DATA ANALYTICS (M.S.)

Requirements

The master's program in Data Analytics requires 30 credits of coursework (10 classes), which will typically be completed in 1-2 years. Students may select to complete a thesis through two courses instead of a capstone project and fifth elective. Classes will be offered in the evenings and during the weekends.

Prerequisites

An undergraduate degree in a field emphasizing quantitative skills is expected, such as a degree in computer science, information science, engineering, math, physical science, health science, business, social science or city and urban planning. Professional knowledge or experience equivalent to the following three courses is required.

1. Computer Programming with basic algorithms (in C, C++, Java, R or Python) (e.g., CISC 5300 C++ Programming or CISC 5380 Programming with Python)
2. Applied Statistics and Probability (e.g., CISC 5420: Applied Statistics and Probability)
3. Discrete Mathematics including basic combinatorics and graph theory (e.g., CISC 5400 Discrete Structures)

Bridging courses are available for students who are missing one or more of the aforementioned prerequisites. With the permission of the Program Director, these courses can be taken concurrently with the Data Analytics courses. If you are required to take these courses, it will be stated in your admissions letter and the courses must be taken during the first semester.

Requirements

Course	Title	Credits
Five Core Courses from the following:		15
CISC 5500	DATA ANALYTICS TOOLS&SCRIPTING [1]	
CISC 5825	COMPUTER ALGORITHMS	
CISC 6930	DATA MINING [2]	
CISC 5950	BIG DATA PROGRAMMING	
CISC 5800	MACHINE LEARNING	
CISC 5900	INFORMATION FUSION	
Three elective courses, selected from any mix of options within the thematic clusters:		9
Internship		
CISC 6081	DATA ANALYTIC PRACTICUM	
Big Data and Cloud Computing		
CISC 5550	CLOUD COMPUTING	
CISC 6735	WIRELESS NETWORKS	
CISC 5700	COGNITIVE COMPUTING	
CISC 5009	NETWORK ESSENTIALS	
CISC 6525	ARTIFICIAL INTELLIGENCE	
Cybersecurity		
CISC 5650	CYBER SECURITY ESSENTIALS	
CISC 6640	PRIVACY AND SECURITY IN BIG DATA	
CISC 6680	INTRUSION DETECTION AND NETWORK FORENSICS	
CISC 5750	INFORMATION SECURITY AND ETHIC	
Bioinformatics and Health Informatics		
CISC 6500	BIOINFORMATICS	
CISC 6700	MEDICAL INFORMATICS	
BISC 6525	BIOSTATISTICS	
BISC 7745	MOLECULAR BIOLOGY	
BISC 8710	SEMINAR IN GENETICS	
Financial Informatics		
CISC 5350	FINANCIAL PROGRAMMING	
CISC 6300	COMPUTATIONAL FINANCE	
CISC 6350	ADVANCED FINANCIAL PROGRAMMING	
ECON 6950	FINANCIAL ECONOMETRICS	
ECON 6910	APPLIED ECONOMETRICS	
Urban and City Informatics		
URST 5000	ISSUES IN URBAN STUDIES	
URST 6200	RESEARCH SKILLS URBAN STUDIES	
BISC 7529	Principles of Geographical Information Science	
Election and Government Informatics		
POSC 5100	AMERICAN POLITICAL BEHAVIOR	
POSC 5130	POLITICAL INSTITUTIONS AND PROCESSES	
POSC 5251	POLITICAL SURVEY RESEARCH	
Behavior Informatics		
PSYC 6850	EVALUATION OF PSYCHOLOGICAL & SOCIAL PROGRAMS	
PSYC 7804	REGRESSION WITH LAB	
PSYC 7816	INTRODUCTION TO MULTIVARIATE ANALYSIS	
PSYC 7830	STRUCTURAL EQUATION MODELING	
PSYC 7850	HIERARCHICAL LINEAR MODELS	
PSYC 7920	ITEM RESPONSE THEORY	
Media Informatics		
PMMA 6103	DATA JOURNALISM AND INTERACTIVE GRAPHICS	
PMMA 6205	ONLINE ANALYTICS AND METRICS	
One selection from the following:		6
Master Thesis [3]		
CISC 6085	MASTER THESIS IN DATA ANALYTICS I	
CISC 6086	MASTER THESIS IN DATA ANALYTICS II	
Capstone and Elective [3]		
CISC 6080	CAPSTONE PROJECT IN DATA ANALYTICS	
One additional elective from the selection above		
Total Credits		30

1. CISC 5500 DATA ANALYTICS TOOLS&SCRIPTING must be taken in the first semester. (Computer Programming is a prerequisite for this course)
2. CISC 6930 DATA MINING must be taken in the first semester if possible and preferably be taken before CISC 5800 and CISC 5900.
3. Capstone and thesis courses can only be taken during the second or third semester.