The Certificate in Data Fluency provides a formal pathway for undergraduates in concentrations other than applied mathematics, computational biology, computer science, math, and statistics who wish to gain fluency and facility with the tools of data science. The driving intellectual question is how we can infer meaning from data whilst avoiding false predictions. The required experiential learning component provides students with the opportunity to apply their data-science skills in applied settings, engage in research that uses data science, teach data science as an undergraduate teaching assistant, or undertake an internship that has a substantive data-science component.

As with all undergraduate certificates (https://www.brown.edu/academics/college/degree/undergraduatecertificates/), students may only have one declared concentration and must be enrolled in or have completed at least two courses toward the certificate at the time they declare in ASK, which must be no earlier than the beginning of the fifth semester and no later than the last day of classes of the antepenultimate (typically the sixth) semester, in order to facilitate planning for the experiential learning opportunity. Students must submit a proposal for their experiential learning opportunity by the end of the sixth semester.

Excluded Concentrations: Applied Mathematics, Computational Biology, Computer Science, Mathematics, and Statistics (including joint concentrations in these areas)

Certificate Requirements

Core Courses:

DATA 0080 Data, Ethics and Society 1
CSCI 0111 Computing Foundations: Data 1
or CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
or CSCI 0170 Computer Science: An Integrated Introduction
or CSCI 0190 Accelerated Introduction to Computer Science
or CLPS 0950 Introduction to programming
DATA 0200 Data Science Fluency 1

Elective Course: Select one follow-up Applied Math, Biostatistics, Computer Science or domain-specific course with a significant data component from the following list (or another course with approval from the certificate advisor):

ANTH 1201 Introduction to Geographic Information Systems and Spatial Analysis
APMA 1650 Statistical Inference I
BIOL 0495 Statistical Analysis of Biological Data
BIOL 1555 Methods in Informatics and Data Science for Health
BIOL 1565 Survey of Biomedical Informatics
CLPS 0900 Statistical Methods
CLPS 1291 Computational Methods for Mind, Brain and Behavior
CLPS 1580C Visualizing Information
CSCI 1450 Advanced Introduction to Probability for Computing and Data Science
CSCI 1470 Deep Learning
CSCI 1951A Data Science
DATA 1150 Data Science Fellows 1
ECON 1620 Introduction to Econometrics
ECON 1660 Big Data
EDUC 1230 Applied Statistics for Ed Research and Policy Analysis
ENVS 1105 Introduction to Environmental GIS
EEPS 1320 Introduction to Geographic Information Systems for Environmental Applications
EEPS 1330 Global Environmental Remote Sensing

Capstone: 0-1

The required experiential learning component provides students with the opportunity to apply their data-science skills in their concentration, engage in research that uses data science, teach data science as UTAs, or undertake an internship that has a data-science component. The capstone may be completed for credit via an independent study course or not for credit. 2

Total Credits 4-5

1 Students may complete DATA 1150 and the concurrent Data Science Fellows project to fulfill both the elective and experiential components of the certificate.
2 Students must submit a proposal for their experiential component experience by the end of the sixth semester.