

Data Science (MSDS)

Graduate degree candidates are expected to develop broad competence in the discipline of Data Science as a whole. The Master of Science in Data Science is a 100% online program, with recommended completion models of one-and-a-half to three years. The program provides advanced training in the theory and methodologies that comprise the field of data science. That training includes, but is not limited to, courses in probability, simulation, data visualization, data mining, data ethics, data analysis, large scale data-based inquiry for big data, non-standard design methodologies, machine learning, deep learning, algorithmic techniques, and optimization. The program integrates some of the following substantive areas of application: biology, computer science, economics, education, engineering, government, neuroscience, and psychology. All courses required for program completion are offered in accordance with University policies that govern non-formula-funded (Option III) programs.

Graduate Handbook

Graduate handbook information is updated and maintained by each program. Graduate handbooks are available within each program's office and [online](#). Please contact the program with concerns or questions.

Admission

To be considered for admission to the program, the student should demonstrate a background knowledge of mathematics and statistics equivalent to that acquired in upper-division courses in probability and statistics, multivariable calculus and linear algebra. Students should have a degree of mathematical maturity and critical thinking skills. Students should also demonstrate a technical acumen in relevant statistical/mathematical software, and experience in computing environments and programming. Deficiencies may be made up by taking courses suggested by the graduate advisor. In most cases, these courses may not be counted toward the degree.

Total Hours Required: 30

Requirements

Code	Title	Hours
	Coursework in data structures and algorithms, probability, regression, machine learning	12
	Gateway coursework in principles of data structure	3
	Statistical modeling and decision analytics elective coursework in advanced predictive models, design principles and causal inference, data exploration and visualization, data science for healthcare discovery and innovation	6
	Coursework in natural language processing, optimization, reinforcement learning, deep learning, advances in deep learning, advances in deep generative models	9
All students must also follow the requirements and policies below:		
Graduate Natural Sciences Requirements		
Graduate University Requirements		
Total Hours		30