

# Bachelor of Science in Statistics Degree Requirements

To earn a BS in Statistics and Data Science, a student must [complete the requirements of the College of Arts and Sciences](#); the following foundational courses in statistics, data science, and computing; as well as 18 credits in an outside area of emphasis, for a total of 80 credit hours.

Students must earn a grade of C- or better in all coursework applied to the major and have at least a C average for all attempted work for the major.

## Minimum required courses specific to the STAT-BS degree

1. Mathematical Foundations
  - a. APPM 1350 and APPM 1360 are introductory courses and prerequisites for Calculus 3
  - b. Select one of APPM 2340 or APPM 2350 or MATH 2400 (Calculus 3). APPM 2340 is the preferred course for Statistics majors.
  - c. APPM 3310 (Matrix Methods)
2. Computing
  - a. STAT 2600 (Introduction to Data Science)
  - b. STAT 1650 (Python with Math/Stat Applications)
  - c. APPM 3650 (Algorithms and Data Structures in Python)
3. Statistical Theory Core
  - a. STAT 3100 (Applied Probability)
  - b. STAT 4520 (Introduction to Mathematical Statistics)
4. Statistical Modeling Core
  - a. STAT 3400 (Applied Regression)
  - b. STAT 4400 (Undergraduate Applied Analysis 1)
  - c. APPM 4560/STAT 4100 (Markov Processes, Queues, and Monte Carlo Simulations)
5. Scientific Machine Learning/Artificial Intelligence Core
  - a. STAT 4610 (Statistical Learning)
  - b. STAT 4350 (Applied Deep Learning) or CSCI 4622 (Machine Learning)
6. Collaboration or Capstone Course, choose one
  - a. STAT 4680 (Statistical Collaboration I)
  - b. STAT 4640 (STAT Capstone Course)
7. Any 12-credit hour combination of the following courses:
  - a. STAT 4250 (Data Assimilation in High Dimensional Dynamical Systems)
  - b. STAT 4360 (Applied Deep Learning 2)
  - c. STAT 4430 (Spatial Statistics)
  - d. STAT 4540 (Introduction to Time Series)
  - e. STAT 4630 (Computational Bayesian Statistics)
  - f. STAT 4700 (Philosophical and Ethical Issues in Statistics)
  - g. APPM 4370 (Computational Neuroscience)
  - h. APPM 4440 (Undergraduate Applied Analysis 1)
  - i. APPM 4490 (Theory of Machine Learning)
  - j. APPM 4515 (High-Dimensional Probability for Data Science)
  - k. APPM 4530 (Stochastic Analysis for Finance)
  - l. APPM 4565 (Random Graphs)

As well as other advisor-approved APPM or STAT upper-division special topics classes

8. [Area of Application](#): The area of application is a minimum of 18 credits in advisor approved courses with significant statistical content.