DATA SCIENCE, MS ANALYTICS AND MODELING SPECIALIZATION

In the world of data science, the analysts and modelers specialize in testing real-world predictions about data. Data analysts and modelers conduct research and take complex factors into account to build predictive models and create forecasts upon which data-driven decisions can be made. With a focus on traditional methods of applied statistics, this specialization prepares data scientists to utilize algorithms for predictive modeling and analytics, developing models for marketing, finance, and other business applications.

Curriculum

Core Courses (8 units)

Course	Title
MSDS 400-DL	Math For Data Scientists
MSDS 401-DL	Applied Statistics with R
MSDS 402-DL	Introduction to Data Science [1]
or MSDS 403-DL	Data Science in Practice
MSDS 420-DL	Database Systems and Data Preparation
MSDS 422-DL	Practical Machine Learning
MSDS 460-DL	Decision Analytics
MSDS 475-DL	Project Management
or MSDS 480-DL	Business Leadership and Communications
or MSDS 485-DL	Data Governance, Ethics, and Law
MSDS 498-DL	Capstone Class
or MSDS 590-DL	Thesis Research

[1] **Which course should students take?**
  - Students without a background in data science should select MSDS 402-DL Introduction to Data Science.
  - Students with a background in data science should select MSDS 403-DL Data Science in Practice. Students who have at least two years' experience in the field and have or had a title, such as data scientist, data analyst, statistician, data engineer, business analyst, etc. should select this course.

Specialization Courses (4 units)

Course	Title
MSDS 410-DL	Supervised Learning Methods
MSDS 411-DL	Unsupervised Learning Methods
Any two electives	
MSDS 413-DL	Times Series Analysis and Forecasting
MSDS 430-DL	Python for Data Analysis
MSDS 432-DL	Foundations for Data Engineering
MSDS 434-DL	Analytics Application Engineering
MSDS 436-DL	Analytics Systems Engineering
MSDS 440-DL	Real-Time Interactive Processing and Analytics
MSDS 442-DL	Real-Time Stream Processing and Analytics
MSDS 450-DL	Marketing Analytics
MSDS 451-DL	Financial and Risk Analytics
MSDS 452-DL	Web and Network Data Science
MSDS 453-DL	Natural Language Processing
MSDS 454-DL	Advanced Modeling Techniques
MSDS 455-DL	Data Visualization
MSDS 456-DL	Sports Performance Analytics
MSDS 457-DL	Sports Management Analytics
MSDS 458-DL	Artificial Intelligence and Deep Learning
MSDS 459-DL	Knowledge Engineering
MSDS 462-DL	Computer Vision
MSDS 464-DL	Intelligent Systems and Robotics
MSDS 470-DL	Analytics Entrepreneurship
MSDS 472-DL	Analytics Consulting
MSDS 474-DL	Accounting and Finance for Analytics Managers
MSDS 485-DL	Data Governance, Ethics, and Law
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	Capstone Class
MSDS 590-DL	Thesis Research