DEPARTMENT OF MANAGEMENT SCIENCE AND ENGINEERING

New Graduate Student Orientation

Fall 2025

Welcome!

- **Prof. Mark Hancock**
  Chair of the Management Science and Engineering Department
- **Prof. Sibel Alumur Alev**
  Associate Chair, Graduate Studies
- **Brenna Costa**
  Graduate Studies Administrator – MMSc Programs & GDDA
- **Lisa Hendel**
  Graduate Studies Administrator – MASc and PhD Programs

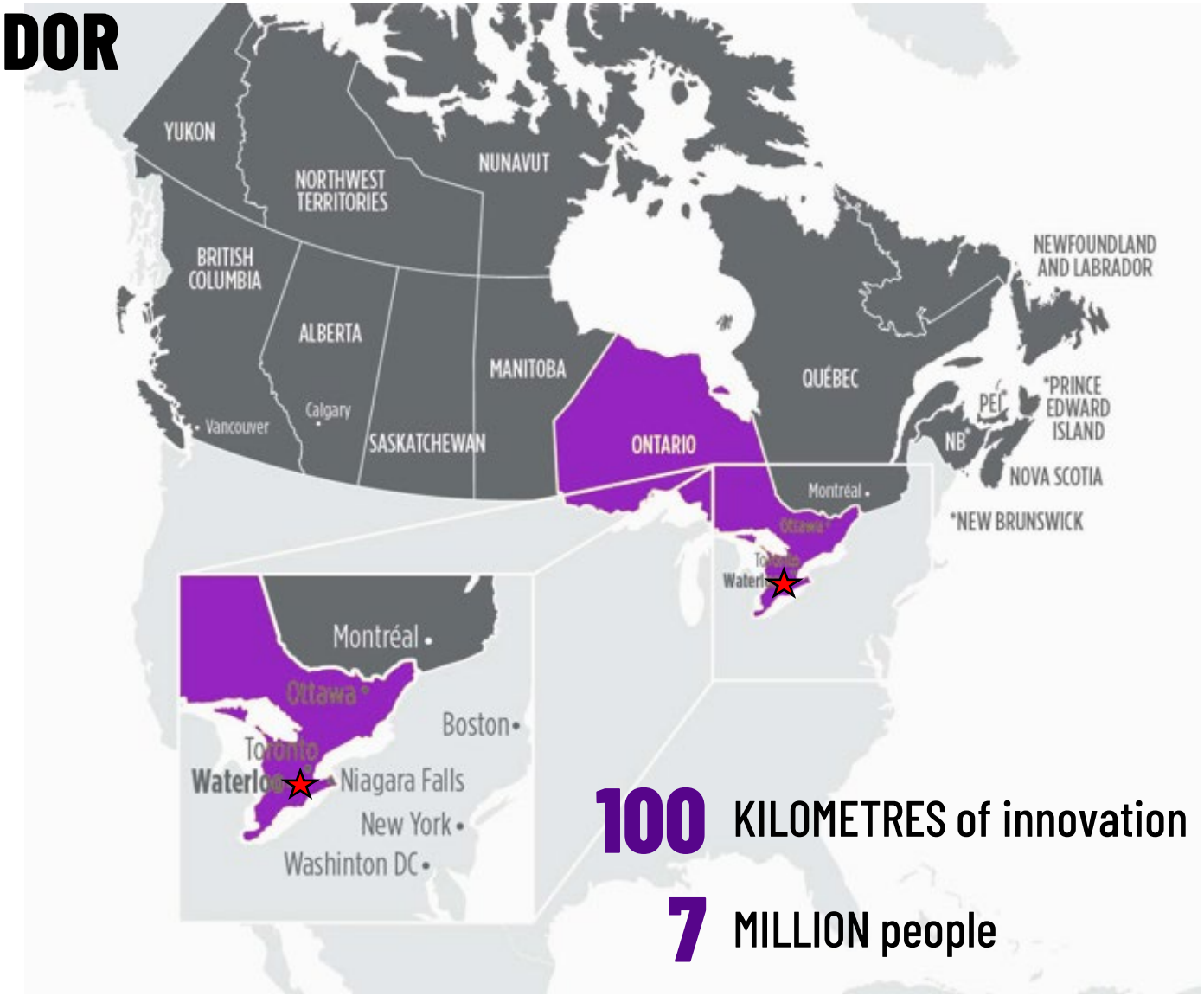
THE WATERLOO-TORONTO CORRIDOR

LARGEST concentration of tech companies and startup activity in Canada

5,000+ STARTUPS

300,000 EMPLOYEES

8% **TOTAL WORKFORCE** employed in tech, similar talent density as Silicon Valley



