

DATA ANALYTICS MAJOR

Professor Jennifer Hoffman, Interim Chair Data and Computer Science

Mission Statement

The mission of the data analytics program is to provide students with the knowledge and skills needed to collect, integrate and analyze complex quantitative and qualitative data.

Demand for individuals with expertise in the field of data analytics is projected to increase significantly over the next decade. A recent study predicts that employment opportunities in the realm of data science will increase by approximately 30% by 2020, especially in the fields of business administration, marketing, finance, insurance, professional services and information technology. Similarly, rapid growth in the areas of telemedical services and health informatics is creating an urgent need for practitioners who possess the knowledge and skills needed to organize, interpret and disseminate the increasing volume and complexity of health data. Beyond this, employment opportunities are beginning to increase in fields such as law enforcement, cybersecurity, urban planning and education as decision makers exploit data mining and predictive analytics to develop proactive solutions for a wide variety of policy issues.

Program Description

The data analytics major is an interdisciplinary program which provides students with the knowledge and skills needed to collect, integrate and analyze complex quantitative and qualitative data. Drawing upon the disciplines of statistics, mathematics and computer science, students will learn how computer programming, database management, data analysis, and data visualization tools can be utilized to collate, interpret and present complex data applicable to a wide variety of fields.

Program 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.

What You Will Study

The Data Analytics degree program consists of 45 credits of academic work, including 8 credits of Computer Science, 13 credits of mathematics and statistics, and a 3-credit hour internship. Students must also complete 36 credits of Liberal Learning Outcomes and 39 credits of electives for a total of 120 credits.

Standard Four-Year Path

FRESHMAN YEAR			
FALL SEMESTER		SPRING SEMESTER	
COMM 101 Freshman Writing I*	3	COMM 102 Freshman Writing II*	3
COSC 101 Introduction to Scientific Programming	4	SPCH 103 Oral Comm. Fundamentals*	3
HUMN 1XX Humanities FYE	3	DASC 101 Introduction to Data Science	3
MATH 121 College Algebra	4	SSCI 1XX Social Science FYE	3
Elective or 3.2 LLO	3	COSC 103 Coding II	4
UNIV 101 Orientation to University	1	UNIV 102 The University Experience	2
TOTAL CREDITS	18	TOTAL CREDITS	18

*These are not separate courses. The outcomes are embedded within HUMN, NSCI, SSCI, and UNIV courses.

SOPHOMORE YEAR			
FALL SEMESTER		SPRING SEMESTER	
STAT 101 Introduction to Statistics	4	STAT 120 Introduction to Probability for Data Science	3
NSCI 117 or CHEM 100	3	MATH 230 Linear Algebra	3
ENGL 202 Brit. Lit I	3	BUSI 241 Business Writing	3
Elective or 3.2 LLO	3	Elective	3
Elective	3	Elective	3
TOTAL CREDITS	16	TOTAL CREDITS	15

JUNIOR YEAR			
FALL SEMESTER		SPRING SEMESTER	
DASC 200 Introduction to Data Mining	3	DASC 310 Introduction to Machine Learning	3
DASC 250 Introduction to Data Visualization	3	DASC 330 Modelling and Simulation	3
NSCI 333 History of Science	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
TOTAL CREDITS	15	TOTAL CREDITS	15

SENIOR YEAR			
FALL SEMESTER		SPRING SEMESTER	
DASC 375 Introduction to Natural Language Processing	3	DASC 475 Data Science Senior Capstone	3
DASC 450 Data Science Internship	3	UNIV 4XX Senior Capstone	3
Elective	3	Elective	3
Elective	3	Elective	3
TOTAL CREDITS	12	TOTAL CREDITS	12

Admission Requirements

Students must gain general admission to the University of Charleston. A visit to campus to meet with Admissions personnel and program faculty is strongly encouraged.

Additional Requirements

- Students must have a 21 ACT or 540 SAT math score, or they must have completed MATH 120 before they are able to enroll in MATH 121.
- In order to graduate, a student must receive a minimum grade of “C” for each of the program courses.
- Data analytics majors must meet all University of Charleston graduation requirements and successfully complete the Data Science Senior Capstone course.