Data Science

Program Co-Directors: Elaine Spiller, Ph.D and Michael Zimmer, Ph.D

Data Science is the emerging field that seeks to extract and quantify knowledge from data. The Interdisciplinary Data Science major (INDS) integrates statistics and mathematics with computer science, allowing students to develop the knowledge and skills necessary to discover and quantify new knowledge from data. Those prepared to integrate advanced technology with modern statistical and mathematical practices have the opportunity to use data in action to benefit society. Data scientists turn data into knowledge.

Data Science Major

The interdisciplinary data science major consists of 56 credit hours of computer science and mathematics courses, including fourteen required courses (47 credit hours), two computer science or mathematics electives (6 credit hours), and a data science capstone course (3 credit hours).

Required Computer Science courses:		
COSC 1010	Introduction to Software Development	4
COSC 1020	Object-Oriented Software Design	4
COSC 2100	Data Structures	3
COSC 4610	Data Mining	3
COSC 4800	Principles of Database Systems	3
Required Mathematics courses:		
MATH 1450	Calculus 1	4
MATH 1451	Calculus 2	4
MATH 2350	Foundations of Mathematics	3
or MATH 2100	Discrete Mathematics	
MATH 2450	Calculus 3	4
MATH 3100	Linear Algebra and Matrix Theory	3
MATH 3570	Introduction to Data Science	3
or COSC 3570	Introduction to Data Science	
MATH 4700	Theory of Probability	3
MATH 4720	Statistical Methods	3
MATH 4780	Regression Analysis	3
Computer Science or Mathematics electives: Choose two of the following.		6
COSC 4500	Advanced Data Science	
COSC 4600	Fundamentals of Artificial Intelligence	
MATH 4630	Mathematical Modeling and Analysis	
MATH 4710	Mathematical Statistics	
MATH 4760	Time Series Analysis	
Required Data Science Capstone course		3
Total Credit Hours		56

Note:

- Depending on course topic and approval by both departments, upper division COSC or MATH courses outside of the list may be substituted as a computer science or mathematics elective.

Typical Program for Data Science Major

Freshman

First Term	Hours	Second Term	Hours
COSC 1010	4	COSC 1020	4
MATH 1450	4	MATH 1451	4
ENGL 1001 or ESSV1 (MCC)	3	ENGL 1001 or ESSV1 (MCC)	3

PHIL 1001 or THEO 1001 (MCC)	3	PHIL 1001 or THEO 1001 (MCC)	3
	14		14

Sophomore

First Term	Hours	Second Term	Hours
COSC 2100	3	MATH 3100	3
MATH 2350	3	MATH 3570 or COSC 3570	3
MATH 2450	4	MATH 4720	3
CORE 1929 (MCC) or elective	3	CORE 1929 (MCC) or elective	3
Elective	3	DSCV (MCC)[1,2]	3
	16		15

Junior

First Term	Hours	Second Term	Hours
COSC 4800	3	COSC 4610	3
MATH 4700	3	COSC or MATH Science elective	3
DSCV (MCC)[1,2]	3	DSCV (MCC)[1,2]	3
Elective	6	DSCV (MCC)[1,2]	3
		Elective	3
	15		15

Senior

First Term	Hours	Second Term	Hours
MATH 4780	3	Data Science Capstone	3
COSC or MATH science elective	3	CORE 4929 (MCC) or elective	3
CORE 4929 (MCC) or elective	3	Electives	9
Electives	7		
	16		15

Total credit hours: 120

1 The four courses in the Discovery Tier (DSCV) of the MCC must be completed in the same theme and include the following content areas: Humanities (HUM), Social Science (SSC), Natural Science and Mathematics (NSM) and one elective (ELE), which is an additional course from any of the three content areas. A maximum of two courses in the Discovery Tier can apply towards a primary major.

2 Students must also complete the Writing Intensive (WRIT) and Engaging Social System and Values 2 (ESSV2) requirements of the MCC. These requirements can be fulfilled through designated courses in the Discovery Tier or other degree requirements.