

MATHEMATICAL OPTIMIZATION

CO-OP OR REGULAR

2 specializations: Operations Research and Business

TOP 10 Operations Research Analyst a top 10 business job in 2018 – USnews.com

96.6% of grads are employed within 2 years

Use analytic tools to model and solve complex problems

This field of mathematics quantifies complex decision-making problems in business and government into mathematical models. Then using sophisticated mathematical and computing techniques, it identifies optimal solutions. You'll take math and computer science courses combined with courses in business, economics, and management science. With these quantitative business skills, you'll be in high demand.

KEVIN RECOMMENDS HIS FAVOURITE COURSES

- › **CO 250 Introduction to Optimization:** A broad introduction to the field of optimization. A great foundation course for the program.
- › **CS 330 Management Information Systems:** An introduction to information systems and their strategic role in business. Builds a base knowledge of IT technology and management.
- › **CO 372 Portfolio Optimization Models:** This course is computational and focused on problems and applications of optimization in finance. No fluff here.
- › **CO 342 Introduction to Graph Theory:** Because Waterloo is known in mathematics circles for its series of Graph Theory courses, I just had to take them. This one is an introduction to key topics in graph theory: connectivity, planarity, and matchings.
- › **CO 456 Introduction to Game Theory:** This course was everything I'd hoped it would be – game theory and its applications to modelling of competition and cooperation in business, economics, and society.

KEVIN

MATHEMATICAL OPTIMIZATION,
BUSINESS SPECIALIZATION,
COMPUTER SCIENCE MINOR,
CO-OP

KEVIN'S ADVICE TO INCOMING FIRST-YEAR STUDENTS

Don't be afraid to try something new! I've switched programs twice, and career paths/goals twice as well. It's okay to be interested in things outside your program: find what you like and go after it. There's nothing wrong with taking an extra semester or changing your academic schedule. What's important is that you enjoy what you're learning and doing.

uwaterloo.ca/combinatorics-and-optimization



UNIVERSITY OF
WATERLOO



WATERLOO IS A GLOBAL LEADER IN CO-OPERATIVE EDUCATION



Kevin co-founded the Data Science Club, was an executive on UW DECA, and was Tie Guard during Math Orientation Week.

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

- › Product Manager Intern, Yelp, **Kevin's current work term**
- › Ad Operations Intern, The Toronto Star, **Kevin's second work term**
- › Internet Marketing & Analytics Intern, eBay, **Kevin's third work term**
- › Product Manager Intern, Zynga, **Kevin's fourth work term**
- › Business Analyst, Direct Energy, Houston

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 website. Successful applicants are then matched with a professor.

INDUSTRY APPLICATIONS

Mathematical optimization is used by an overwhelming majority of Fortune 500 companies in their day-to-day operations. Consequently, our graduates find employment in a variety of fields including: finance, software, insurance, telecommunications, retail and hospitality services, national defence, oil and gas, and engineering.

CUSTOMIZE YOUR DEGREE

With your degree you'll learn about the application of advanced analytical methods and business strategies to help make better decisions.

Operations Research Specialization

A degree more focused on the methodological aspects.

Business Specialization

A degree more focused on the business strategies.

GRADS AT WORK

- › Associate, Northwater Capital Management Inc., Toronto
- › Systems Analyst, United Overseas Bank Group, Singapore
- › Associate, Morgan Stanley Asia Ltd., Hong Kong
- › Auditor, Government of British Columbia, Vernon
- › Business Analyst, RBC Financial Group, Toronto
- › Senior Business Analyst, Hang Seng Bank, Hong Kong
- › Risk Analyst, TD Bank Group, Toronto
- › Health Information Analyst, Ministry of Health Services, Toronto
- › Business Analyst, ThoughtWorks Canada, Toronto



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