ANALYTICS AND DATA SCIENCE MAJOR: DATA SCIENCE OPTION (B.S.) MANCHESTER

Description

https://manchester.unh.edu/program(bs/analytics-data-science-major-data-science-option

The option in Data Science is intended for students interested in pursuing advanced degrees and conducting original research in data science. The option in data science places its emphasis on a rigorous introduction to the theoretical mathematical and computational underpinnings of modern data science.

Program Objectives

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. Graduates of the bachelor of science in analytics and data science program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security
- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team
- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor's degree program.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, and completing all of the 18 required courses in the major as listed below. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

Students who enroll in the Data Science Option may need to take some required courses on the Durham campus.

Program Requirements

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 425</td>
<td>Calculus I</td>
<td>4</td>
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<tr>
<td>MATH 426</td>
<td>Calculus II</td>
<td>4</td>
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<td>MATH 528</td>
<td>Multidimensional Calculus</td>
<td>4</td>
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<tr>
<td>MATH 631</td>
<td>Mathematical Proof</td>
<td>4</td>
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<td>COMP 570</td>
<td>Statistics in Computing and Engineering</td>
<td>4</td>
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<tr>
<td>MATH 645</td>
<td>Linear Algebra for Applications</td>
<td>4</td>
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<tr>
<td>MATH 755</td>
<td>Probability with Applications</td>
<td>4</td>
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<tr>
<td>MATH 756</td>
<td>Principles of Statistical Inference</td>
<td>4</td>
</tr>
<tr>
<td>DATA 790</td>
<td>Capstone Project</td>
<td>4</td>
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- **Computing**
- **MATH 659** Introduction to the Theory of Computation
- **COMP 424** Applied Computing 1: Foundations of Programming
- **COMP 625** Data Structures Fundamentals
- **COMP 625** Data Structures and Algorithms
- **CS 578** Algorithms
- **COMP 720** Database Systems and Technologies

- **Analytics & Data Science**
- **DATA 557** Introduction to Data Science and Analytics
- **ENGL 502** Professional and Technical Writing

For additional information about the Analytics and Data Science: Data Science Option, contact Mihaela Sabin, program coordinator, at Mihaela.Sabin@unh.edu (mihaela.sabin@unh.edu), Jeremiah Johnson, Assistant Professor at Jeremiah.Johnson@unh.edu (jeremiah.johnson@unh.edu), or the UNH Manchester Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Student Learning Outcomes

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply theory, techniques, and tools throughout the data analysis lifecycle and employ the resulting knowledge to satisfy stakeholders’ needs.