



# Data Science

Data science is a rapidly-growing field that touches billions of lives around the globe each day—including yours. Our data science program will give you the tools you need to investigate, discover opportunities, and use data to make a difference. It will also empower you to critically evaluate and ethically apply data science techniques to big data thanks to our interdisciplinary liberal arts experience.

## Major

A major in data science consists of six units of foundational courses, five units of core courses, three elective courses, and an experiential learning component related to data science. Thus, the major requires either 14 or 15 units, depending on the nature of the experiential learning component.

### Foundational Courses

MATH 135. Calculus I  
 MATH 136. Calculus II  
 CS 140. Introduction to Computer Programming  
 CS 219. Techniques of Computer Science  
 STAT 113. Applied Statistics  
 STAT 213. Applied Regression Analysis

### Core Courses

MATH 217. Linear Algebra  
 CS 256. Data Structures  
 CS 345. Database Systems  
 DATA 234. Foundations of Data Science  
 DATA 352. Statistical and Machine Learning

### Electives

Three chosen two groups: technical electives and applied electives, with at least one from the technical electives.

#### Group 1 - (Technical Electives)

MATH 205: Multivariable Calculus  
 MATH 230: Differential Equations  
 MATH 318: Graph Theory  
 CS 332: Web Programming  
 CS 340: Software Engineering  
 CS 362: Algorithm Analysis  
 CS 374: Artificial Intelligence  
 DATA 334: Data Visualization  
 STAT 226: Statistical Methods of Data Collection  
 STAT 313: Advanced Linear Models  
 STAT 325: Probability  
 STAT 326: Mathematical Statistics  
 STAT 343: Time Series Analysis

#### Group 2 - (Applied Electives)

BIOL 303: Biostatistics  
 CHEM 205: Quantitative Analysis  
 CHEM 342: Thermodynamics and Kinetics  
 ECON 342: Econometrics  
 GEOL 233: Geographic Information Systems  
 GEOL 319: Hydrology and Hydrogeology  
 GEOL 333: Advanced Geographic Information Systems  
 GEOL 362: Geochemistry  
 ENVS 323: Environmental Epidemiology  
 ENVS 383: Energy Life Cycle Analysis  
 PCA 365: The Rhetoric of Algorithms  
 PHYS 221: Modern Physics I  
 PHYS 222: Modern Physics II  
 PSYC 205: Research Methods in Psychology  
 PSYC 401: Fundamentals of Learning  
 SOC 301: Quantitative Research Methods

## Senior Year Experience (SYE)

This can be satisfied by completing an SYE course: DATA 450, DATA 489/498. This can also be satisfied by doing an internship or summer fellowship, approved by the department chair.

## Minor

Seven courses are required for the minor, including six foundational courses and one elective.

### Foundational Courses

CS 140. Introduction to Computer Programming  
CS 219. Techniques of Computer Science  
CS 256. Data Structures  
STAT 113. Applied Statistics  
STAT 213. Applied Regression Analysis      **OR**      ECON 342. Econometrics  
DATA 234. Foundations of Data Science

### Electives

CS 332. Web Programming  
CS 340. Software Engineering  
CS 345. Database Systems  
CS 362. Algorithm Analysis  
CS 374. Artificial Intelligence  
MATH 205. Multivariable Calculus  
MATH 217. Linear Algebra  
MATH 230. Differential Equations  
MATH 318. Graph Theory  
STAT 226. Statistical Methods of Data Collection  
STAT 313. Advanced Linear Models  
STAT 325. Probability  
STAT 326. Mathematical Statistics  
STAT 343. Time Series Analysis