Mizzou
University of Missouri

MS in Data Science and Analytics

Graduates will be able to individually acquire and stage large data sets, design and conduct experiments, and analyze results for complex data analytical problems using their foundational and specialized data science tools and techniques; taking a problem from conceptualization stage through to the production of data-derived business intelligence.

The special skills the graduating students will acquire or possess include:

- Real-world experience in applying state-of-the-art data science tools and techniques to solve industry, academic, and/or business data and decision-making challenges.
- A clear understanding of the ethics and security mechanisms required to safeguard large-scale data collections that contain sensitive and critical information.
- A comprehensive understanding of modern data analytics, statistical analysis, and visualization tools that facilitate timely, large data analysis.
- A solid foundational understanding of database systems, database design, and information retrieval; allowing exploitation of a broad spectrum of data repositories and streaming data systems.
- A demonstrated ability to effectively communicate to a broad audience the relevant information derived from large data collections using a variety of visualization and presentation methods. Students will be able to convey the meanings behind specific data analysis techniques to audiences of various technical knowledge.
- Training in the latest data analytic methods and tools; including fundamental and advanced statistical and mathematical principles upon which advanced data analysis techniques are built (machine learning, pattern recognition, data mining, etc.).
- Specialized, advanced training in a chosen emphasis area, such as BioHealth Analytics, High-Performance Computing, Strategic Communications/Data Journalism, Human-Centered Science Design, or Geospatial Analytics.

Degree Requirements

All students will take Core Courses that will provide a foundation of knowledge and an introduction to state-of-the-art technology in Big Data, database design, data ethics, and visualization of high-dimensional and high-volume data.

To understand real-world Big Data issues in context, students will select three courses in an emphasis area. These elective courses will support in-depth analyses and training on data analytic techniques, issues, and problems students will face within a given emphasis area. Students will take a Case Study course to gain hands-on experience with large data sets and use the relevant technology and techniques. A Capstone project will enable students to refine and demonstrate knowledge and skills learned throughout the program. Both courses will provide students with mentoring from faculty, as well as insight from industry partners.

Required Core Courses

DATA_SCI 7010	Principles of Data Science and Analytics	3
DATA_SCI 7020	Statistical and Mathematical Foundations for Data Analytics	3
DATA_SCI 7030	Applied SQL for Database and Analytics	3
DATA_SCI 7040	Big Data Visualization	3
DATA_SCI 8000	Data and Information Ethics	1
DATA_SCI 8010	Data Analytics with Applied AI and Machine Learning	3
Case Study		
DATA_SCI 8080	Data Science and Analytics Case Study	2
Capstone		
DATA_SCI 8090	Data Science & Analytics Capstone Project	3
Electives		**9**
Total Credits		**30**

Sample Plan of Study MS DSA

First Year			
Fall	**CR**	**Spring**	**CR**
DATA_SCI 7010	3	DATA_SCI 7040	3
DATA_SCI 7020	3	DATA_SCI 8010	3
DATA_SCI 7030	3	Emphasis Area Course 1	3
	9		**9**
Second Year			
Fall	**CR**	**Spring**	**CR**
DATA_SCI 8000	1	DATA_SCI 8090	3
DATA_SCI 8080	2		
Emphasis Area Course 2	3		
Emphasis Area Course 3	3		
	9		**3**

Total Credits: 30