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
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MSDS 400-DL | Math for Modelers
MSDS 401-DL | Applied Statistics with R
MSDS 420-DL | Database Systems
MSDS 422-DL | Practical Machine Learning
MSDS 460-DL | Decision Analytics
MSDS 485-DL | Data Governance, Ethics, and Law
MSDS 498-DL | Capstone Class
or MSDS 590-DL | Thesis Research

Any one of the following:

- 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 | Business Process Analytics
- MSDS 480-DL | Business Leadership and Communications
- MSDS 482-DL | Computer Vision
- MSDS 486-DL | Intelligent Systems and Robotics
- 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 | Business Process Analytics
- MSDS 480-DL | Business Leadership and Communications
- MSDS 482-DL | Computer Vision

Specialization Courses (4 units)

Course | Title
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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 | Data Engineering with Go
- MSDS 432-DL | Foundations of Data Engineering
- MSDS 434-DL | Analytics Application Engineering

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
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Choose one
- MSDS 498-DL | Capstone Class
- MSDS 590-DL | Thesis Research