STATISTICS - MINOR

The Department of Applied Mathematics offers a minor in statistics and data science. Declaration of a minor is open to any undergraduate student enrolled at CU Boulder, regardless of college or school.
For more information, see the university's minor requirements on the Policies & Requirements (https://catalog.colorado.edu/undergraduate/colleges-schools/arts-sciences/policies-requirements/#degreerequirementstext) page.

The minor in statistics and data science was developed to provide in-depth training in data science, statistical methods and techniques well beyond the training usually received by science and engineering majors. The ability to understand, visualize and analyze data is becoming an increasingly important skill in many disparate fields. This minor offers undergraduate students from any major the opportunity to develop their statistical knowledge.

Requirements

Prerequisites for the Statistics and Data Science minor are two semesters of calculus and computing experiences such as provided by APPM 1650 (preferred), CSCI 1300 or CHEN 1310. A student cannot earn both a minor in statistics and data science and a minor in applied mathematics (https://catalog.colorado.edu/undergraduate/colleges-schools/arts-sciences/programs-study/applied-mathematics/applied-mathematics-minor/) with the probability and statistics emphasis.

Students may earn both a BS in Applied Mathematics and a minor in Statistics and Data Science. However, the 12 upper-division credits of statistics required for the minor may not be counted towards the 25 credits of upper-division applied math courses. The 12 upper-division credits of statistics may, however, count towards the 24 credits of Area of Application required for all applied math majors.

Residency

A *minimum* of 23 credits at the 2000 level and above is required. At least three APPM or STAT courses, two of which must be at the 3000 level or above, need to be taken on the Boulder campus. No more than nine credit hours may be applied from transfer work; of those nine, no more than six may be 3000 level or above.

Minimum Grades

A cumulative GPA of 2.00 or better is required in the courses that are used to satisfy the requirements for this minor. Each individual course that is counted towards these degree requirements must be passed with a grade of C- or better.

Required Courses and Credit Hours

Code	Title	Credit Hours
Required Courses		
APPM 2350	Calculus 3 for Engineers	4-5
or MATH 2400	Calculus 3	
or APPM 2340	Calculus 3 for Statistics and Data Science	
APPM 3310	Matrix Methods and Applications	3
STAT 2600	Introduction to Data Science	4
APPM 3570/ STAT 3100	Applied Probability	3
STAT 3400	Applied Regression	3
Elective Courses		
Select two of the following courses: [1]		6
STAT 4230	Stochastic Analysis for Finance	
STAT 4250	Data Assimilation in High Dimensional Dynamical Systems	
STAT 4350 & STAT 4360	Applied Deep Learning 1 and Applied Deep Learning 2	
STAT 4400	Advanced Statistical Modeling	
STAT 4430	Spatial Statistics	
APPM 4490	Theory of Machine Learning	
APPM 4515	High-Dimensional Probability for Data Science	
STAT 4520	Introduction to Mathematical Statistics	
STAT 4540	Introduction to Time Series	
APPM 4560	Markov Processes, Queues, and Monte Carlo Simulations	
or STAT 4100	Markov Processes, Queues, and Monte Carlo Simulations	
APPM 4565	Random Graphs	
STAT 4610	Statistical Learning	
STAT 4630	Computational Bayesian Statistics	
Total Credit Hours		**23-24**

[1] Any one of APPM's 3-credit special topics courses in probability or statistics may also be used to meet this requirement.