DATA SCIENCE, MS ARTIFICIAL INTELLIGENCE SPECIALIZATION

Advances in machine learning algorithms, growth in computer processing power, and access to large volumes of data make artificial intelligence possible. Recent advances flow from the development of deep learning methods, which are neural networks with many hidden layers. Artificial intelligence builds on machine learning, with computer programs performing many tasks formerly associated with human intelligence. Students in this specialization learn how to move from the traditional models of applied statistics to contemporary data-adaptive models employing machine learning. Students learn how to implement solutions in computer vision, natural language processing, and software robotics.

Curriculum

Core Courses (8 units)

Course	Title
MSDS 400-DL	Math for Modelers
MSDS 401-DL/401-0	Applied Statistics with R
MSDS 420-DL/420-0	Database Systems
MSDS 422-DL/422-0	Practical Machine Learning
MSDS 460-DL/460-0	Decision Analytics
MSDS 485-DL/485-0	Data Governance, Ethics, and Law
MSDS 498-DL/498-0	Capstone Class
or MSDS 590-DL	Thesis Research
Any one of the following: [1]	
MSDS 402-DL	Research Design for Data Science
MSDS 403-DL	Data Science and Digital Transformation
MSDS 470-DL	Technology Entrepreneurship
MSDS 472-DL	Management Consulting
MSDS 474-DL	Accounting and Finance for Technology Managers
MSDS 475-DL	Project Management
MSDS 476-DL/476-0	Business Process Analytics
MSDS 480-DL/480-0	Business Leadership and Communications

[1] Students need to choose one of these eight course options to fulfill the business, leadership, communication requirement. A student cannot fulfill a core and specialization requirement with the same course.

Specialization Courses (4 units)

Course	Title
MSDS 453-DL	Natural Language Processing
MSDS 458-DL	Artificial Intelligence and Deep Learning
Any two electives	
MSDS 402-DL	Research Design for Data Science
MSDS 403-DL	Data Science and Digital Transformation
MSDS 410-DL	Supervised Learning Methods
MSDS 411-DL	Unsupervised Learning Methods
MSDS 413-DL	Times Series Analysis and Forecasting
MSDS 430-DL	Python for Data Analysis
MSDS 431-DL	Go and AI-Assisted Programming
MSDS 432-DL	Foundations of Data Engineering
MSDS 434-DL	Data Science and Cloud Computing
MSDS 436-DL	Technology Product Engineering
MSDS 440-DL	Conversational AI Assistants
MSDS 442-DL	AI Agent Design and Development
MSDS 450-DL	Marketing Analytics
MSDS 451-DL	Financial Engineering
MSDS 452-DL	Graphical and Network Models
MSDS 454-DL	Applied Probability and Simulation Modeling
MSDS 455-DL	Data Visualization
MSDS 456-DL	Sports Performance Analytics
MSDS 457-DL	Sports Management Analytics
MSDS 459-DL	Knowledge Engineering
MSDS 462-DL	Computer Vision
MSDS 464-DL	Intelligent Systems and Robotics
MSDS 466-DL	Applied Generative AI for Enterprises
MSDS 470-DL	Technology Entrepreneurship
MSDS 472-DL	Management Consulting
MSDS 474-DL	Accounting and Finance for Technology Managers
MSDS 475-DL	Project Management
MSDS 476-DL/476-0	Business Process Analytics
MSDS 480-DL/480-0	Business Leadership and Communications
MSDS 490-DL	Special Topics in Data Science
MSDS 499-DL	Independent Study

About the Final Project

As their final course in the program, students take either a master's thesis project in an independent study format or a classroom final project class in which students integrate the knowledge they have gained in the core curriculum in a team project approved by the instructor. In both cases, students are guided by faculty in exploring the body of knowledge of data science. The master's thesis or capstone class project count as one unit of credit.

Course	Title
Choose one	
MSDS 498-DL/498-0	Capstone Class
MSDS 590-DL	Thesis Research