MASTER OF SCIENCE IN DATA SCIENCE

Program

Prerequisites and Foundation Competencies

The MSDS degree requires students to have competencies that will allow them to pursue graduate coursework. Knowledge and/or experience in data science, programming, and specific domains is necessary. Gaps in knowledge and experience in these areas can be remedied by domain-specific bridge courses offered in the MSDS program:

Code	Title	Credits
BIOL 1171	General Biology I	4
CPSC 1101	Introduction to Computing	3
PSYC 1010	General Psychology	3
SOCI 1100	Introduction to Sociology	3

Students who are accepted into the program with certain bridge courses should complete the bridge requirement in the first semester with a grade of B or higher to satisfy the bridge requirement. Students may take graduate level courses and bridge courses at the same time. Bridge courses do not count for credit towards the degree.

Program Requirements

MSDS students will complete four required courses, as described below. In addition, students should select a concentration from one or more specialization areas in which they have an interest with their advisor's guidance. Concentrations currently include computational analytics, bioinformatics, social analytics, behavioral analytics, or health analytics. Additional individual areas of interest may be discussed with the advisor. Students may also take two elective courses from the list below.

The program requires two capstone courses and four required core courses listed below. Completion of a minimum of eight three-credit courses, plus the two-semester capstone sequence, for a total of 30 credits, comprise the graduation requirements for the MSDS program.

To earn the Master of Science in Data Science, students complete the following:

Code	Title	Credits
MATH 5417	Applied Statistics I	3
SWEG 5322	Visual Analytics	3
SWEG 6508	Data Warehouse Systems	3
SWEG 6518	Data Mining and Business Intelligence	3
Concentration Courses		
Select two courses in one of the following concentration areas:		6
Computational Analytics		
SWEG 5357	Database Management Systems	
SWEG 6461	Pattern Recognition	
Health Analytics		
NURS 7602	Healthcare Economics and Marketing	
NURS 7613	Finance and Quality Management in Healthcare Organizations	
Bioinformatics		
BIOL 5365	Evolutionary Biology	
SWEG 5315	Computational Biology	
SWEG 5317	Computational Statistics for Biomedical Sciences	
Social Analytics		
SOCI 5100	American Class Structure	
SOCI 5110	Race, Cities, and Poverty	
SOCI 5300	Sociology of Education	
Elective Courses		
Select two elective courses from the following: [1]		6
Computing Technical Electives		
SWEG 5349	Cloud Computing	
SWEG 5355	Artificial Intelligence	
SWEG 5360	Machine Learning	
SWEG 6499	Algorithms	
SWEG 6505	Advanced Database Concepts	
SWEG 6530	Applications and Data Security	
Mathematics Electives		
MATH 5418	Applied Statistics II	
MATH 5451	Probability Theory	
MATH 5452	Statistics Theory	
Capstone Sequence		
SWEG 6961	Capstone Professional Project I	3
SWEG 6962	Capstone Professional Project II	3
Total Credits		**30**

[1] Electives may be chosen from courses listed, SWEG 5990 Independent Study, or any other graduate-level course from a concentration or another area, under advisement of the department chair or academic advisor.