

KU BS Data Science: Mathematics Requirements

The major in Data Science focuses on the core concepts in computer science and mathematics, allowing students to build a foundation. Students will gain an understanding of basic programming, database, data analytics, and mathematics concepts to create a foundation in data science. They will also learn how to apply these concepts to a concentration area for a more general focus on data science. The concentration areas are bioinformatics, geospatial information, and mathematics.

Note that all students must achieve 120 undergraduate credits and a minimum 2.0 overall GPA to graduate. The final major GPA requirement for Data Science with a concentration in Mathematics is 2.25.

Required Computer Science Core Courses – 27 credits

CPSC 105 Introduction to Data Visualization (3 credits)
CPSC 123 Introduction to Scientific Programming *or* CPSC 135 Computer Science I (3 credits)
CPSC 125 Discrete Math for Computer Science I (3 credits)
CPSC 150 Ethical, Legal, and Professional Impacts of the Digital Age (3 credits)
CPSC 223 Advanced Scientific Programming (3 credits)
CPSC 256 SQL Programming (3 credits)
CPSC 356 Introduction to Database Management Systems (3 credits)
CPSC 458 Data Mining and Predictive Analytics I (3 credits)
CPSC 459 Introduction to Data Mining (3 credits)

Required Mathematics Courses – 6 credits

MATH 250 Applied Regression Analysis (3 credits)
MATH 304 Statistical Programming *or* MATH 325 Applied Time Series Analysis (3 credits)

Computer Science Electives – 6 credits

6 additional credits of CPSC courses numbered 125 or higher, not previously used for above requirements, excluding CPSC 280 and CPSC 380.

Mathematics Concentration – 19 credits

MATH 224 Foundations of Higher Mathematics *or* CPSC 225 Discrete Math for Computing II (3 credits)
MATH 260 Linear Algebra (3 credits)
MATH 283 Calculus III (4 credits)
MATH 301 Probability and Statistics I (3 credits)
MATH 302 Probability and Statistics II (3 credits)
MATH 380 Senior Seminar in Math *or* MATH 390 Directed Reading/ Research in Math *or* MATH 490 Advanced Directed Reading/ Research in Math *or* MATH 395 Honors Independent Study/Thesis *or* MATH 398 Honors Research *or* CPSC 385 Computer Science Seminar *or* CPSC 372 Independent Study / Project in Computer Science (3 credits)

Directed General Education Courses – 4 credits

The following courses are required to fulfill the major requirements and is suggested to satisfy general education.

MATH 181 Calculus I – Category C2 (4 credits)
MATH 182 Calculus II – Category C3 (4 credits)

Program Plan Code: BS_DASC_MATH
Effective Semester: Fall 2024

KU BS Data Science: Mathematics Check Sheet

Student Name:

Student ID Number:

This check sheet provides a mechanism for students and advisors to keep track of a student's progress in the program. Please refer to the program requirements for more details regarding options.

Note that all students must achieve 120 undergraduate credits and a minimum 2.0 overall GPA to graduate. The final major GPA requirement for Data Science with a concentration in Mathematics is 2.25.

Required Computer Science Core Courses - 27 credits

CPSC 105 Introduction to Data Visualization	3 credits	Grade:
CPSC 123 Introduction to Scientific Programming I or CPSC 135 Computer Science I	3 credits	Grade:
CPSC 125 Discrete Math for Computer Science I	3 credits	Grade:
CPSC 150 Ethical, Legal, and Professional Impacts of the Digital Age	3 credits	Grade:
CPSC 223 Advanced Scientific Programming	3 credits	Grade:
CPSC 256 SQL Programming	3 credits	Grade:
CPSC 356 Introduction to Database Management Systems	3 credits	Grade:
CPSC 458 Data Mining and Predictive Analytics I	3 credits	Grade:
CPSC 459 Introduction to Big Data	3 credits	Grade:
Total Credits	27 total credits	

Required Mathematics Courses - 6 credits

MATH 250 Applied Regression Analysis	3 credits	Grade:
MATH 304 Statistical Programming or MATH 325 Applied Time Series Analysis	3 credits	Grade:
Total Credits	6 total credits	

