

Data Science, Minor

The minor in data science studies the collection, manipulation, storage, retrieval, and computational analysis of data in its various forms, including numeric, textual, image, and video data from small to large volumes.

Minor Requirements

Note: CCIS minors are only available to non-CCIS majors; students in CCIS-only or CCIS-combined degrees are not eligible for CCIS minors. A student may receive at most one CCIS minor, regardless of how many CCIS minors they qualify for.

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified.

Required Courses

Code	Title	Hours
Computer Science Fundamental Courses		
A grade of C– or higher is required in computer science fundamental courses.		
Complete one of the following options:		5-10
<i>Fundamentals of Computer Science Option</i>		
CS 2500 and CS 2501	Fundamentals of Computer Science 1 and Lab for CS 2500	
CS 2510 and CS 2511	Fundamentals of Computer Science 2 and Lab for CS 2510	
<i>Programming with Data Option</i>		
DS 2000 and DS 2001	Programming with Data and Practicum for DS 2000	
Data Science Required Course		
DS 4100	Data Collection, Integration, and Analysis	4

Data Science Electives

Code	Title	Hours
Complete three of the following. Only one course from the Meaningful Minor list may contribute toward the minor requirements:		12
DS 2010 to DS 4989		
CS 3200	Database Design	
Meaningful Minor list (see below)		

CCIS Meaningful Minors

The concept of “CCIS Meaningful Minors” allows students the chance to personalize a computer or information science minor to meet individual academic needs and interests. Students may take *one elective* related to computation or information from a preapproved list of courses offered across the university rather than from within CCIS. This allows students to integrate the minor with a course in their own major or with a course in another area of interest. Students may of course choose to take all electives in the minor within CCIS if they wish.

Code	Title	Hours
Arts, Media and Design		
ARTG 3451	Information Design 1	
ARTG 4552	Information Design 2	

ARTG 5100	Information Design Studio 1: Principles
ARTG 5110	Information Design History
ARTG 5120	Research Methods for Design
ARTG 5330	Visualization Technologies 1
ARTG 6100	Information Design Studio 2: Dynamic Mapping and Models
ARTG 6200	Information Design Studio 3: Synthesis
GSND 5110	Game Design and Analysis
GSND 6350	Data-Driven Player Modeling
Bouvé Health Sciences	
HINF 5101	Introduction to Health Informatics and Health Information Systems
HINF 5102	Data Management in Healthcare
HINF 5300	Personal Health Interface Design and Development
HINF 5301	Personal Health Technologies: Field Deployment and System Evaluation
D'Amore-McKim—Business	
FINA 4608	Advanced Financial Strategy
MISM 3305	Information Resource Management
MISM 3403	Data Management in the Enterprise
MKTG 3401	Marketing Research
MKTG 3501	Marketing Analytics
SCHM 2301	Supply Chain and Operations Management
Computer and Information Science	
IA 5010	Foundations of Information Assurance
IA 5200	Security Risk Management and Assessment
Engineering	
EECE 4542	Advanced Engineering Algorithms
EECE 5642	Data Visualization
EECE 5644	Introduction to Machine Learning and Pattern Recognition
EECE 5639	Computer Vision
IE 5640	Data Mining for Engineering Applications
Science	
BINF 6308	Bioinformatics Computational Methods 1
BINF 6309	Bioinformatics Computational Methods 2
ENVR 2500	Biostatistics
MATH 2331	Linear Algebra
MATH 3081	Probability and Statistics
MATH 4581	Statistics and Stochastic Processes
PSYC 2320	Statistics in Psychological Research
Social Science and Humanities	
ECON 2350	Statistics

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ECON 3916 Intermediate Selected Topics in
Microeconomics

POLS 2400 Quantitative Techniques

GPA Requirement

2.000 GPA required in the minor