Master of Science

Data Science and Analytics with a Concentration in Physics (MS)

Physics Concentration

The purpose of this concentration is to provide students with a thorough understanding of the methods and technologies to handle big data and to instill physics problem-solving skills rooted in big data solutions. It prepares them to become professionals trained in advanced data analytics, with the ability to transform large streams of multiple data sources into understandable and actionable information for the purpose of making decisions. The coursework enables the students to achieve a comprehensive list of tasks including collecting, storing, processing, and analyzing data, reporting statistics and patterns, drawing conclusions and insights, and making actionable recommendations.

Admission

The requirements for admission to the Master of Science in Data Science and Analytics are as follows:

1. A baccalaureate degree in computer science, electrical and/or computer engineering, mathematics, statistics, information system & technology, or a related field from a regionally-accredited institution or an equivalent institution outside the U.S.; students holding a bachelor's degree in an unrelated field will need competency in topics related to basic statistics and computer science.
2. Current scores on the Test of English as a Foreign Language (TOEFL) of at least 230 on the computer-based TOEFL or 79 on the TOEFL iBT, or IELTS 6.5 overall.

Curriculum Requirements

The program requires 30 credit hours. A capstone project is required.

Data Science & Analytics Core

Core Requirements		15
DASC/CS 620	Introduction to Data Science and Analytics	
CS 624	Data Analytics and Big Data	
CS 625	Data Visualization	
STAT 603	Probability Models for Data Science and Analytics	
DASC 605	Advanced Statistical Concepts in Data Science	
Total Credit Hours for Concentration		**12**
Required Courses		
PHYS 556	Intermediate Quantum Mechanics	
or PHYS 621	Quantum Mechanics I	
PHYS 603	Classical Mechanics	
PHYS 604	Classical Electrodynamics I	
Elective Course [*]		
Select one of the following:		
DASC 600	Programming for Data Science	
PHYS 517	Introduction to Particle Accelerator Physics	
PHYS 696	Special Topics in Accelerator Physics	
PHYS 755	Experimental and Computational Techniques in Accelerator Physics	
PHYS 513	Methods of Experimental Physics	

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PHYS 515	Introduction to Nuclear Particle Physics	
PHYS 871	Introduction to Quantum Field Theory I	
PHYS 595	Special Topics in Physics	
PHYS 795	Special Topics in Physics	
PHYS 520	Introductory Computational Physics	
or PHYS 711	Computational Physics	
PHYS 804	Classical Electrodynamics II	
Capstone Course		**3**
Total Credit Hours		**30**

*   Other courses may be used to fulfill the elective requirement with the approval of the Graduate Program Director.