DATA SCIENCE, MS

The vision of the Master of Science in data science program is to provide flexible, innovative, and technologically current education to rising data professionals who want to prepare for corporate leadership positions through their functional expertise. The interdisciplinary data science program brings together thought leaders in the fields of business, information technology, mathematics, and other units at UNO, including international university partners and local businesses.

This interdisciplinary graduate program is designed to be completed in 24 months. The curriculum includes course modules on topics that address the following major themes: data organization, manipulation, cleaning, and visualization; data analytics; working with massive amounts of data; dealing with missing and messy data; understanding the value of data and creating data products.

Program Related Information
Program Contact
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Program Website (https://www.unomaha.edu/graduate-studies/prospective-students/ms-data-science.php)
Admissions
General Application Requirements and Admission Criteria (http://catalog.unomaha.edu/graduate/admission/)

Application Deadlines
- Spring 2026: December 15
- Fall 2026: July 1

Other Requirements
- Minimum GPA of at least 3.0 in undergraduate degree.
- **English Language Proficiency:** Applicants are required to have a command of oral and written English. Those who do not hold a baccalaureate or other advanced degree from the U.S., **OR** a baccalaureate or advanced degree from a pre-determined country on the waiver list (https://www.unomaha.edu/office-of-graduate-studies/admissions/entrance-exams.php), must meet the minimum language proficiency score requirement in order to be considered for admission.
  - Internet-based TOEFL: 80, IELTS: 6.5, PTE: 53, Duolingo: 110
- **Resume:** An up-to-date resume with details about all relevant IT experience and skills.
- Optional: One letter of recommendation from a reference who can evaluate your work and/or academic achievements.
- Interview: A personal, telephone or Zoom/Microsoft Teams interview is encouraged, but is optional.

Degree Requirements
Foundation Courses
Students must have completed basic courses in the following areas, either as an undergraduate student or prior to enrolling in the first data science course.

- Introduction to programming: one semester of Java, Python, C++, or other approved programming course
- Statistics: one semester of undergraduate statistics

Foundation courses do not count towards the plan of study/degree requirements.

Requirements

Code	Title	Credits
Core Courses		**18**
STAT 8416	INTRODUCTION TO DATA SCIENCE	
STAT 8426	EXPLORATORY DATA VISUALIZATION AND QUANTIFICATION	
ECON 8320	TOOLS FOR DATA ANALYSIS	
ECON 8310	BUSINESS FORECASTING	
or BSAD 8080	BUSINESS FORECASTING	
ISQA 8206	INFORMATION AND DATA QUALITY MANAGEMENT	
HCC 8300	RESEARCH FOUNDATIONS	
or ISQA 8060	RESEARCH IN MIS	
Concentration		**12**
Select one of the five concentration areas.		
Exit Requirement (Capstone, Project or Thesis)		**6**
Specific exit requirements for each concentration are included on the Concentrations tab.		
Total Credits		**36**

Exit Requirements
- Capstone Option: Complete DSCI 8950 OR STAT 8950 and 3 hours of additional electives.
- Project Option: Complete STAT 8960 and 3 hours of additional electives.
- Thesis 6 Credits
  - All candidates should carefully review the Graduate College requirements for forming a supervisory committee, Thesis/Thesis Equivalent Proposal Approval forms and final approval and submission of a thesis.

Concentrations
Business Concentration

Code	Title	Credits
Select 12 hours from the following:		**12**
ACCT 8080	CURRENT TECHNOLOGY USE IN ACCOUNTING	
BSAD 8376	SUPPLY CHAIN ANALYTICS	
BSAD 8066	HEALTHCARE ANALYTICS FOR BUSINESS	
BSAD 8396	MARKETING ANALYTICS	
BSAD 8426	BUSINESS DEMOGRAPHICS	
BSAD 8910	SPECIAL TOPICS IN BUSINESS	
ECON 8300	ECONOMETRICS	
ECON 8306	QUANTITATIVE APPLICATIONS IN ECONOMICS AND BUSINESS	
ECON 8316	BUSINESS INTELLIGENCE AND REPORTING	
ECON 8330	DATA ANALYSIS FROM SCRATCH	
ECON 8910	SPECIAL STUDIES IN ECONOMICS (Sports Economics)	
Total Credits		**12**

Exit Requirement
- Capstone Option - Complete ECON 8330 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)

- Project Option - Complete STAT 8960 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling),
- Thesis Option - All candidates should carefully review the Graduate College requirements for forming a supervisory committee, thesis/thesis equivalent proposal approval forms and final approval and submission of a thesis. The chair of the supervisory committee must be from the College of Business Administration.

Data Science for Health Sciences Concentration

Code	Title	Credits
BMI 8100	INTRODUCTION TO BIOMEDICAL INFORMATICS	3
Select 9 hours from the following:		**9**
BMI 8020	ADVANCED COURSE IN BIOINFORMATICS	
BMI 8866	BIOINFORMATICS ALGORITHMS	
BMI 8896	COMPUTERIZED GENETIC SEQUENCE ANALYSIS	
CSCI 8156	GRAPH THEORY & APPLICATIONS	
STAT 8456	INTRODUCTION TO MACHINE LEARNING AND DATA MINING	
Total Credits		**12**

Exit Requirement

- Capstone Option - Complete DSCI 8950 or STAT 8950 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)
- Project Option - Complete STAT 8960 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)

- Thesis Option - All candidates should carefully review the Graduate College requirements for forming a supervisory committee, Thesis/Thesis Equivalent Proposal Approval forms and final approval and submission of a thesis. The chair of the supervisory committee must be from the Department of Mathematical and Statistical Sciences.

