Data Analytics

Contact Information

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The M.S. in Data Analytics, an OPT-STEM program, aims at providing an interdisciplinary approach to data analytics that covers both the foundational mathematical knowledge of data science and the computational methods and tools for preprocessing, interpreting, analyzing, representing, and visualizing data sets. The degree is offered in both on-campus and online formats. Applications are accepted each spring and fall semester. The Data Analytics program may, at its own discretion, accept new students in the summer semester, and consider accepting students under conditional admission, thereby allowing students to take classes at UIS to complete the program's entrance requirements. Upon the completion of all entrance requirements, the student will be fully admitted.

Students must have completed a course in data structures and algorithms to be considered for admission to the master's degree program.

Note:

Students enrolled in the M.S. in Data Analytics degree program are not eligible for the graduate certificate in Data Analytics.

The Master's Degree

Advising

On acceptance, students are assigned their academic advisor. Before registering for the first time, the student should discuss an appropriate course of study with the academic advisor.

Grading Policy

Students must earn a grade of B- or better in all courses that apply toward the degree, and a cumulative 3.0 grade point average is required to graduate. In addition, graduate students who do not maintain a 3.0 grade point average will be placed on academic probation according to campus policy. Graduate students enrolled in 400-level courses should expect more stringent grading standards and/or additional assignments. Courses taken on a CR/NC basis will not count toward the degree.

Program Learning Outcomes

1. Exhibit understanding of the key technologies in data storage, data management, data warehousing and analysis.
2. Demonstrate theoretical and practical knowledge of foundational statistical methods to collect data, analyze and draw inferences from data and interpret the results.
3. Use data analytics methods and tools to preprocess and clean data sets; discover patterns; extract knowledge from raw data sets; represent, interpret, and evaluate data and predict future behavior, patterns, and trends.
4. Manage, store, and analyze big data sets that cannot be handled using traditional database systems.
5. Exhibit the ability to apply various elements of statistics and computer science to solve real-world problems and use appropriate visual, verbal, and written media to effectively present and communicate findings.
6. Demonstrate the ability to apply Artificial Intelligence and other emerging technologies to analyze data for complex perceptual problems such as computer vision and natural language understanding.

Requirements

Prerequisites		
CSC 225	Computer Programming Concepts I	3
CSC 275	Computer Programming Concepts II	3
CSC 302	Discrete Structures	4
CSC 385	Data Structures and Algorithms	4
DAT 332	Matrix Analysis and Numerical Optimization	4
or MAT 332	Linear Algebra	
MAT 113	Business Calculus	4
or MAT 115	Calculus I	
MAT 121	Applied Statistics	3
Total Hours		**25**

Required Courses		
CSC 472	Introduction to Database Systems	4
CSC 532	Introduction to Machine Learning	4
CSC 534	Big Data Analytics	4
CSC 535	Deep Learning	4
DAT 502	Introduction to Statistical Computation	4
DAT 530	Advanced Statistical Methods	4
DAT 554	Data Analytics Capstone [1]	4
Electives (Choose two)		**8**
CSC 533	Data Mining	
CSC 561	NoSQL Databases	
CSC 562	Data Visualization	
CSC 570	Advanced Topics in Computer Systems (A.I. for Cybersecurity, Natural Language Processing, or Containerization/BigData)	
CSC 572	Advanced Database Concepts	
DAT 444	Operations Research Methods	
or MAT 444	Operations Research Methods	
DAT 570	Advanced Topics in Data Analytics (Introduction to Quantum Computing)	
Total Hours		**36**

[1] The capstone project will draw upon the knowledge and skills learned throughout the entire curriculum and will ask students to apply the appropriate methods and tools for data analysis in a real-world organizational setting. The capstone course provides the opportunity to exercise different techniques for data storage,

preprocessing, integration and analysis covered throughout the M.S. in Data Analytics curriculum in order to address business challenges. The students must provide a well-written report and an oral presentation to effectively communicate their findings.

Master's Closure

Students who take DAT 554 and do not pass must register for DAT 555 (zero credit hours, one billable hour) each subsequent fall and spring semester until the closure is complete.

Transfer Courses

Students are allowed to transfer a maximum of eight graduate semester hours with a grade of B or better. They will be evaluated on a case-by-case basis and approved by a Student Petition. Transfer students will be required to take a minimum of 28 credit hours of Data Analytics core and elective course work at UIS.

Students must complete 28 required credit hours and 8 elective credit hours to earn the Data Analytics degree while maintaining a minimum GPA of 3.0 on a scale of 4.0 as listed below.

Graduate Certificates

- Graduate Certificate Data Analytics

Online

- Data Analytics (p. 1)
- Graduate Certificate Data Analytics