100 KILOMETRES of innovation

7 MILLION people

150+ LANGUAGES spoken

A TOP 40

Engineering school in the world
(QS World University Ranking 2024)

1,000+

STARTUPS, SPIN-OFFS AND MATURE COMPANIES

have Waterloo Engineering students, faculty, staff, or alumni as founders

INDUSTRY INTEGRATION

established with co-operative education as a cornerstone

15 Bachelor
45 Graduate

Degree programs

$82+ M

Sponsored research funds

#1

GRADUATE EMPLOYMENT

QS Graduate Employment Rankings 2022

#1

COMPREHENSIVE RESEARCH

Research Infosource 2022

#1

ENTREPRENEURSHIP

PitchBook 2022

WATERLOO | ENGINEERING

DEPARTMENT & RESEARCH

UNDERGRADUATE

Management Engineering (BASc)

- 8 academic terms + 6 co-op terms
- 475 students

Option in Management Science

- open to other engineering students
- 6 elective management science courses
- 73 graduates in 2024

GRADUATE

Graduate Diploma in Data Analytics (GDip) 146 diplomas since 2017

4 courses, 8 months (2 terms)

Master of Management Science (MMSc) **67** students

8 courses, 12 - 16 months (3 - 4 terms), regular or co-op (+2 terms)