Information Technology Concentration

Code	Title	Credits
Select 12 hours from the following:		**12**
ISQA 8016	BUSINESS INTELLIGENCE	
ISQA 8086	SPECIAL TOPICS: INFORMATION SYSTEMS & QUANTITATIVE ANALYSIS	
ISQA 8156	ADVANCED STATISTICAL METHODS FOR IS&T	
ISQA 8160	APPLIED DISTRIBUTION FREE STATISTICS	
ISQA 8340	APPLIED REGRESSION ANALYSIS	
ISQA 8410	DATA MANAGEMENT	
ISQA 8450	NOSQL AND BIG DATA TECHNOLOGIES	
ISQA 8460	INTERNET OF THINGS (IOT), BIG DATA AND THE CLOUD	
ISQA 8600	FROM DATA TO DECISIONS	
ISQA 8700 or CSCI 8350	DATA MINING: THEORY AND PRACTICE DATA WAREHOUSING AND DATA MINING	
ISQA 8720	APPLIED STATISTICAL MACHINE LEARNING	

ISQA 8736	DECISION SUPPORT SYSTEMS	
ISQA 8750	STORYTELLING WITH DATA	
ISQA 8810	INFORMATION TECHNOLOGY PROJECT FUNDAMENTALS	
ISQA 8910	INFORMATION SYSTEMS INTERNSHIP	
ISQA 9120	APPLIED EXPERIMENTAL DESIGN AND ANALYSIS	
ISQA 9130	APPLIED MULTIVARIATE ANALYSIS	
CSCI 8476	PATTERN RECOGNITION	
CSCI 8856	DATABASE MANAGEMENT SYSTEMS	
CYBR 8396	MOBILE DEVICE FORENSICS	
CYBR 8490	CYBER INVESTIGATIONS	
Total Credits		**12**

Exit Requirement

- Capstone Option - Complete DSCI 8950 or STAT 8950 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)
- Project Option - Complete CSCI 8910 or STAT 8960 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)
- Thesis Option - All candidates should carefully review the Graduate College requirements for forming a supervisory committee, Thesis/Thesis Equivalent Proposal Approval forms and final approval and submission of a thesis. The chair of the supervisory committee must be from the College of Information Science & Technology.

Interdisciplinary Concentration

Code	Title	Credits
Select 12 hours from any of the other concentrations, courses must be approved by your advisor.		12
Total Credits		**12**

Exit Requirement

- Capstone Option - Complete ECON 8330 or DSCI 8950 or STAT 8950 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)
- Project Option - Complete STAT 8960 and 3 additional hours from any concentration area or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)
- Thesis Option - All candidates should carefully review the Graduate College requirements for forming a supervisory committee, Thesis/Thesis Equivalent Proposal Approval forms and final approval and submission of a thesis.

Statistical and Decision Sciences Concentration

Code	Title	Credits
Select 12 hours from the following:		**12**
STAT 8446	TIME SERIES ANALYSIS	
STAT 8436	LINEAR MODELS	
STAT 8456	INTRODUCTION TO MACHINE LEARNING AND DATA MINING	
STAT 8700	BAYESIAN STATISTICS	
STAT 8730	ADVANCED STATISTICAL MACHINE LEARNING	

STAT 8710	DESIGN AND ANALYSIS OF EXPERIMENTS
MATH/CSCI 8306	DETERMINISTIC OPERATIONS RESEARCH MODELS
MATH/CSCI 8316	PROBABILISTIC OPERATIONS RESEARCH MODELS
MATH 8326	COMPUTATIONAL OPERATIONS RESEARCH
MATH 8430	LINEAR PROGRAMMING
MATH/CSCI 8520	ADVANCED TOPICS IN OPERATIONS RESEARCH
MATH 8650	INTRODUCTION TO PROBABILITY MODELS
MATH 8670	TOPICS IN PROBABILITY AND STATISTICS
MATH 8440	NETWORK PROGRAMMING
MATH 8460	INTEGER PROGRAMMING
Total Credits	**12**

Exit Requirement

- Capstone Option- Complete DSCI 8950 or STAT 8950
- Project Option - Complete STAT 8960 and 3 additional hours from any of the concentration areas or PSYC 9020, PSYC 9090, PSYC 9100, PSYC 9120, PSYC 9910 (Structure Equation/Hierarchical Linear Modeling), PSYC 9920 (Multilevel Modeling)
- Thesis Option - All candidates should carefully review the Graduate College requirements for forming a supervisory committee, Thesis/ Thesis Equivalent Proposal Approval forms and final approval and submission of a thesis. The chair of the supervisory committee must be from the Department of Mathematical and Statistical Sciences.