

DATA SCIENCE

CO-OP OR REGULAR

Leverage volumes of data to predict and improve business

Data Science is the study, application, and development of methods used to analyze large data sets in order to predict and improve business strategy, products and services, marketing campaigns, medicine, public health and safety. These methods include elements of computer science and statistics.

In Data Science at Waterloo, you'll take courses in computing systems, data analytics, database management, statistics, statistical and machine learning, as well as core mathematical subjects like algebra and calculus. You'll learn from leaders in this evolving field and have opportunities for hands-on learning experiences.

SIMON'S RECOMMENDED COURSES

- › **CS 136 Elementary Algorithm Design and Data Abstraction:** I love this course. It teaches the fundamentals of coding skills and techniques in C, but moves toward abstract data structures (a precursor to data science.) A great course for a student like me who hadn't done any programming before arriving at Waterloo.
- › **CS 246 Object Oriented Software Development:** This course introduces object-oriented programming and techniques for software development, like designing, coding, debugging, testing, and documenting programs. I enjoyed applying what I'd learned in the development of my final project.
- › **MATH 237 Calculus 3 for Honours Mathematics:** You'll learn about the calculus of functions of several variables, limits, continuity, differentiability, the chain rule, the gradient vector, and the directional derivative. This course helped me do proofs in STAT 330 and it helps me solve data and statistical problems.
- › **STAT 330 Mathematical Statistics:** This course provides a mathematically rigorous treatment of topics covered in STAT 230 and 231, and it extends to the multivariate case. In my opinion, this course uses mathematical proofs to reveal the secrets that are behind the "magical tricks" found in the earlier STAT courses.
- › **STAT 331 Applied Linear Models:** I got to do basic data analysis, from collecting and preprocessing data to actually using statistical models for analyzing data. I learned important basic statistical testing and diagnostic skills. I plan to build on these skills with upper-year STAT courses.

uwaterloo.ca/data-science



#1 "Sexiest job of the 21st century"
– The Harvard Business Review

“... more than 2.7 zettabytes of data exist in today's digital universe” – Martech.zone

26 years as Canada's most innovative university (Maclean's)

SIMON

3B DATA SCIENCE, CO-OP

WHY DID YOU CHOOSE YOUR PROGRAM?

I'm majoring in Data Science because I'm interested in statistics and in computer science. At my last co-op job at Environics Analytics, which is a marketing analytics company, I got a taste of the kind of work I want to do after I graduate. My future will involve using computers to analyze data.



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WATERLOO IS A GLOBAL LEADER IN CO-OPERATIVE EDUCATION



Simon enjoys travelling, music, and cooking. His friends enjoy his culinary creations, such as peanut butter fried eggs.

CO-OP STUDENTS AT WORK

Co-op bridges the gap between the classroom and the real world. Find opportunities to connect classroom theory with applications in a wide range of employment settings. During your co-op work terms, you will assume various job responsibilities, pick up new work-related skills, and earn competitive salaries.

TYPICAL CO-OP POSITIONS

- › IT Solution Developer, EnviroNics Analytics, **Simon's first work term**
- › CS 136 Instructional Support Assistant, University of Waterloo, **Simon's second work term**
- › Statistician, Labstat International ULC
- › Data Mining Research Assistant, Simon Fraser University
- › Computer Vision Researcher, Slyce

STUDY AND CO-OP SEQUENCE 1*

YR.	TERM	REGULAR	SEQ. 1
1	Fall	Study	Study
	Winter	Study	Study
	Spring	Off	Work
2	Fall	Study	Study
	Winter	Study	Work
	Spring	Off	Study
3	Fall	Study	Work
	Winter	Study	Study
	Spring	Off	Work
4	Fall	Study	Study
	Winter	Study	Work
	Spring		Study
5	Fall		Work
	Winter		Study

* This study-work sequence is one of 4 choices of co-op sequences.

UNDERGRADUATE RESEARCH OPPORTUNITIES

If you're curious about the research that professors conduct, research opportunities are available for strong undergraduate students. You could be paid for a part-time opportunity, or a full-time position may substitute as a co-op term. It's not uncommon for students to publish their work.

You can find details about the application, deadlines, and examples of research conducted by previous undergraduates in the department and school websites. Successful applicants are then matched with a professor. You'd be well suited for a research position if you want to pursue a master's and/or doctoral degree after completing your undergraduate studies.

WORKING IN THE INDUSTRY

Data Management Professional

This IT position is akin to a database administrator role in which the professional oversees data projects and their supporting infrastructure.

Data Engineer

Data Engineers focus on building the infrastructure, tools, and techniques required for data mining.

Business Analyst

Focused on business problems, these analysts interact with data to document, assess, and develop IT solutions.

Data-oriented Professional

Regardless of what technologies or tools are needed to carry out the task, a data-oriented professional is concerned primarily with the data and the stories it can tell.

Machine Learning Researcher/Practitioner

Machine learning researchers and practitioners craft and use the predictive and correlative tools used to leverage data.

Companies that attempt to handle big data with siloed statisticians, computer scientists or MBAs will fail... Instead, they need professionals with a convergence of these skills to fully grasp the business and technological challenges.

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