Data Science, B.S.

The Data Science Major prepares students for a career in data analysis, combining foundational statistical concepts with computational principles from computer science. In the first two years of the program students will take core courses in both the Statistics and Computer Science Departments, providing a strong foundation in the principles of each field. In the 3rd and 4th years of the program, students will take more specialized courses, on topics such as design of algorithms, machine learning, information visualization, and Bayesian statistics. A major component of this degree is the final year capstone project course, a 2-quarter course that teaches students how to apply statistical and computational principles to solve large-scale real-world data analysis problems.

Freshman Applicants: See the Undergraduate Admissions section (http://catalogue.uci.edu/informationforprospectivestudents/undergraduateadmissions/#admissionasafreshmanapplicanttext).

Transfer Applicants: See the Undergraduate Admissions section (http://catalogue.uci.edu/informationforprospectivestudents/undergraduateadmissions/#admissionasatransferapplicanttext).

Bren School of ICS majors (including shared majors, BIM and CSE) pursuing minors within the Bren School of ICS may not count more than five courses toward both the major and minor. Some ICS majors and minors outside of the School are not permitted due to significant overlap. Visit the ICS Student Affairs Office website for Majors and Minors restrictions. (http://www.ics.uci.edu/ugrad/degrees/MajorMinor_Restrictions_Chart.pdf) All students should check the Double Major Restrictions Chart (https://www.ics.uci.edu/ugrad/degrees/Dbl_Major_Restrictions_Chart.pdf) and view our information page (http://www.ics.uci.edu/ugrad/degrees/Double_Majors.php) on double majoring to see what degree programs are eligible for double majoring.

All students must meet the University Requirements. (http://catalogue.uci.edu/informationforadmittedstudents/requirementsforabachelorsdegree/)

Data Science Major Requirements

Lower-division:	
A. Select one of the following series:	
I&C SCI 31- 32- 33	Introduction to Programming and Programming with Software Libraries and Intermediate Programming
or	
I&C SCI H32- 33	Python Programming and Libraries (Accelerated) and Intermediate Programming
B. Complete:	
I&C SCI 45C	Programming in C/C++ as a Second Language
I&C SCI 46	Data Structure Implementation and Analysis
I&C SCI 51	Introductory Computer Organization
IN4MATX 43	Introduction to Software Engineering
C. Complete:	
MATH 2A	Single-Variable Calculus I
MATH 2B	Single-Variable Calculus II
MATH 2D	Multivariable Calculus I
MATH 3A	Introduction to Linear Algebra
or I&C SCI 6N	Computational Linear Algebra
I&C SCI 6B	Boolean Logic and Discrete Structures
I&C SCI 6D	Discrete Mathematics for Computer Science
STATS 5	Seminar in Data Science
STATS 7	Basic Statistics
STATS 68	Statistical Computing and Exploratory Data Analysis
Upper-division:	
A. Data Science core requirements:	
STATS 110	Statistical Methods for Data Analysis I
STATS 111	Statistical Methods for Data Analysis II
STATS 112	Statistical Methods for Data Analysis III
STATS 115	Introduction to Bayesian Data Analysis
STATS 120A	Introduction to Probability and Statistics I

STATS 120B	Introduction to Probability and Statistics II
STATS 120C	Introduction to Probability and Statistics III
I&C SCI 139W	Critical Writing on Information Technology
COMPSCI 122A	Introduction to Data Management
COMPSCI 161	Design and Analysis of Algorithms
COMPSCI 178	Machine Learning and Data-Mining
IN4MATX 143	Information Visualization
B. Three elective courses from the list below:	
MATH 130B	Probability II
MATH 130C	Stochastic Processes
STATS 140	Multivariate Statistical Methods
I&C SCI 53	Principles in System Design
COMPSCI 111	Digital Image Processing
COMPSCI 115	Computer Simulation
COMPSCI 121	Information Retrieval
COMPSCI 122B	Project in Databases and Web Applications
COMPSCI 122C	Principles of Data Management
COMPSCI 125	Next Generation Search Systems
COMPSCI 131	Parallel and Distributed Computing
COMPSCI 134	Computer and Network Security
COMPSCI 163	Graph Algorithms
COMPSCI 165	Project in Algorithms and Data Structures
COMPSCI 169	Introduction to Optimization
COMPSCI 171	Introduction to Artificial Intelligence
COMPSCI 172B	Neural Networks and Deep Learning
IN4MATX 131	Human Computer Interaction
IN4MATX 141	Information Retrieval
IN4MATX 161	Social Analysis of Computing
C. Data Science capstone team-based project courses: STATS 170A and STATS 170B	

Freshman

Fall	Winter	Spring
I&C SCI 31	I&C SCI 32	I&C SCI 33
MATH 2A	MATH 2B	MATH 2D
WRITING 40	STATS 5	STATS 7
	WRITING 50	WRITING 60

Sophomore

Fall	Winter	Spring
I&C SCI 45C	I&C SCI 46	I&C SCI 51
I&C SCI 6B	I&C SCI 6D	STATS 68
STATS 120A	MATH 3A	STATS 120C
General Education III	STATS 120B	General Education VI

Junior

Fall	Winter	Spring
COMPSCI 122A, 161, or 178	COMPSCI 122A, 161, or 178	COMPSCI 122A, 161, or 178
IN4MATX 43	I&C SCI 139W	IN4MATX 143
STATS 110	STATS 111	STATS 112
General Education IV/VIII	General Education III/VII	

Senior

Fall	Winter	Spring
Data Science Major Elective	STATS 115	STATS 170B
Data Science Major Elective	STATS 170A	Data Science Major Elective
General Education III	General Education IV	General Education IV

A wide variety of careers and graduate programs are open to graduates of the Data Science major. Demand for graduates with skills in both statistics and computer science currently outpaces supply - thus, students with these skills typically find employment quickly, across a wide variety of sectors,

including internet companies, finance, engineering, business, medicine, and more. Data Science graduates are well-qualified for job titles such as "data scientist," "data analyst," or "statistician," both in the public and private sectors. Graduate school in area such as Computer Science or Statistics is also a possible career path.

- Statistics, M.S.
- Statistics, Minor
- Statistics, Ph.D.