Management of Technology Online (MMSc-Online) **35** students

8 courses, online

Master of Applied Science (MASc) **32** students

4 courses, original research, regular or co-op, thesis, 2 years

Doctor of Philosophy (PhD) 41 students

4 courses, original research, thesis, 4-5 years

650+

CURRENT STUDENTS

Current enrollments

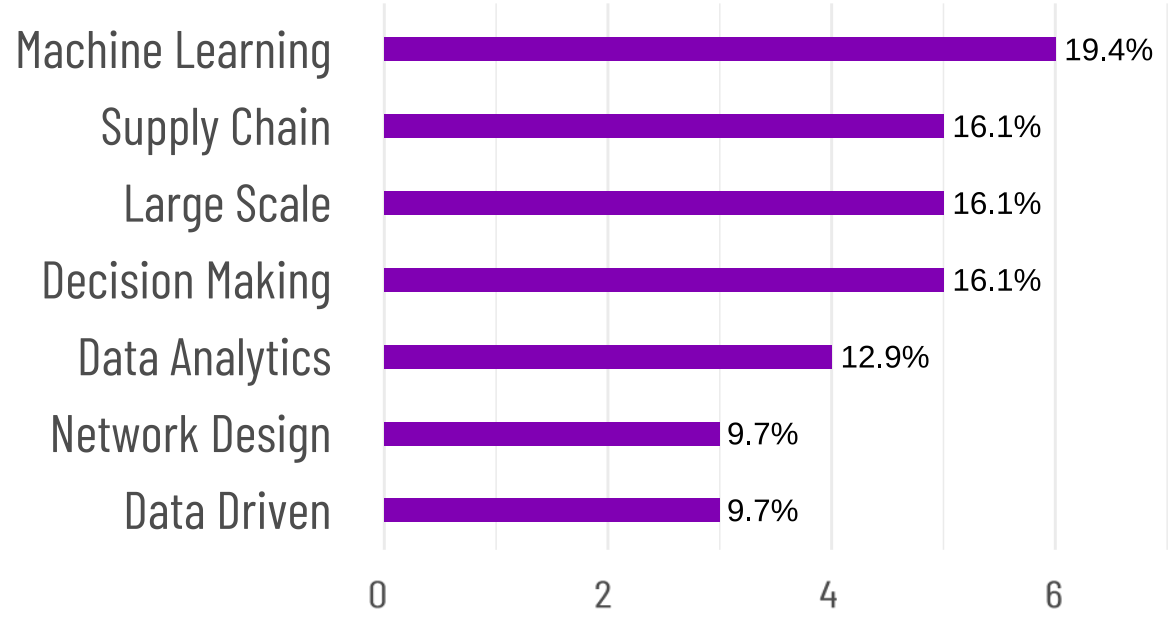
EXPERTS IN DIVERSE FIELDS

32

FACULTY MEMBERS

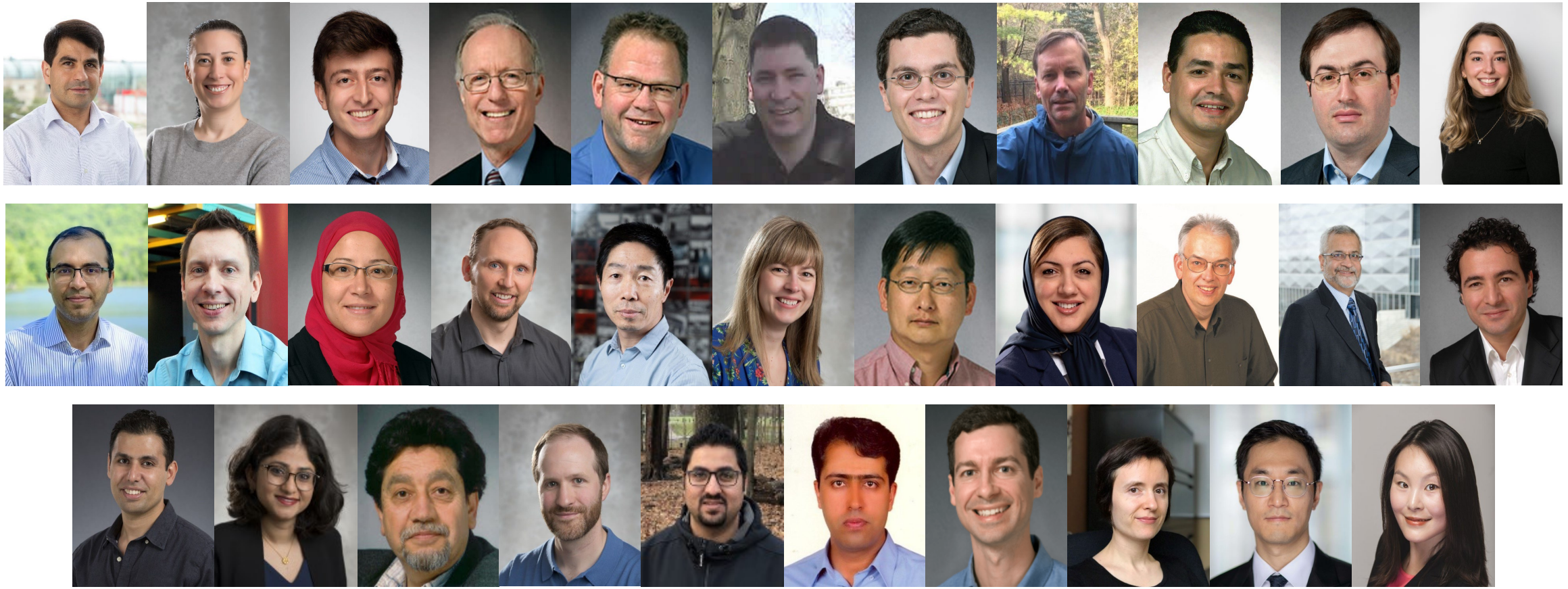
$17M+

Funding from NSERC, SSHRC, CIHR, CFI, Mitacs, NFRF



Frequency of 2-grams for faculty specializations (% of faculty members)

