

# 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: Khoury minors are only available to non-Khoury majors; students in Khoury-only majors or Khoury combined majors are not eligible for Khoury minors. A student may declare at most one Khoury minor, regardless of how many Khoury 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
<b>Computer Science Fundamental Courses</b>		
Complete one of the following options:		9-10
<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 Data Science Programming Practicum	
DS 2500 and DS 2501	Intermediate Programming with Data and Lab for DS 2500	
<b>Data Science Required Course</b>		
DS 3000	Foundations of Data Science	4

## Data Science Electives

Code	Title	Hours
Complete two of the following (only one course from the meaningful minor list may contribute toward the minor requirements):		8
CS 3200	Database Design	
DS 2010 to DS 4989		
Meaningful minor list (see below)		

## Khoury Meaningful Minors

The concept of Khoury Meaningful Minors allows students the chance to personalize a computer 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 Khoury. 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 Khoury if they wish.

Code	Title	Hours
<i>Arts, Media and Design</i>		
ARTG 3451	Information Design 1	
ARTG 5100	Information Design Studio 1: Principles	
ARTG 5110	Information Design History	
ARTG 5120	Research Methods for Design	
ARTG 5330	Visualization Technologies 1: Fundamentals	
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	
<i>Bouvé Health Sciences</i>		
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	Evaluating Health Technologies
<i>D'Amore-McKim—Business</i>	
FINA 4335	Computational Methods and Their Applications in Finance
FINA 4350	Applied Financial Econometrics and Data Modeling
FINA 4390	Machine Learning in Finance
MISM 2510	Fundamentals of Information Analytics
MISM 3403	Data Management for Business
MISM 3501	Information Visualization for Business
MISM 3515	Data Mining for Business
MKTG 3401	Marketing Research
MKTG 3501	Marketing Analytics
SCHM 2301	Supply Chain and Operations Management
<i>Computer and Information Science</i>	
CY 5010	Foundations of Information Assurance
CY 5200	Security Risk Management and Assessment
<i>Engineering</i>	
CIVE 3464	Probability and Engineering Economy for Civil Engineering
EECE 5639	Computer Vision
EECE 5642	Data Visualization
EECE 5644	Introduction to Machine Learning and Pattern Recognition
IE 5640	Data Mining for Engineering Applications
<i>Science</i>	
BINF 6308	Bioinformatics Computational Methods 1
BINF 6309	Bioinformatics Computational Methods 2
ENVR 2500	Biostatistics
MATH 2331	Linear Algebra
MATH 2341	Differential Equations and Linear Algebra for Engineering
MATH 3081	Probability and Statistics
MATH 4581	Statistics and Stochastic Processes
PSYC 2320	Statistics in Psychological Research
<i>Social Science and Humanities</i>	
ECON 2350	Statistics for Economists
ECON 2560	Applied Econometrics
ECON 3916	Intermediate Selected Topics in Microeconomics
POLS 2400	Quantitative Techniques

### GPA Requirement

2.000 GPA required in the minor