DATA SCIENCE @ ROCHESTER
Undergraduate Information FAQ

• What is Data Science?
Data science is an interdisciplinary field about scientific methods, processes, and systems to extract knowledge or insights from data in various forms. The data could be structured (e.g. databases and spreadsheets) or unstructured (text, video, images).
Data science leverages tools from a variety of disciplines to gather a data set, process and derive insights from the data set, and interpret it for decision-making purposes. A data scientist possesses skills from computer science, statistics, mathematics, and some domain of application. Domains of application include business, medicine, and practically any area of science, engineering, or the humanities.

• What degrees do you offer in Data Science?
We offer a Bachelor of Arts (BA), Bachelor of Science (BS) and Masters of Science (MS) in Data Science. The BA and BS degrees are comprised of pre-requisite courses, followed by upper level core courses in math, computer science and data science including a capstone project course in the senior year and specialization in an application area. Since data science is a natural science major, BA and BS degrees also require clusters in humanities and social science. In addition, data science majors must complete two upper level writing courses.

Our MS degree is a 2-3 semester program that attracts students who have undergraduate degrees in mathematics, statistics, computer science, natural or social sciences, and engineering.

• What is an application area?
Data science can be applied to many different areas of natural science, social science and business. An application area is a set of 3 courses in one area of specialization. We currently offer application areas in Biology, Brain and Cognitive Sciences, Computer Science/Statistics/Mathematics, Earth and Environmental Science, Physics, Economics/Business, and Political Science.

• What is the difference between a BA and a BS in Data Science?
The BS provides rigorous preparation in the core areas of data science and is for students interested in cutting-edge R&D careers in industry or academia. A BS degree requires additional coursework in mathematics that cover probability and statistics (MTH 201 and MTH 203) and an upper level course in computer science (see website for acceptable courses.) The BA provides a more flexible course of study that is good for students with interdisciplinary interests. It is popular for double majors and students interested in careers in a related discipline or industry.

• Can I get a minor or cluster in Data Science?
At this time, we do not offer a minors or clusters in Data Science.

• I’m a freshman. What should I take so I can declare Data Science as my major?
Incoming freshman typically the prerequisite courses to enter the major. This would include taking calculus (MTH 141/161/171) and MTH 150 (Discrete Mathematics) in their first term and CSC 171 (The Science of Programming) and the 2nd calculus course (MTH 142/162/172) in their second semester. In your sophomore year, you would take CSC 172 (The Science of Data Structures) and MTH 143 (if required). Your grades must be a 2.0 or better in these courses to pursue the degree.

In some cases these course requirements may be satisfied by AP credit or by testing, depending on the department that houses the particular course.

Incoming freshman should usually take a prerequisite towards their applications area during their first year. Most common courses would be BIO 110 (for Biology), BCS 110 (for Brain and Cognitive Sciences), ECO 108 (for Economics and Business). Some application areas do not need prerequisites and can be also started during the freshman year.
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- **Will my Advanced Placement Calculus and Computer Science be considered towards my curriculum in Data Science?**
  Calculus AP exam scores are evaluated by the Mathematics department. Computer Science AP exams are evaluated by the Computer Science department to determine your placement for MTH or CSC courses. Those departments also determine if you can receive credit for your scores towards your degree. Our goal is to make sure you are placed correctly so that you are neither over your head or bored with the material. We also want students to be prepared for the next level course they expect to take so they can be successful in their upcoming studies.

- **Can I study abroad as a DSC major?**
  Yes, absolutely!!! If you are interested in studying abroad, a four-year course plan can be worked out to see what semesters are optimum for your global experience.

- **Where do people with Data Science degrees do after graduation?**
  A majority of alumni from our department find jobs after graduation in industry working as data scientists and analysts and engineers for companies who deal with big data in technology, business consulting, healthcare, manufacturing and more. In addition, our students also attend graduate school for advanced degrees.

- **Do I need to have an internship during college?**
  Doing a summer internship is a great way to gain on-the-job experience and gives you stronger options for job offers by the time you graduate so we highly recommend it. The Gwen M. Green Career and Internship Center frequently brings in employers and posts jobs and internships that are of interest for our students. We do not have a co-op program for students to work full time through the academic year.

- **What is the difference between Data Science and Computer Science?**
  Computer science is the development of hardware and software, the application of computer technology, and the study of computation theory.

  Data science combines various aspects of computer science along with applied mathematics, statistics and application domain knowledge to develop automated methods to analyze massive amounts of data and extract knowledge from them. A data scientist would rely on software tools and infrastructure developed and managed by computer scientists to access, store and process data to solve problems in a variety of application domains.

- **Can I double-major in Computer Science and Data Science?**
  Computer Science and Data Science share many courses, so double-majoring is not allowed. Students in Data Science may minor in CSC however. Computer Science majors interested in data science and analytics, you may choose your advanced electives in CSC to specialize in courses that Data Science students are required to take (such as CSC240, CSC246, and CSC261).

- **What is the difference between Data Science and Statistics?**
  Data science emphasizes the data problems of the 21st Century, like accessing information from large databases, writing code to manipulate data, and visualizing data. Harvesting, processing, storing and cleaning are more central to data science.

- **What is the difference between Data Science and Business Analytics?**
  Data Scientists design, develop and deploy algorithms through statistical programming and supports business decision making tools. Business analysts research and extract valuable information from sources to explain historical, current and future business performances and determine analytical models to present and explain solutions to business users. Data Scientists often deal in more coding and programming to manage the large amounts of data and they create visualizations to aid in the understanding of the data. Data Scientists frequently work in business but also can apply their knowledge to other fields. https://www.ivervandezand.com/single-post/2015/11/10/Let-me-compare-Analytics-and-Data-Science-each-their-own-unique-characteristics