

DATA SCIENCE MAJOR

Department of Mathematics and Computer Science (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/>)
Division of Natural Sciences and Mathematics

While data science is a new concept to describe a suite of technical and investigative skills, the heart of the subject is rooted in mathematics, statistics, and computer science. Our major therefore draws on these subjects for the core of the program. Data science does not exist within a vacuum, however, and domain-specific knowledge is essential for students to leverage their technical expertise in different fields. Our electives help students gain that domain expertise. The data practicum and the Senior Capstone Experience bring together the technical and domain specific knowledge, allowing students to complete data science projects from start to finish. Along with Washington College's distribution requirements, we aim for students to have the ability to use data as a lens to critically examine important issues in the world.

Data science is often concerned with questions of generalization and prediction, which are fraught with ethical potholes. By situating this program within Washington College's broader liberal arts context, where students are prepared for serious ethical reflection within every class, we provide our students with a strong foundation for ethically interrogating their work.

Data Science Major Requirements

Data Science students start with MAT 109 Statistical Inference & Data Analysis I, as well as computer science with CSI 111 Computer Science I. However, students who have earned advanced placement credit for statistics or computer science may start at a higher level and are encouraged to consult with the Department Chair to make such arrangements.

The major in data science consists of the senior capstone plus a minimum of twelve courses: nine core courses, and three electives.

Students should not take a course unless they received a grade of C or higher in the prerequisite course.

Code	Title	Credits	Notes
Foundational and Core Courses		36	
CSI 111	Computer Science I		
CSI 310	Database Systems		
CSI 220	Data Science		
CSI 360	Machine Learning		
CSI 450	Data Ethics and Practicum		
MAT 109	Statistical Inference & Data Analysis I		
MAT 209	Statistical Inference & Data Analysis II		
MAT/CSI 240	Discrete Mathematics		
MAT 280 or MAT 370	Linear Algebra Operations Research		
Select 3 Courses From Below		12	
BUS 357	Intro to Quantitative Finance		
CSI 112	Computer Science II		
CSI 380	Design & Analysis of Algorithms		
CSI 420	Artificial Intelligence		
ECN 320	Econometrics		
ENV 211	Intermediate Geographic Info Systems		
MAT 280	Linear Algebra ((if not counted in the core above))		
MAT 320	Probability		
MAT 370	Operations Research ((if not counted in the core above))		
PHY 252	Scientific Modeling & Data Analysis		
SOC 306	Research Methods in Sociology		
Other course may be approved by the Department Chair.			

Senior Capstone Experience (DTS SCE)	2-4	_____
Total Credits	50-52	_____

Major

- Computer Science Major (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/computer-science-major/>)
- Mathematics Major (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/mathematics-major/>)

Minor

- Computer Science Minor (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/computer-science-minor/>)
- Data Science Minor (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/data-science-minor/>)
- Mathematics Minor (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/mathematics-minor/>)

Certificate

- Secondary Education Certification Program (<https://catalog.washcoll.edu/catalog/departments-programs/education/secondary-education-certification-program/>)