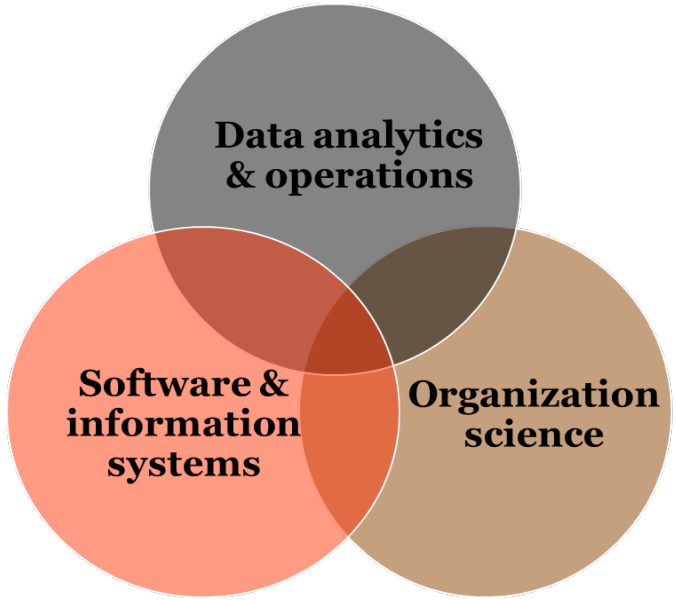
EXPERT FACULTY IN DIVERSE FIELDS



WATERLOO | ENGINEERING

ENGINEERING DATA-DRIVEN BUSINESS DECISIONS

- ✓Improve how businesses **operate** and **make decisions**
- ✓In an increasingly **digital** and **data/AI-centric** world
- ✓**Design** and **manage** optimized systems, products, and processes



Integrate & **apply**
3 core areas

Research areas
MASc and PhD

1. Applied Operations Research
2. Information Systems
3. Management of Technology

WATERLOO | ENGINEERING

1. Applied Operations Research

- Data Analytics
- Health care
- Supply chain management
- Logistics planning & transportation
- Revenue management & pricing
- Energy markets

2. Information Systems

- **Human centered research:** human-computer interaction, haptics, games, touch interfaces, and modeling of search engine user behavior.
- **Machine learning and algorithms:** natural language processing (NLP), deep learning, text analytics, reducing misinformation in health search, and data analytics.
- **Data systems:** data systems for social and environmental issues, data exploration, pattern discovery, data cleaning, data profiling, and explainable AI.

- Data science & artificial intelligence
- Machine learning
- Search engines and recommender systems
- Natural language processing
- Human-computer interaction

3. Management of Technology

- **Technology strategy** (new product strategy, business unit strategy)
- **Decision-making** (human biases, effects, heuristics, etc.)
- **Technology policy (**Intellectual Property Rights, impact of government policy, impact of university, individual and government research)
- **Leadership** (personal leadership, managing technical teams)

- 602 Strategic Mgt of Technological Innovation
- 752 Behavioural Decision-Making
- 744 Science & Technology Policy
- 605 Organizational Behaviour

PRACTICAL INFORMATION

MSE Health & Safety Requirements

The department is required to ensure all “Members” of the Management Science and Engineering Department have been provided with a Health & Safety Manual and have completed the required modules

Your UW userid and password are required to access the training

- Employee Safety Orientation - S01001
- Workplace Violence Awareness - S01081
- WHMIS 2015 - S02017
- Employee Accessibility Training (AODA) – OPD102

The Department Health & Safety Manual can be found at the following website:

https://uwaterloo.ca/management-sciences/department-health-and-safety-manual

Proof of completion must be sent to heidi@uwaterloo.ca

Emails and IT Support

- Always use your “**@uwaterloo.ca**” email account for all your correspondence
- UW administrative offices will use your “**@uwaterloo.ca**” email account
- It is your responsibility to read your emails on a regular basis and meet deadlines as required
- If you are having problems with your email account, please contact Zivojin Pantic (zivojin.pantic@uwaterloo.ca) for assistance.

Online Resources

Student Portal

- A personalized app and website made exclusively for Waterloo students to keep them informed of campus services, events, and news and to provide tailored academic information in one convenient platform.

  https://uwaterloo.ca/uwaterloo-portal/

Waterloo LEARN

- A web-based learning management system that enables instructors to manage course materials, activities and assessments and to interact easily and efficiently with their students outside the physical classroom.

  https://uwaterloo.ca/learn-help/

Academic Integrity

We take academic integrity very seriously … so … *Don't EVER Cheat!!*

But what counts as cheating?

