

Data Science

Master of Science in Data Science

The Data Science Institute at Brown offers a master's program (ScM) that prepares students from a wide range of disciplinary backgrounds for distinctive careers in Data Science. With connections to departments across campus, in particular Brown's Division of Applied Mathematics (<https://appliedmath.brown.edu/>) and Department of Computer Science (<https://cs.brown.edu/>), the master's program offers a unique and rigorous education for people building careers in data science. The program is designed to provide a fundamental understanding of the methods and algorithms of data science, to be achieved through a study of relevant topics in mathematics, statistics, and computer science, including database engineering, visualization, machine learning, and deep learning. The program also provides experience in important, frontline data-science problems in a variety of fields, and introduces students to ethical and societal considerations surrounding data science and its applications.

The program's course structure, including the capstone experience, ensures that students meet the goals of acquiring and integrating foundational knowledge for data science, applying this understanding in relation to specific problems, and appreciating the broader ramifications of data-driven approaches to human activity.

The program can be completed in 12 months (September to August). All students begin the program in September; **there is no option for starting in the spring semester**. Students may elect to complete the program over 16, 21, or 24 months, and most do so. In some cases, exceptionally well-prepared students complete their work in nine months.

The curriculum for the Data Science Master's Program consists of nine credits: eight required courses, one of which is the experiential project course, and one elective. The nine credit-units divide as follows:

- 3 credits in mathematical and statistical foundations
- 3 credits in data and computational science
- 1 credit in societal implications and opportunities
- 1 elective credit to be drawn from a wide range of focused applications or deeper theoretical exploration
- 1 credit capstone experience.

We also offer an option as a 5-th Year Master's Program if you are an undergraduate at Brown. This allows you to substitute maximally 2 credits with courses you have already taken. **5th-Year students must complete the degree in one year.**

DATA 1030	Hands-on Data Science	1
DATA 1050	Data Engineering	1
APMA 1690	Computational Probability and Statistics	1
DATA 2020	Statistical Learning	1
CSCI 1951Z	Fairness in Automated Decision Making	1
CSCI 2470	Deep Learning	1
DATA 2060	Machine Learning: from Theory to Algorithms	1
DATA 2050	Data Science Practicum	1

The practicum experience is a hands-on thesis project that entails an in-depth study of a current problem in data science. Students will synthesize their knowledge of probability and statistics, machine learning, and data and computational science. Students will work in teams on projects with Brown faculty members or with external companies. The project will be completed as part of a course that includes additional career-oriented skills development.

One elective: 1

Domain knowledge relevant to individual interest, 1 credit, must be a graduate level course with 4-digit course number starting with a non-0 digit. Most graduate level CSCI and APMA courses qualify. Please contact the DGS if you plan to take a course from a different department.

Total Credits 9