Computer Science Electives - 6 credits

Course 1:	3 credits	Grade:
Course 2:	3 credits	Grade:
Total Credits	6 total credits	

Mathematics Concentration Courses – 19 credits

MATH 224 Foundations of Higher Mathematics or CPSC 225 Discrete Math for Computing II	3 credits	Grade:
MATH 260 Linear Algebra I	3 credits	Grade:
MATH 283 Calculus III	4 credits	Grade:
MATH 301 Probability and Statistics I	3 credits	Grade:
MATH 302 Probability and Statistics II	3 credits	Grade:
MATH 380 Senior Seminar in Math or MATH 390 Directed Reading/ Research in Math or MATH 490 Advanced Directed Reading/ Research in Math or MATH 395 Honors Independent Study/Thesis or MATH 398 Honors Research or CPSC 385 Computer Science Seminar or CPSC 372 Independent Study/ Project in Computer Science	3 credits	Grade:
Total Credits	19 total credits	

Directed General Education Courses – 8 credits

MATH 181 Calculus I (Category C2)	4 credits	Grade:
MATH 182: Calculus II (Category C3)	4 credits	Grade:
Total Credits	8 total credits	

Summary of Graduation Requirements

Total credits from major courses	58-60
Total credits from general education program	42-45
Total credits from university electives	15-20
Minimum total credits to graduate	120
Minimum overall GPA	2.0
Minimum GPA in major program	2.25
Comprehensive Exam (capstone class)	PASS

Program Plan Code: BS_DASC_MATH

Effective Semester: Fall 2024

KU BS Data Science: Mathematics 8-Semester Planner

Student Name:

Student ID Number:

Each semester listed below provides information including course categories, typical credit hours (CH.), and space to add specific course selections. This planner is a suggested path. Consult with your advisor regarding your unique plans and interests as you make choices about your schedule.

First Semester Plan

Gen Ed	Category A1	3 CH.	Selection:
Gen Ed	MATH 181 (C2)	4 CH.	Selection:
Gen Ed	FYSM 100	3 CH.	Selection:
Major	CPSC 105	3 CH.	Selection:
Major	CSPC 123 <i>or</i> CPSC 135	3 CH.	Selection:
Total		16 CH.	

Second Semester Plan

Gen Ed	Category A2	3 CH.	Selection:
Gen Ed	MATH 182 (C3)	4 CH.	Selection:
Major	CPSC 125	3 CH.	Selection:
Major	CPSC 150	3 CH.	Selection:
Major	CPSC 223	3 CH.	Selection:
Total		16 CH.	

Third Semester Plan

Gen Ed	Category B	3 CH.	Selection:
Gen Ed	Category C1	3 CH.	Selection:
Major	CPSC 256	3 CH.	Selection:
Major	MATH 283	4 CH.	Selection:
Major	MATH 224 <i>or</i> CPSC 225	3 CH.	Selection:
Total		16 CH.	

Fourth Semester Plan

Gen Ed	Category A3	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Major	CPSC 356	3 CH.	Selection:
Major	MATH 301	3 CH.	Selection:
Major	MATH 260	3 CH.	Selection:
Total		15 CH.	

Fifth Semester Plan

Gen Ed	Category A4	3 CH.	Selection:
Major	CPSC Elective Course	3 CH.	Selection:
Major	MATH 302	3 CH.	Selection:
Major	MATH 250	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Total		15 CH.	

Sixth Semester Plan

Gen Ed	Category B	3 CH.	Selection:
Major	CPSC 458 <i>or</i> CPSC 459	3 CH.	Selection:
Major	MATH 304 <i>or</i> MATH 325	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Total		15 CH.	

Seventh Semester Plan

Gen Ed	Category B	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Major	CPSC 458 <i>or</i> CPSC459	3 CH.	Selection:
Major	CPSC Elective	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Total		15 CH.	

Eighth Semester Plan

Gen Ed	Category D	3 CH.	Selection:
Major	MATH 380 <i>or</i> MATH 390 <i>or</i> MATH 490 <i>or</i> MATH 395 <i>or</i> MATH 398 <i>or</i> CPSC 372 <i>or</i> CPSC 385	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Total		12 CH.	

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