- Presenting someone else's work/ideas as your own
- Outright copying
- Collaborating with others when not permitted (e.g., on individual assignments, exams)
- Not properly citing sources
- Use of GenAI tools (e.g., ChatGPT) without acknowledging its use or when not permitted
- …

It is YOUR responsibility to know and follow the rules!

Academic Integrity

You must complete the *Graduate AIM* online/LEARN training as a degree requirement

- See Graduate Aim Online

Instructors/professors are obliged to report all cases of suspected academic misconduct to the Associate Dean for Graduate Studies

- Penalties are based on severity of the offense
- Recorded in your academic file to track repeat offenders

See Policy 71 – Academic Misconduct for more information

It is YOUR responsibility to know and follow the rules!

DEGREE REQUIREMENTS

MMSc Degree Requirements

Regular	CO-OP	MMSC+GDDA	MMSC Health Tech
8 courses (minimum) 3 academic terms (1yr) 4 MMSc core courses + 4 electives	9 courses (minimum) 5 terms (2yrs) 4 MMSc core courses + WIL 601 +4 electives +2 work terms	8 courses (minimum) 3 academic terms (1 yr) 4 MMSc core courses + MSE 718, 719, 623 + 1 department approved elective	10 courses (minimum) 5 terms (2 years) 6 MMSc Core courses + WIL 601 + 3 electives + 2 work terms
4 MMSc Core Courses: MSE 603 (or MSE 634), MSE 605, MSE 607, MSE 609			
6 MMSc Core courses for Health Tech: MSE 603 (or MSE 634), MSE 605, MSE 607, MSE 609, MSE 619, MSE 630			
Students must maintain an overall average of at least 73% each term With no more than two failed courses overall			
Courses outside of Management Sciences: Maximum of one (1) course can be taken outside of the department, including approved Ontario Visiting Graduate Student (OVGS) Must be approved by the Associate Chair for Graduate studies prior to enrolment to be counted as your fourth elective.			

MMSC – Coop Program

MMSc Co-op Sequence (2 workterms: Must start with Academic and finish on Academic)				
Fall	**Winter**	**Spring**	**Fall**	**Winter**
MSE 603	MSE 607	Work term 1	Work term 2	Elective #3
MSE 605	Elective #1			Elective #4
MSE 609	Elective #2			
WIL 601				

***Students must begin and end on an academic term**

MMSc Health Technology Co-op Program

MMSc Co-op Sequence (2 workterms: Must start with Academic and finish on Academic)				
Fall	**Winter**	**Spring**	**Fall**	**Winter**
MSE 603	MSE 607	Work Term 1	Work Term 2	MSE 630
MSE 605	MSE 619			Elective #2
MSE 609	Elective #1			Elective #3
WIL 601				

***Students must begin and end on an academic term**

Graduate Diploma in Data Analytics

- Available as **stand-alone, direct entry**
- MMSc students can earn the diploma in conjunction with their degree, at **no extra cost**
- Courses:
  - MSE 623 – Intro to Machine Learning
  - MSE 718 - Statistical Methods for Data Analytics
  - MSE 719 - Operations Analytics
  - + 1 more GDip elective

Graduate Diploma in Data Analytics (GDDA)

- The GDDA is a set of data analytic elective courses an MMSc graduate student can complete (within their MMSc degree) to earn Graduate Diploma Data Analytics.
- They are a 'package' of electives to be taken in the regular MMSc degree course selection. Completed successfully, they will have earned you a Graduate Diploma in Data Analytics.
- Students must complete the four GDDA courses successfully to earn the GDDA
- The fourth course is a selection made by the student BUT it must be approved by the Associate Chair of Graduate Studies.

MMSc + GDDA		
Fall	**Winter**	**Spring**
MSE 603	MSE 607	MSE 623
MSE 605	MSE 719	Elective #4
MSE 609	MSE 718	

Maximum Number of Courses

- Maximum number of courses for Engineering Students in Graduate Studies:
  - Full time students can take a maximum of three (3) courses each term.
  - Part time students can take a maximum of one (1) course each term.
- If you want or need to take additional courses, you will need to request they be added manually with the drop/add form (with special permission & rationale).

