DATA SCIENCE, MS DATA ENGINEERING SPECIALIZATION

After analysts and modelers have built and tested models, data engineers implement models to scale within an information infrastructure, creating systems and workflows to organize and manage large quantities of data. This means understanding computer systems (including software, hardware, data collection, and data processes) and solving problems related to data collection, security, and organization. This specialization trains data scientists to utilize system-wide problem-solving skills, choose hardware systems, and build software systems for implementing models made by data analysts to scale in productions systems.

Curriculum

Core Courses (8 units)

Course Title
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

1 Students need to choose one of these eight course options to fulfill the business, leadership, communication requirement.

Specialization Courses (4 units)

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

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 436-DL Analytics Systems Engineering
- MSDS 440-DL Full-Stack Data Engineering
- MSDS 442-DL Data Pipelines and Stream Processing

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 Capstone Class
- MSDS 590-DL Thesis Research