

# DATA SCIENCE, BACHELOR OF SCIENCE

## College of Letters & Science

The Data Science program has a capped admission process. Information about the requirements for continuing students to change majors into Data Science can be found at Department of Statistics (<https://statistics.ucdavis.edu/undergrad/advising/change-of-major/data-science/>).

Data Science combines computational, mathematical and statistical reasoning to draw conclusions based on data. Data science techniques and methods can be applied to problems from virtually any discipline; for example, in agricultural and environmental sciences, biological sciences, engineering, medical sciences and social sciences.

## The Program

Data Science majors receive a Bachelor of Science degree. The program requires both theoretical and applied course work to underscore the strong interdependence of technical foundations in computer science, engineering, mathematics and statistics, and their applications to any field of inquiry relying on quantitative data analysis. The B.S. degree program has one track, the Foundations track.

**B.S. in Data Science-Foundations Track** emphasizes the underlying computer science, engineering, mathematics and statistics methodology and theory, and is especially recommended as preparation for graduate study in data science or related fields.

## Career Opportunities

Inferential and computational techniques are used in many fields, including the agricultural and environmental sciences, biological sciences, social sciences, and health sciences, business, and engineering. The wide applicability of data science is reflected in the strong demand for graduates with data science training in both the public and private sectors. Employment opportunities include careers in data & policy analysis in government & industry, tech industry, insurance & healthcare industry, engineering, public health, biological & pharmaceutical research, law, and education. Students with an undergraduate degree in data science may enter advanced studies in data science, computer science, applied mathematics, statistics, economics, finance, psychology, medicine, business management & analytics, and other professional school programs.

## Major Advisor

For a current list of faculty and staff advisors in the Department of Statistics, see Undergraduate Advising (<https://statistics.ucdavis.edu/undergrad/advising/>).

The major requirements below are in addition to meeting University Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) & College Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/>); unless otherwise noted. The minimum number of units required for the Data Science Bachelor of Science is 91.

## Foundations Track

Code	Title	Units
<b>Preparatory Subject Matter</b>		
<i>Computer Science Engineering</i>		
ECS 017	Data, Logic, & Computing	4
ECS 032A	Introduction to Programming	4
or ECS 032AV	Introduction to Programming	
ECS 032B	Introduction to Data Structures	4
<i>Mathematics</i>		
MAT 021A	Calculus	4
MAT 021B	Calculus	4
MAT 021C	Calculus	4
MAT 022A	Linear Algebra	3
<i>Statistics</i>		
STA 035A	Statistical Data Science I	4
STA 035B	Statistical Data Science II	4
STA 035C	Statistical Data Science III	4
Preparatory Subject Matter Subtotal		39
<b>Depth Subject Matter</b>		
<i>Computer Science Engineering</i>		12
ECS 116	Databases for Non-Majors	
ECS 117	Algorithms for Data Science	
ECS 119	Data Processing Pipelines	
<i>Probability &amp; Statistics</i>		12
STA 108	Applied Statistical Methods: Regression Analysis	
STA 141A	Fundamentals of Statistical Data Science	
MAT 135A	Probability	
or STA 131A	Introduction to Probability Theory	
<i>Machine Learning</i>		
Choose one:		4
ECS 111	Applied Machine Learning for Non-Majors	
MAT 170	Mathematics for Data Analytics & Decision Making	
STA 142A	Statistical Learning I	
<i>Mathematics</i>		8
MAT 168	Optimization	
MAT 167	Applied Linear Algebra	
or ECS 130	Scientific Computation	
<i>Science &amp; Technology Studies</i>		4
STS 101	Data & Society	
<b>Upper Division Electives</b>		
Three elective courses in a related discipline. A list of pre-approved electives can be found on the Department of Statistics website.		12
Pre-Approved Electives List ( <a href="https://statistics.ucdavis.edu/undergrad/data-science/bs-foundations-track/electives/">https://statistics.ucdavis.edu/undergrad/data-science/bs-foundations-track/electives/</a> )		
<b>Note:</b> A course used to fulfill a core requirement cannot be used as an elective.		
Depth Subject Matter Subtotal		52
<b>Total Units</b>		<b>91</b>