

DATA SCIENCE MAJOR

Bachelor of Science

Professor Vincent Smith, Program Director

Data Science Program Mission Statement

The mission of the data science program is to equip students with the knowledge and skills needed to gather, analyze, and interpret complex data sets and to use data to drive data-informed decision-making in various industries. The data science program instills ethical values and a commitment to social responsibility through using real-world data sets to create positive change.

Program Description

Our data science program is designed to provide students with the knowledge and skills needed to gather, analyze, and interpret complex data sets to drive data-informed decision-making in various industries. The program covers a range of topics, including statistical analysis, data visualization, machine learning, and database management. Students in the program will gain hands-on experience working with real-world data sets, through a combination of coursework, projects, and internships. They will learn how to use software tools such as Microsoft Excel, R, and SQL to analyze data, create visualizations, and communicate results effectively.

The Data Science major is offered as an in-seat residential program on the Charleston campus*. Students complete a core of mathematics, computer science, and data analytics with further coursework in an application area of emphasis. The area of emphasis for is usually a minor that the student selects, but it can be determined in consultation with the student's academic advisor to fulfill academic objectives**. Students have the opportunity to double major in Cybersecurity, Information Technology, Technology Applications, or Video Game Development.

Data Science Program Learning Outcomes

The graduate will:

- 1. Apply data science principles relating to data retrieval, processing, and analysis.
- 2. Apply mathematical and statistical concepts to detect patterns in data and to draw inferences.
- 3. Apply critical thinking skills for approaching problems and making assessment decisions.
- 4. Evaluate research results and communicate findings in data science.

Data Science Major Courses		
DASC 100	Introduction to Scientific Programming	3 credits
DASC 101	Intro to Data Science	3 credits
DASC 250	Data Visualization	3 credits
DASC 310	Machine Learning	3 credits
DASC 375	Natural Language Processing	3 credits
COSC 110	Computer Science I	3 credits
COSC 110L	Computer Science I Lab	1 credit
COSC 120	Computer Science II	3 credits
COSC 120L	Computer Science II Lab	1 credit
COSC 245	Internet of Things	3 credits
COSC 280	Data Structures	3 credits
COSC 315	Database Systems	3 credits
COSC 430	Cryptology	3 credits
COSC 440	Co-Op Experience	3 credits
COSC 450	Capstone	3 credits
MATH 201	Calculus I	4 credits
MATH 202	Calculus II	4 credits
MATH 203	Calculus III	4 credits
MATH 225	Discrete Mathematics	3 credits
MATH 230	Linear Algebra	3 credits

MATH 240	Probability and Statistics	3 credits
MATH 241	Probability and Statistics II	3 credits
BSAN 315	Big Data Analytics	3 credits
	Credits for Data Science:	67

122 Credit Hours Total
Admission Requirements

*Students may be required to complete some courses in online or hybrid formats.
 ** Application Area courses (18 credit hours) are typically comprised of an existing UC minor. Other electives require an approved departmental plan.
 ***MATH 201 requires MATH 123 or Math ACT Score 27 (Math SAT score 640).
 Students must gain general admission to the University of Charleston.

Additional Requirements

To register for a course, students must meet all prerequisite requirements for that course or obtain instructor approval.

To graduate, students must earn a C or better in all courses required for the major.

Data Science students must meet all University of Charleston graduation requirements.

While a Mac may be used in some courses, Data Science students are required to have a modern Windows computer capable of running the required programs.

DATA SCIENCE MINOR

Students pursuing other academic majors may complete a 21-hour Data Science Minor.

Data Science Minor		
DASC 100	Intro to Sci Prog*	3 credits
DASC 101	Intro to Data Science	3 credits
DASC 250	Data Visualization	3 credits
DASC 310	Machine Learning	3 credits
DASC 375	Natural Language Processing	3 credits
MATH 240**	Probability and Statistics I*** (or equivalent)	3 credits
MATH 241	Probability and Statistics II	3 credits
Total Credits		21

Students must earn a C or better in all courses required for the minor.

*MATH 120 is a prerequisite for DASC 100.

**MATH 121 is a prerequisite for MATH 240.

***Equivalent courses to MATH 240 include: BUSI 316 (Quantitative Methods for Business and Economics), BUSI 317 (Business Statistics), NSCI 220 (Statistics for Science & Research), PSYC 315 (Psychological Statistics), and HSCI 312 (Statistics for Evidence Based Practice).