

DATA SCIENCE - MATHEMATICS CONCENTRATION	120 total credits required 42 upper division credits required <i>Please review with the Data Science Advisor</i>
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ALL UNIVERSITY CORE CURRICULUM (AUCC)

Status	Category	Course	Credit
	1A) Intermediate writing	CO 150 or HONR 193	3
	1B) Quantitative Reasoning	MATH 156 (preferred) or MATH 160	4
	1C) Diversity, Equity, and Inclusion		3
	2) Advanced Writing	CO 300, 301B ,302, or JTC 300	3
	3A) Biological and Physical Science w/ lab		4
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	3B) Arts & Humanities	CS 150B	3
	3B) Arts & Humanities	CS 201/PHIL 201	3
	3C) Social & Behavioral Science		3
	3D) Historical Perspectives		3
	4) Depth and Integration	DSCI 445 and DSCI 478	7
		total	39

CORE COURSES (Total of 58 credits) – Must complete ALL core courses

COMPUTER SCIENCE

- ___ CS 150B - Culture and Coding [3]
- ___ CS 164 - CS1--Computational Thinking w Java [4]
- ___ CS 165 CS2--Data Structures [4]
- ___ CS 201 - Ethical Computing Systems [3]
- ___ CS 220 - Discrete Structures & their Applications[4]

DATA SCIENCE

- ___ DSCI 100 - First Year Seminar in Data Science [1]
- ___ DSCI 235 - Data Wrangling [2]
- ___ DSCI 320 - Optimization Methods in Data Science[3]
- ___ DSCI 335 - Inferential Reasoning in Data Analysis [3]
- ___ DSCI 336 - Data Graphics and Visualization [1]
- ___ DSCI 369 - Linear Algebra for Data Science [4]
- ___ DSCI 445 - Statistical Machine Learning [3]
- ___ DSCI 478 - Capstone in Data Science [4]

MATHEMATICS

- ___ MATH 151- Math Algorithms in Matlab I [1]
- ___ MATH 156 - Math for Computational Science I [4]
- ___ MATH 256 - Math for Computational Science II [4]

STATISTICS

- ___ STAT 158 - Introduction to R Programming [1]
- ___ STAT 315 - Intro to Theory & Practice of Statistics[3]
- ___ STAT 341 - Statistical Data Analysis I [3]
- ___ STAT 342 - Statistical Data Analysis II [3]

Effective August 2023

MATHEMATICS CONCENTRATION REQUIREMENTS

Select a minimum of FOUR (4) Mathematics Courses from Mathematics Electives List:

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|---|---|
| ___ MATH 301- Intro to Combinatorial Theory [3] | ___ MATH 417 – Advanced Calculus I [3] |
| ___ MATH 317 - Advanced Calculus of One Variable [3] | ___ MATH/ECE 430 – Fourier & Wavelet Analysis
w/Apps [3] |
| ___ MATH 331 - Intro to Mathematical Modeling [3] | ___ MATH 455 – Mathematics in Biology & Medicine [3] |
| ___ MATH 332 - Partial Differential Equations [3] | ___ MATH 460 - Information and Coding Theory [3] |
| ___ MATH 345 - Differential Equations [4] | |
| ___ MATH 360 - Mathematics of Information Security[3] | |

Data Science Electives – Select at least FIFTEEN (15) credit hours from Data Science Electives List (number of courses will vary based on the credit hours of the courses)

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|------------------------------|------------------------------|
| ___ DS Elective 1: _____ [] | ___ DS Elective 4: _____ [] |
| ___ DS Elective 2: _____ [] | ___ DS Elective 5: _____ [] |
| ___ DS Elective 3: _____ [] | ___ DS Elective 6: _____ [] |

Data Science Electives List

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|--|--|
| CS 214 - Software Development [3] | ECON 204 - Principles of Macroeconomics [3] |
| CS 250 - Computer Systems Foundations [4] | ECON 304 - Intermediate Macroeconomics [3] |
| CS 270 – Computer Organization [4] | ECON 306 - Intermediate Microeconomics [3] |
| CS 314 – Software Engineering [3] | ECON 435 - Intermediate Econometrics [3] |
| CS 320 - Algorithms--Theory and Practice [3] | STAT 351 - Sports Statistics and Analytics I [3] |
| CS 370 - Operating Systems [3] | STAT 400 - Statistical Computing [3] |
| CS 435 – Introduction to Big Data [4] | STAT 420 - Probability and Mathematical Statistics I [3] |
| CS 440 – Introduction to Artificial Intelligence [4] | STAT 421 - Introduction to Stochastic Processes [3] |
| CT 301 – C++ Fundamentals [2] | STAT 430 - Probability and Mathematical Statistics I [3] |
| DSCI 473 - Intro to Geometric Data Analysis [2] | STAT 440 - Bayesian Data Analysis [3] |
| DSCI 475 - Topological Data Analysis [2] | STAT 451 - Sports Statistics and Analytics I [3] |
| ECON 202 - Principles of Microeconomics [3] | STAT 460 - Applied Multivariate Analysis [3] |

Additional Notes:

- Although there is not a specified grade required for courses in the major, it is important to be aware of prerequisite requirements. Grades of C are better are often necessary, and some courses require B or better in prerequisite coursework.
- A cumulative GPA of 2.0 or above is required to remain in good academic standing
- Students pursuing the Data Science major with a CS concentration are not eligible for any minors offered by the Computer Science Department
- MATH 160, 161, and 261 sequence will substitute for MATH 156 + 256 sequence