

# DATA SCIENCE, BS

The Data science, BS program provides a comprehensive course of study in the mathematical theory and algorithms used to explore, understand, and analyze large sets of data. The program aims to equip students with the experience and knowledge needed to understand and implement current machine learning and artificial intelligence algorithms, as well as to provide a foundation for being able to learn novel techniques as they arise. The program is interdisciplinary; being supported by both the Department of Mathematics and the Department of Computer Science.

Code and Title	Hours
<b>Ancillary Courses</b>	
MATH 125 or Calculus I	4
MATH 145 Honors Calculus I	
MATH 126 or Calculus II	4
MATH 146 Honors Calculus II	
MATH 227 or Calculus III	4
MATH 247 Honors Calculus III	
MATH 237 Introduction to Linear Algebra	3
MATH 301 Discrete Mathematics	3
CS 100 or CS I for Majors	4
CS 110 Honors CS I for Majors	
CS 101 or CS II for Majors	4
CS 111 Honors CSII for Majors	
CS 201 Data Structures and Algorithms	4
Credit Hours Subtotal:	30
<b>Program Courses</b>	
<b>Required courses</b>	
MATH 355 Theory Of Probability	3
MATH 359 Math Data Science	3
MATH 451 Math Stats W/Applictn I	3
CS 301 Database Management Systems	3
CS 451 Data Science	3
CS 470 Computer Algorithms	3
MATH 493 Capstone in Data Science	3
Credit Hours Subtotal:	21
<b>Depth Requirement: Take 2 courses from</b>	<b>6</b>
MATH 410 Numerical Linear Algebra	
MATH 421 Non-Linear Optimization Theory	
MATH 452 Math Stats W/Applictn II	
MATH 457 Stochastic Processes I	
CS 455 Social Media Data Analytics	
CS 484 Reinforcement Learning	
Credit Hours Subtotal:	6
<b>Ethics Requirement: Take one course from</b>	<b>3</b>
CS 340 Legal & Ethical Issues in Comp	
CS 347 Cyber Law and Ethics	
Credit Hours Subtotal:	3
<b>Machine Learning/Artificial Intelligence requirement: take one course from</b>	<b>3</b>
CS 465 Artificial Intelligence	
CS 452 Information Retrieval	

CS/ECE 483	Comp Foundations of ML	
PH 451	Machine Learning	
		Credit Hours Subtotal: 3
<b>Total Hours</b>		<b>63</b>

The Data Science major requires the completion of a minor or a second major.

Related courses that are not listed may be included with departmental permission. In particular, those with double majors in computer science may substitute MATH 311 Intro Scientific Computing in place of CS 301 Database Management Systems to complete the Data Science major, since CS 301 is required for the computer science program.

## Grade Point Average

A 2.0 grade point average in the major is required for completion of the degree. Please see the Grades and Grade Points section of this catalog for an explanation on grade point average calculations.

## Upper-level Residency

A minimum of 12 hours of 300- or 400-level courses in the major must be earned on this campus.

## Required Minor

The mathematics major requires the completion of a minor or a second major.

## Additional Major Requirements

Students are responsible for ensuring that they have met all University, College, major and minor requirements. These include the general education requirements, the major requirements, all requirements for an approved minor, and have sufficient credits to total a minimum of 120 applicable semester hours. Moreover, each student should meet with an adviser in the mathematics department for academic planning and to be approved for registration each semester. College advisers are also available for additional assistance with minor, College and University requirements.

Data Science graduates will be well prepared to for positions in

- Actuarial science
- Data Analyst
- Data Architect/Engineer
- Data Scientist
- Finance
- Machine learning engineer
- Market Research
- Operations Research Analyst
- Risk Management

or for any other positions which analyzes large quantities of data using computers and computational statistics.

In addition, the program will have internship, undergraduate research, and entrepreneurial opportunities for current students.

Learn more about opportunities in this field at the Career Center