

DATA SCIENCE MAJOR (M.S.)

Data science comprises the concepts, techniques, tools and body of knowledge supporting Big Data, the acquisition, management, analysis and display of large, rapidly changing, and varied sets of information. It supports the extraction of actionable knowledge directly from data through a process of discovery, or hypothesis formulation and hypothesis testing. Data science encompasses activities ranging from collecting the raw data, processing and extracting knowledge from the data, to decision making based on the data, implementing a solution. The data science field presents career entry, advancement and transition opportunities for practitioners and researchers in industry, government and academia at various levels of expertise.

A data scientist is a practitioner who has extensive knowledge in the overlapping realms of business needs, domain knowledge, analytical skills, and software and systems engineering to manage the end-to-end data processes in the data life cycle. Such a practitioner is skilled in data management and processing, analyzing business and scientific processes, and communicating findings for effective decision making.

The Master of Science in Data Science Program equips students with the knowledge and competencies required to become data science and analytics professionals. Applying tools and methods such as probability theory, statistical analysis and computing, and exploring subjects such as data collection, manipulation, processing, analysis and visualization, the students learn how to solve data-driven problems and practice analytics-driven decision making. Furthermore, students learn how to automate these activities by cloud computing and machine learning platforms as the amount of accumulated data grows immensely.

General Admission Requirements

Applicants must submit the following materials (please note that an application will not be reviewed until all required materials have been submitted):

- Completed Graduate Application with Fee
- Résumé
- Personal Statement
- Three Letters of Recommendation
- Transcript(s)
- GRE General Exam Scores (maybe waived according to academic record of candidate, please contact the Director of Graduate Studies to request a waiver)

Admission Requirements for International Applicants

In addition to the general admission requirements for the M.S. in Data Science program, international applicants must submit the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) scores.

Degree Requirements

Total number of credits for both capstone and thesis track: 30 credits

Code	Title	Hours
Required Courses		
Take the following 5 required courses (15 credits):		15

DASC 6911	Big Data Analytics	
DASC 8211	Machine Learning	
DASC 6010	Data Mining	
DASC 7000	Data Visualization	
DASC 6811	Statistics for Data Science	
Elective Courses		
Select 3 courses (9 credits) of the following:		9
DASC 8212	Deep Learning	
DASC 8222	Data Engineering	
DASC 8211	Machine Learning	
DASC 8803	ST - Adv Machine Learning	
DASC 7111	Text Mining	
DASC 7521	Operations Research	
DASC 8011	Intern in Visual Analytics	
DASC 7211	Network Analysis	
DASC 8811	Special Topics in Data Science (*)	
DASC 8812	Special Topics in Data Science (*)	
PSMA 7800	Ethical Challenges of Big Data	
PSYC 7214	Cognition for Visualization	
Specialization		
Select one of the following Tracks:		6
<i>M.S. Capstone Track (6 credits)</i>		
Elective		
DASC 9311	Data Science Project	
<i>M.S. Thesis Track (6 credits)</i>		
DASC 9412		
DASC 9413	M.S. Thesis	
Total Hours		30

* Represent one and two credit special topics courses that may be scheduled in three- credit course sequences.