

## **DATA ANALYTICS MAJOR**

***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.

### Standard Four-Year Path

#### FIRST YEAR

FALL SEMESTER		SPRING SEMESTER	
ENGL 101 Freshman Writing I	3	ENGL 102 Freshman Writing II	3
DASC 101 Intro to Data Science	3	MATH 201 Calculus I (Flex Elective)***	4
COSC 110 Computer Science I (STEM Flex)	3	COSC 120 Computer Science II	3
COSC 110L Computer Science I Lab	1	COSC 120L Computer Science II Lab	1
DASC 100 Intro. Sci. Prog. (STEM Flex)	3	SPCH 103 Oral Communication (embedded)	3
UNIV 104 College Motivation & Success	3	UNIV 105 Foundations of Character & Leadership	3
<b>TOTAL CREDITS</b>	<b>16</b>	<b>TOTAL CREDITS</b>	<b>17</b>

*\* Math 123 (if needed)*

#### SECOND YEAR

FALL SEMESTER		SPRING SEMESTER	
MATH 225 Discrete Math (Flex Elective)	3	MATH 230 Linear Algebra	3
COSC 280 Data Structures	3	Application Area (1) **	3
Flex Elective *	3	COSC 315 Database Systems	3
MATH 202 Calculus II	4	MATH 240 Prob and Stat	3
Humanities Flex Course	3	Soc. Sci. Flex Course	3
<b>TOTAL CREDITS</b>	<b>16</b>	<b>TOTAL CREDITS</b>	<b>15</b>

#### THIRD YEAR

FALL SEMESTER		SPRING SEMESTER	
MATH 241 Prob and Stat II	3	DASC 250 Data Visualization	3
COSC 360 Web App Development	3	DASC 310 Machine Learning	3
Elective	3	DASC 330 Mod. and Simulation	3
COSC 345 Computer Networks	3	Application Area (3) **	3
Application Area (2) **	3	Soc. Sci. Flex Course	3
<b>TOTAL CREDITS</b>	<b>15</b>	<b>TOTAL CREDITS</b>	<b>15</b>

## FOURTH YEAR

FALL SEMESTER		SPRING SEMESTER	
DASC 375 Natural Lang. Processing	3	COSC 450 Capstone	3
COSC 440 Co-Op Experience	3	COSC 430 Cryptology	3
Humanities Flex Course	3	Elective	3
Application Area (4) **	3	Application Area (6) **	3
Application Area (5) **	3		
<b>TOTAL CREDITS</b>		<b>TOTAL CREDITS</b>	<b>12</b>

### 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.

### 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
DASC 101	Intro to Data Science	3
DASC 250	Data Visualization	3
DASC 310	Machine Learning	3
DASC 330	Modeling and Simulation	3
DASC 375	Natural Language Processing	3
MATH 240**	Probability and Statistics I** (or equivalent)	3
<b>Total Credits</b>		<b>21</b>

\*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).