

DATA ANALYTICS MAJOR

Bachelor of Science

Professor Vincent Smith, Program Director

Data Analytics Program Mission Statement

The mission of the data analytics 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 analytics program instills ethical values and a commitment to social responsibility through using real-world data sets to create positive change.

Program Description

Our data analytics 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 Analytics 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 Analytics 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 decision.
4. Evaluate research results and communicate findings in data science.

| Data Analytics 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 |

| Data Analytics Major Courses | | |
|------------------------------|------------------------------------|-----------|
| DASC 330 | Modeling and Simulation | 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 280 | Data Structures | 3 credits |
| COSC 315 | Database Systems | 3 credits |
| COSC 345 | Computer Networks | 3 credits |
| COSC 360 | Web App Development | 3 credits |
| COSC 430 | Cryptography | 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 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 |
| | Credits for Data Analytics: | 66 |

122 Credit Hours Total

*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).

Admission Requirements

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 Analytics students must meet all University of Charleston graduation requirements.

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

DATA ANALYTICS MINOR

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

| Data Analytics 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 330 | Modeling and Simulation | 3 credits |
| DASC 375 | Natural Language Processing | 3 credits |
| MATH 240** | Probability and Statistics I*** (or equivalent) | 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).