>*Prerequisite: C- or higher in MATH 1401 Course can fulfill CU Denver Core Mathematics</i>
MATH 2421 Calculus III	4	<i>*Prerequisite: C- or higher in MATH 2411 Course can fulfill CU Denver Core Mathematics</i>
MATH 3191 Applied Linear Algebra <b>or</b> MATH 3195 Linear Algebra and Differential Equations	3-4	<i>*Prerequisite: C- or higher in MATH 1401 (for MATH 3191) *Prerequisite: C- or higher in MATH 2411 (for MATH 3195)</i>
MATH 3376 Data Wrangling & Visualization	3	<i>*Prerequisite: C- higher in MATH 1376 or MATH 4387 or CSCI1410/1411 and C- or higher in MATH 2830 or MATH 3382</i>
MATH 3382 Statistical Theory	3	<i>*Prerequisite: C- or higher in MATH 2411</i>
MATH 3810 Introduction to Probability	3	<i>*Corequisite: MATH 2421</i>
MATH 4388 Machine Learning Methods	3	<i>*Prerequisite: C- or higher in MATH 1376 or 3250; and MATH 3382 or 3800; and MATH 3191 or 3195</i>
MATH 4387 Applied Regression Analysis	3	<i>*Prerequisite: C- or higher in MATH 3191 and MATH 3382, 3800, or 4820</i>
MATH 4779, MATH 3939, MATH 4840, ISMG 3939, or ISMG 4840	3	<i>*Check prerequisites for individual courses Any course other than MATH 4779 requires the approval of the Director of Data Science and must be taken for 3 credit hours</i>
<b>Complete nine credits of approved Data Science electives</b>	<b>9</b>	<i>*See major advisor for approved courses</i>
<b>Estimated General Electives</b>	<b>11 - 20</b>	<i>General Elective credit hours will vary. Students are highly encouraged to explore and complete additional programs including certificates, minors, double-majors, and dual-degrees. Consult with CLAS Academic Advisor and Data Science Advisor.</i>
<b>Total Minimum Credit Hours:</b>	<b>120</b>	

## 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 certificates, minors, double-majors, or dual-degrees. Students should also work with their CLAS and major advisors to modify this sample academic plan based on their math readiness, placement, and selected concentration option for the Data Science major. Additional sample plans based on varying math placements are available [here](#).

Year 1 - Fall	CRS
BMIN 1000 Introduction to Business	3
ENGL 1020 Core Composition I <sup>C</sup>	3
CSCI 1410 & 14011 Fundamentals of Computing & Lab	4
MATH 1401 Calculus I <sup>PE C</sup>	4
UNIV 1110 College Success	1
<b>Total Credit Hours</b>	<b>15</b>

Year 1 - Spring	CRS
ENGL 2030 – Core Composition II <sup>C</sup>	3
ISMG 2050 Business Problem Solving Tools	3
MATH 2830 <sup>C</sup> or CSCI 2980	3
MATH 2411 Calculus II <sup>PE C</sup>	4
CU Denver Core Arts	3
<b>Total Credit Hours</b>	<b>16</b>

Year 2 - Fall	CRS
ISMG 3500 Business Data and Database Management	3
MATH 2421 Calculus III <sup>PE C</sup>	4
MATH 3191 Applied Linear Algebra <sup>PE</sup>	3
MATH 3810 Introduction to Probability <sup>PE</sup>	3
CU Denver Core Cultural Diversity	3
<b>Total Credit Hours</b>	<b>16</b>

Year 2 - Spring	CRS
ISMG 3110 Data Governance, Ethics, and AI Accountability	3
MATH 3382 Statistical Theory <sup>PE</sup>	3
MATH 3376 Data Wrangling & Visualization <sup>PE</sup>	3
CU Denver Core Humanities	3
CU Denver Core Behavioral Sciences	3-4
<b>Total Credit Hours</b>	<b>15-16</b>

Year 3 - Fall	CRS
BUSN 2110 and BUSN 3110	2
MATH 4387 Applied Regression Analysis <sup>PE</sup>	3
CU Denver Core Social Sciences	3-4
General Elective	3
General Elective	3
<b>Total Credit Hours</b>	<b>14-15</b>

Year 3 - Spring	CRS
MATH 4388 Machine Learning Methods <sup>PE</sup>	3
BANA 4120 Forecasting Techniques <sup>PE</sup> / BANA Approved Course	3
CU Denver Core Natural and Physical Sciences with lab	4-5
General Elective	3
General Elective	3
<b>Total Credit Hours</b>	<b>16-17</b>

Year 4 - Fall	CRS
MATH 4779 Math Clinic <sup>PE</sup>	3
Approved Data Science Elective	3
Approved Data Science Elective	3
General Elective	3
General Elective	3
<b>Total Credit Hours</b>	<b>15</b>

Year 4 - Spring	CRS
Approved Data Science Elective	3
CU Denver Core International Perspectives	3
General Elective	3
General Elective	3
General Elective	3
<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