

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

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

Description

The option in Analytics is intended for students interested in either heading into industry immediately upon graduation, or pursuing graduate work in a professionally oriented program such as the Master of Science in Analytics at UNH. The option in Analytics places its emphasis on applications of data science in industry.

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. 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, completing all of the 21 required courses in the major as listed below, including the capstone course, the internship preparedness course, and an internship. 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).

Program Requirements

Code	Title	Credits
Mathematics		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 545	Introduction to Linear Algebra	4
or MATH 645	Linear Algebra for Applications	
MATH 739	Applied Regression Analysis	4
Computing		
COMP 424	Applied Computing 1: Foundations of Programming	4
or CS 414	From Problems to Algorithms to Programs	
or CS 415	Introduction to Computer Science I	
COMP 430	Systems Fundamentals	4
COMP 520	Database Design and Development	4
or IT 505	Integrative Programming	
COMP 525	Data Structures Fundamentals	4
or CS 416	Introduction to Computer Science II	
or CS 417	From Programs to Computer Science	
COMP 570	Statistics in Computing and Engineering	4
or MATH 539	Introduction to Statistical Analysis	
or MATH 644	Statistics for Engineers and Scientists	
COMP 625	Data Structures and Algorithms	4
or CS 515	Data Structures and Introduction to Algorithms	

Business ¹		12
Analytics & DATA Courses		
DATA 557	Introduction to Data Science and Analytics	4
or CS 457	Introduction to Data Science and Analytics	
DATA 674	Predictive and Prescriptive Analytics I	4
DATA 675	Predictive and Prescriptive Analytics II	4
DATA 757	Mining Massive Datasets	4
or COMP 721	Big Data for Data Engineers	
Project and Professional Practice		
DATA 690	Internship Experience	4
DATA 790	Capstone Project	4
or CS 791	Senior Project I	
or CS 792	Senior Project II	
Other		
ENGL 502	Professional and Technical Writing	4
UMST 582	Internship and Career Planning Seminar	1
Total Credits		81

- ¹ In consultation with your advisor, select:
- 1 course (4 credits) in Introduction to Business
 - 1 course (4 credits) in Organizational Behavior
 - 1 course (4 credits) in Organizational Leadership

For additional information about the Analytics and Data Science: Analytics 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, (603) 641-4150, unhm.admissions@unh.edu.

Degree Plan

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
COMP 424	Applied Computing 1: Foundations of Programming	4
or CS 414	or From Problems to Algorithms to Programs	
or CS 415	or Introduction to Computer Science I	
ENGL 401	First-Year Writing	4
MATH 425	Calculus I	4
Discovery Course		4
Credits		16
Spring		
BUS A ¹		4
COMP 525	Data Structures Fundamentals	4
or CS 416	or Introduction to Computer Science II	
or CS 417	or From Programs to Computer Science	
DATA 557	Introduction to Data Science and Analytics	4
or CS 457	or Introduction to Data Science and Analytics	
MATH 426	Calculus II	4
Credits		16

Second Year**Fall**

COMP 625 or CS 515	Data Structures and Algorithms or Data Structures and Introduction to Algorithms	4
MATH 645	Linear Algebra for Applications	4
Discovery Course		4
Elective ²		4
Credits		16

Spring

COMP 430	Systems Fundamentals	4
COMP 520 or IT 505	Database Design and Development or Integrative Programming	4
COMP 570 or MATH 539 or MATH 644	Statistics in Computing and Engineering or Introduction to Statistical Analysis or Statistics for Engineers and Scientists	4
Discovery Course		4
Credits		16

Third Year**Fall**

BUS B ¹		4
DATA 674	Predictive and Prescriptive Analytics I	4
MATH 739	Applied Regression Analysis	4
Discovery Course		4
Credits		16

Spring

DATA 675 or COMP 721	Predictive and Prescriptive Analytics II or Big Data for Data Engineers	4
ENGL 502	Professional and Technical Writing	4
UMST 582	Internship and Career Planning Seminar	1
Discovery Course		4
Discovery Course		4
Credits		17

Fourth Year**Fall**

BUS C ¹		4
DATA 757	Mining Massive Datasets	4
Discovery Course		4
Elective		4
Credits		16

Spring

DATA 790 or CS 791 or CS 792	Capstone Project or Senior Project I or Senior Project II	4
Discovery Course		4
Elective		4
Elective		4
Credits		16
Total Credits		129

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.

¹ In consultation with your advisor, select: Introduction to Business, Organizational Behavior, or Organizational Leadership.

² MATH 531 Mathematical Proof strongly encouraged