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

https://ceps.unh.edu/computer-science/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 business and industry.

Program Objectives
Analytics and Data Science focuses on the extraction of meaning from data through the application of computer science, mathematics and business domain knowledge. Within a few years of obtaining a bachelor's degree in Analytics and Data Science, our alumni will have:

1. Engaged in successful career areas of analytics and data science and will already have, or be pursuing, advanced degrees in Analytics, Data Science, Computer Science, Mathematics or related fields
2. Applied the full range of core Data Science concepts and techniques to fill the analytics needs of an organization
3. Communicated effectively with diverse stakeholders as well as functioned appropriately in a team environment
4. Navigated the complex interconnections between data, computing technology, and the goals and constraints of the organization served
5. Understood the pervasive and changing role of data in global society, and participated responsibly as both an Analytics and Data Science professional and citizen

For additional information about the Analytics and Data Science: Analytics Option, contact Matt Magnusson (matthew.magnusson@unh.edu), program co-director (Durham campus), or Jeremiah Johnson (jeremiah.johnson@unh.edu), program co-director (Manchester campus), at (603) 641-4127.

Requirements
Degree Requirements
Minimum Credit Requirement: 128 credits
Minimum Residency Requirement: 32 credits must be taken at UNH
Minimum GPA: 2.0 required for conferral*
Core Curriculum Required: Discovery & Writing Program Requirements
Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated. *Major GPA requirements as indicated.

Major 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 24 required courses in the major as listed below, including the capstone course, the internship preparedness course, and a three-credit 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).

Code | Title | Credits
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MATH 425 | Calculus I | 4
MATH 426 | Calculus II | 4
MATH 644 | Statistics for Engineers and Scientists | 4
or COMP 570 | Statistics in Computing and Engineering | 4
or MATH 539 | Introduction to Statistical Analysis | 4
MATH 645 | Linear Algebra for Applications | 4
or MATH 546 | Introduction to Linear Algebra | 4
MATH 739 | Applied Regression Analysis | 4

Computer Science
CS 400 | Introduction to Computing | 2
CS 415 | Introduction to Computer Science I | 4
or CS 410P | Introduction to Scientific Programming/Python | 4
or COMP 424 | Applied Computing I: Foundations of Programming | 4
CS 416 | Introduction to Computer Science II | 4
or COMP 525 | Data Structures Fundamentals | 4
CS 457 | Introduction to Data Science and Analytics | 4
or DATA 557 | Introduction to Data Science and Analytics | 4
CS 515 | Data Structures and Introduction to Algorithms | 4
or COMP 625 | Data Structures and Algorithms | 4
IT 505 | Integrative Programming | 4
or COMP 520 | Database Design and Development | 4
IT 520 | Computer Organization and System-Level Programming | 4
or COMP 430 | Systems Fundamentals | 4

Business
In Consultation with your advisor select:
1 Course in Introduction to Business | 4
1 Course in Organizational Behavior | 4
1 Course in Organizational Leadership | 4

English
ENGL 502 | Professional and Technical Writing | 4

Analytics Courses
DATA 674 | Predictive and Prescriptive Analytics I | 8
& DATA 675 | Predictive and Prescriptive Analytics II | 8
& DATA 674 | Predictive and Prescriptive Analytics I | 8
or DATA 674 | and Machine Learning | 8
or CS 790 | Data Mining and Predictive Analytics | 8
or MATH 738 | and Machine Learning | 8
& CS 790 | Predictive and Prescriptive Analytics I | 8
DATA 690 | Internship Experience | 1-4
DATA #757 | Mining Massive Datasets | 4
or COMP 721 | Big Data for Data Engineers | 4

Capstone
DATA #790 | Capstone Project | 4
or CS 791 | Senior Project I | 4
or CS 792 | Senior Project II | 4
or CS 799 | Thesis | 4

Select three electives | 12

Total Credits | 91-94

1 Or another suitable 700-level data science or data engineering course chosen in consultation with the program coordinator.
2 Must be 600 or 700-level and approved by advisor.
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.