

Data Science

BA, BSc | www.yorku.ca/science/mathstats/data-science

Admission Requirements

BA

- ENG4U, MCV4U, MHF4U with a grade of at least 75%
- **Minimum admission average:** high 70s – mid 80s

BSc

- ENG4U, MCV4U, SBI4U or SCH4U or SPH4U, MHF4U with a grade of at least 75%
- **Minimum admission average:** high 70s – mid 80s

Program Overview

Students in the Data Science program will master the statistical methods, computation skills and data techniques that enable data scientists to extract knowledge from data. This new program is designed to address the emerging need for expertise in data science across nearly all industries.

In their studies, students will become familiar with the nature and needs of analyzing large and complex data through case studies in specific domains such as business, health, and digital media, and through a capstone experience that engages students in research with data in an industrial setting.

Each student chooses a stream, which is a field of study outside data science in which they take courses. Their capstone course will use data from that stream. The streams are:

- Business (Schulich School of Business)
- Health (School of Health Policy & Management)
- Computational Arts (School of the Arts, Media, Performance & Design)
- Optimization (Applied Mathematics)
- Computation (Applied Mathematics)

The Data Science program is designed to prepare students for meaningful employment in data science related positions, whether in private, public, or non-profit organizations. Students will not only master the hands-on skills necessary for initial employment, but also become able, creative, curious, entrepreneurial thinkers who can thoughtfully contribute to a world of rapid technological change.

First Year Courses:

- Introduction to Data Science
- Python Programming
- Calculus
- Discrete Math for Computer Science
- Applied Linear Algebra
- Statistics

Students in the BSc degree will also take courses in other science fields such as Biology, Chemistry, or Physics.

Second Year Courses:

- Principles and Techniques of Data Science
- Communication in Data Science
- Data Structures

Upper Year Options:

- Database Management
- Data Analytics
- Data Visualization
- Ethics of Data Science
- Simulation and the Monte Carlo Method
- Regression Analysis
- Statistical Machine Learning
- Data Science Capstone Course

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Experiential Education

From the beginning of the program, students will be exposed to problems involving real data, where they will learn to give solutions to real business questions. They will understand the active participation of data scientists in real-world decision-making.

Experiential, hands-on learning opportunities such as case studies, analyzing data, writing exercises, and problem-solving are integrated into the structure of each of the data science courses. Some courses include tutorial components where students will learn how to use programming languages to perform data analytics to solve real world problems.

Students in the Data Science program will engage in experiential learning in the capstone project course. This course brings together the student’s statistical, computing, and stream knowledge in working on a real-life problem from industry or the public sector. In this course, students will get hands-on experience in applying data science to real world projects.

Possible Career Pathways

The Data Science program will provide students with the knowledge, skills, and credentials they desire to successfully transition into rewarding and impactful careers. They will have career opportunities in the whole data science pipeline, from data acquisition and transformation to visualization, model selection, and deployment into fully functional production systems.

- Data Scientist
- Data Analyst
- Machine Learning Engineer
- Data Architect
- Business Analyst
- Market Analyst
- Data Engineer

Get In Touch

Domestic Students:
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“The Mathematics and Statistics department at York University offers an excellent Statistics program with courses and a support system. The diversity of Math and Statistics courses helps grow intellectual and essential skills required for various career pathways. PASS leaders, Club Infinity and Math/ Stats lab are of great help to master concepts, data analytical knowledge in depth as well.”

- My, Statistics Alumni and Masters Student