

Data Science Initiative Graduate Program Handbook

Academic Year 2020-2021

1 Mission statement

The Data Science Initiative seeks to provide the students in the Master's Program in Data Science with (1) a fundamental understanding of the methods and algorithms of data science and an appreciation of the broader ramifications of data-driven approaches to human activity, and (2) preparation for distinctive careers in data science.

2 Program guide

This handbook is intended to give you an overview of the Master's Program in Data Science at Brown University and to answer some of the commonly raised questions about policies and procedures. However, the definitive source for all matters is the Brown Graduate School Handbook which can be found, along with other useful information, on the Graduate School web pages¹.

2.1 Program description

Brown University offers a two-year Master of Science degree in Data Science. The program is designed to train students from a wide variety of backgrounds to apply the insights and skills of mathematics, statistics, and computer science to academic and industrial problems. Candidates for the program follow an integrated program of study comprising 9 credits, including a data practicum.

Students completing the program are expected to have proficiency in the following areas:

- Probability, Statistics, Machine Learning, Data and Computational Science
- Formulating appropriate questions, performing analyses, and drawing appropriate conclusions from big data sets
- Explaining the limitations and broader impacts of their data analysis

2.2 Coursework

The program consists of seven classroom courses and a data practicum course.

- DATA 1010 (Fall, 2 credits): *Probability, Statistics, and Machine Learning*
- DATA 1030 (Fall, 1 credit): *Hands-on Data Science*
- DATA 1050 (Fall, 1 credit): *Data Engineering*
- DATA 2020 (Spring, 1 credit): *Statistical Learning*
- DATA 2040 (Spring, 1 credit): *Deep Learning and Special Topics in Data Science*
- DATA 2080 (Spring, 1 credit): *Data and Society*
- Elective (Spring, 1 credit)

¹<http://www.brown.edu/academics/gradschool>

- DATA 2050 (Summer/Fall/Spring, 1 credit): *Data Practicum*

By default, students take these courses over two academic years and a summer (two credits each term, followed by one in the final summer). For students wishing to accelerate the program, the courses may be taken in one year (four credits each term, followed by one in the summer).

Students may take as their elective any graduate level course which advances their data science education, subject to the approval of the Director of Graduate Studies.

Students who have not completed the program requirements by the end of the spring semester will not be able to officially graduate until October, and they will not be able to participate in a commencement ceremony until the following May. However following the term in which a student completes their requirements, they will receive a certification of completion, and this document may be used in place of a diploma for visa and employment purposes.

2.3 Data Practicum

Each student will work with a faculty member, postdoc, or industry partner a data science project. A faculty member from one of the four core DSI departments (Applied Mathematics, Biostatistics, Computer Science, Mathematics) should be designated to oversee the project. Each student will prepare a paper and oral presentation of their work, and the project should comprise at least 180 hours of work. The practicum can be completed under the auspices of an internship at a company, provided that the company agrees to disclose enough details of the project for us to assess to work and issue a grade.

- *Proposal*: Each student, or student group, must submit a proposal that explains the work to be done and how it relates to the program's target competencies. Proposals must be approved by practicum supervisors and then by DSI Director of Industry Relations. Students are encouraged to work with course instructors to help ensure this approval process goes smoothly.
- *Pitch*: In order to solicit ideas and feedback, each student or student group will share a short screencast (no more than 10 minutes) about their approved project.
- *Weekly Status Reports*: Each student will provide a weekly report on the work they have done on the their project (due at the end of each week by Sunday at 11:59pm). These reports will be in the form of a single Google document that grows as the projects proceeds. These reports will be reviewed by the course staff.
- *Final Report*: Each student, or student group, will create a report that gives a project overview, research outcomes and next steps.
- *Final Presentation*: Each student or student group will create a 3 minute executive summary and longer 12 minute presentation on their project. Students may do their presentations in person or via pre-recorded screencasts.

2.4 Grading policy

Students must earn a grade of A, B, or C in their DATA courses and a grade of A, B, C, or S in their elective.