MASc Degree Requirements

	Non Co-op	Co-op
Master of Applied Science (MASc): Thesis-based	* 4 courses (minimum) • Research seminar • Thesis * 6 academic terms	* 5 courses- (minimum) Wil 601 (mandatory) • Research seminar • Thesis * 8 terms (6 academic terms + 2 work terms) (Must switch to Coop in Winter Term only-Must be approved by Supervisor (s)
Required Courses: 2 core courses from the list: MSE 605, 607, 623, 630, 631, 634 and 641		
Elective Courses for MASc and MMSc: Max. (1) from outside of the department (incl. Ontario Visiting Graduate Student; OVGS). Must be approved by the Associate Chair for Graduate Studies. (see department website to access the form. **See Schedule of Classes**		

Switching from MMSc to MASc

Student must successfully complete 1-2 terms of MMSc

Student needs to find a willing thesis supervisor(s)

- Feel free to reach out to potential supervisors; talk to other MASc students, etc.
- Some considerations: research topic, expertise, supervision style, personality and funding.

Funding

- Supervisors financially support MASC/PhD student from individual research budget

Program/plan change form must be approved by Associate Chair. All coursework will be reviewed at the time of transfer.

PhD Degree Requirements (4 yr program)

(Amitted with a Master's Degree)

At least 4 courses at the 600 or 700 level

- 2 core courses from the list: MSE 605, 607, 623, 630, 631, 634 and 641
- 2 elective courses (minimum)
  - Courses from outside department (max. 2 toward degree) must be approved by Associate Chair for Graduate Studies
- Overall average at least 73%.

Pass comprehensive exam by end of 4th term

Write dissertation & pass oral defense by end of 12th term

- Dissertation/thesis: independent and original research

PhD Degree Requirements (5 yr program)

(Admitted without a Master's Degree)

- At least 8 courses at the 600 or 700 level
  - 2 core courses from the list: MSE 605, 607, 623, 630, 631, 634 and 641
  - 2 elective courses
    - Courses from outside department (max. 2 toward degree) must be approved by Associate Chair for Graduate Studies
  - PLEASE NOTE: **Courses must be approved by the supervisor(s)**
  - Overall average at least 73%.
  - Pass comprehensive exam by end of 4th term
  - Write dissertation & pass oral defense by end of 15th term
  - Dissertation/thesis: independent and original research

Activity Reports for MASc and PhD

MASc/PhD students submit an *activity report* each term

- Used to track student progress and assist in awarding scholarships.
- Students are provided feedback if required.

Process

- Due by the end of the second week of each term.
- Signed/approved by your supervisor.
- You will receive an email and your supervisor is required to provide comments and signature (contact Lisa Hendel if you have questions).

TEACHING ASSISTANTSHIP & SCHOLARSHIPS

Teaching Assistantship

- Apply online each term
- Must complete ExpecTAtions workshop to be eligible
  - Offered in October, March and June
  - Will receive several emails with details each term
- TA selection process
  - TAs rank their instructor and course choices
  - Instructors rank TA applicants for each course
  - An algorithm and the TA Officer specifies the final TA assignments to maximize assignment rankings
- TA's are paid to support the teaching of MSE courses
- Full TA position = 10 hours/week for 13 weeks
  - Full-time students may not work more than 10 hours/week on-campus.
  - Must be available for work from the first day of classes to the submission of final grades for the course. If not, the TA contract may be cancelled.
- https://uwaterloo.ca/management-science-engineering/graduate-studies/current-students/teaching-assistantship

Teaching Assistantship

- If you are scheduled to be a teaching assistant (TA) in the Fall 2025 term, speak to the instructor of the course to determine a plan for the start of term and develop a strategy on how you can support the delivery of the course at the beginning of term.
  - Questions to consider include how to address illness within the class, expectations if you are ill, options around hybrid or remote engagement if needed.
- As with all TA appointments, you are strongly encouraged to talk with the course instructor about the expectations for the term, and how your TA hours will be allocated. Students and instructors are reminded that best practice is to formalize these expectations through TA time allocation forms.
- During the term, check-in with the instructor and discuss the progression of the TA position with respect to the hours assigned for this position and adapt your responsibilities to ensure your commitments the support you receive.