3 Resources and expectations

3.1 The DSI Team

- *Sohini Ramachandran*, Director

- *Alden Bumstead*, Associate Director
- *Joseph Hogan*, Deputy Director
- *Meg Lopes*, Assistant and Financial Coordinator
- *Dan Potter*, Directory of Industry Relations
- *Samuel Watson*, Director of Graduate Studies

3.2 Student space

The DSI space is at 164 Angell Street, 3rd floor. Students have access to tables, external motors, lockers, and a kitchenette. (COVID-19 note: until further notice, students do not have access to the floor.)

3.3 Diversity and Inclusion

The Initiative shares the university's commitment to fostering a more fully diverse and inclusive community. More information is available here:

<https://www.brown.edu/about/administration/institutional-diversity/pathways>

3.4 Grievance procedures

Students should usually bring concerns or grievances directly to the attention of their instructor if the course if the issue is coursework related or their project supervisor if the issue is related to their data practicum. If the outcome of this informal process is unsatisfactory, or if a student does not want to approach the instructor or supervisor directly, they may bring the matter to the Director of Graduate Studies, the Director of Industry Relations, or the Director of the Initiative who will work toward a resolution. Beyond this, the University provides formal grievance procedures, details of which can be found in the Graduate School Student Handbook.

3.5 Academic and student conduct codes

Graduate students are expected to be aware of, and to conduct themselves in accordance with, the principles of the Brown community as set forth in the Academic and Student Conduct Codes found here:

<https://www.brown.edu/academics/college/orientation/academic-student-conduct-codes>

Students are also responsible for rules and regulations set forth in the university-wide version of the Academic and Student Conduct Codes, found on the above website. For issues of student conduct, the university-wide Code takes precedence. Ignorance of the Code is not accepted as a defense for violation of any of the rules and regulations specified in the Code. Procedures for identifying and treating violations of the Code are described in the above mentioned documents.

3.6 Sexual harassment

Graduate students at Brown University are expected to refrain from behavior that constitutes sexual harassment as specified by Brown University's Policy Statement on sexual harassment. This policy can be found on the Graduate School website. Additional information on what constitutes sexual harassment and what

a student should do if they feel they are the victim of sexual harassment by another student or a faculty member can be found at the website of the Brown Human Resources Department and at the Brown Health Services website.

3.7 Additional resources

- *The Graduate School Handbook*. The Graduate School Handbook can be found on the Graduate School webpages and contains a wealth of information and additional resources beyond what is contained here.
- *Student and Employee Accessibility Services (SEAS)*. Coordinates and facilitates services for students with physical, psychological, and learning disabilities and temporary injuries (20 Benevolent Street, 1st floor).
- *Counseling and Psychological Services (CAPS)*. Provides free confidential counseling (J. Walter Wilson, Room 516, 401-863-3476). CAPS offers Saturday appointments for graduate students from 9 AM to 4 PM during the academic year at Health Services, 13 Brown Street.
- *Associate Dean of Student Support in the Graduate School*. Maria Suarez is dedicated to serving master's and PhD students (Horace Mann 110, Maria_Suarez@brown.edu, 401-863-1802)
- *CareerLAB*. The CareerLAB provides individual confidential counseling sessions on job searches in industry (including feedback on resumes and CVs). Its website also provides a Doctoral Student Packet with useful and comprehensive information about all aspects of graduate-student life.

<http://brown.edu/campus-life/support/careerlab/>

- *Other useful links.*

- Links for DSI Master's Students: <https://brown.dsi.github.io>
- Graduate School webpages: <http://www.brown.edu/academics/gradschool/>
- Brown A-Z: <http://brown.edu/a-to-z/>
- Banner (course registration): <https://selfservice.brown.edu>
- Calendar: <http://www.brown.edu/Administration/Registrar/calendar.html>
- OISSS (for international students): <http://brown.edu/Administration/OISSS/>
- Courses webpage: <https://coursetools.brown.edu>
- The internal Master's in Data Science student resources website:

<https://sites.google.com/brown.edu/dsi-students/>