Scholarships

Faculty of Engineering/UW Merit Scholarships are awarded by the Department:

- Available to top ranked full-time domestic and international students.
- Minimum 80% overall average. (Do not have to apply)
- Scholarships are applied against the student's tuition.

Students are not eligible for FoE/UW scholarships if:

- Probationary/transitional status; part-time; inactive status.
- Newly transferred from another department.
- Incomplete grades on record at the time of award decisions.

Department Awards

Donald J. Clough Memorial Award

- Awarded to top-ranked (domestic and international) first-year Masters student.

El Gabbani Award

- Awarded to top-ranked (international) first-year Masters student.

Fraser Research Award

- Research paper award for MASc/PhD students **(Email will be sent to apply)**

MSE TA Award

- Awarded to an exceptional TA, based on student and instructor feedback (one award per term).
- No need to apply for these awards-Must apply for the Fraser Research Award only- notified by email

External Tri-Council and OGS Scholarships

Major federal and provincial scholarships for MASc/PhD students

- NSERC – Natural Sciences & Engineering Research Council
- SSHRC – Social Sciences & Humanities Research Council
- CIHR – Canadian Institutes for Health Research
- OGS/QEII-GSST – Ontario Government Scholarships

See Graduate Studies/Postdoctoral Affairs (GSPA) Scholarship Competition Resources website

- For eligibility criteria, deadlines, application information, webinars, tips/advice
- **Graduate Studies Scholarships**

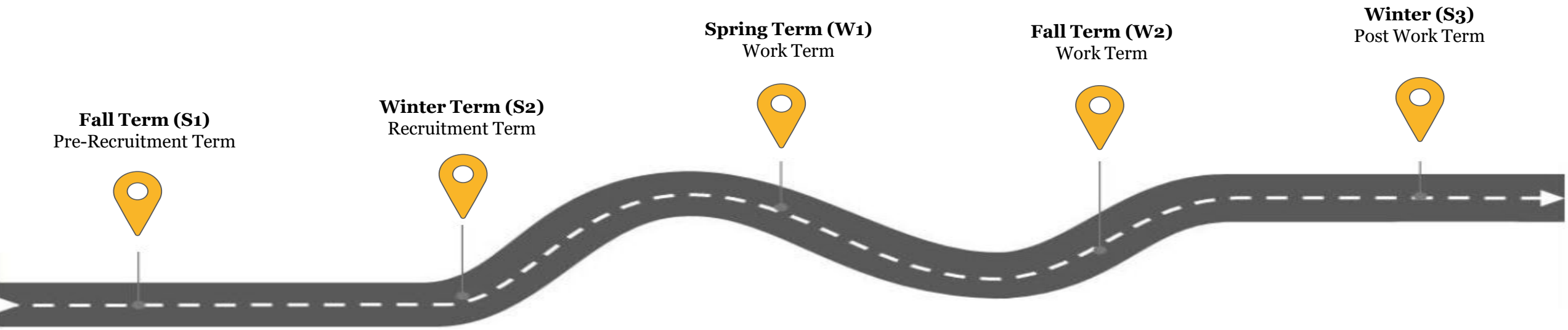
CO-OPERATIVE EDUCATION

WATERLOO | ENGINEERING

Program Roadmap - MMSc Co-op

What is co-op?

Co-op is a type of Work Integrated Learning (WIL). At the University of Waterloo, co-op students alternate study terms with work terms and graduate with relevant, paid work experience. This hands-on journey helps you navigate the job market, apply your talents to real-world challenges, and learn more about yourself in the process. Each program has a 'co-op sequence' that outlines their journey within their chosen program.



Grad Co-op Orientation Sessions

There are 3 sessions and the content will be the same for all:

- Wednesday, September 10th from 12:00-1:00PM
- Wednesday, September 17th from 8:30-9:30 PM
- Friday, September 26th from 2:00-3:00 PM

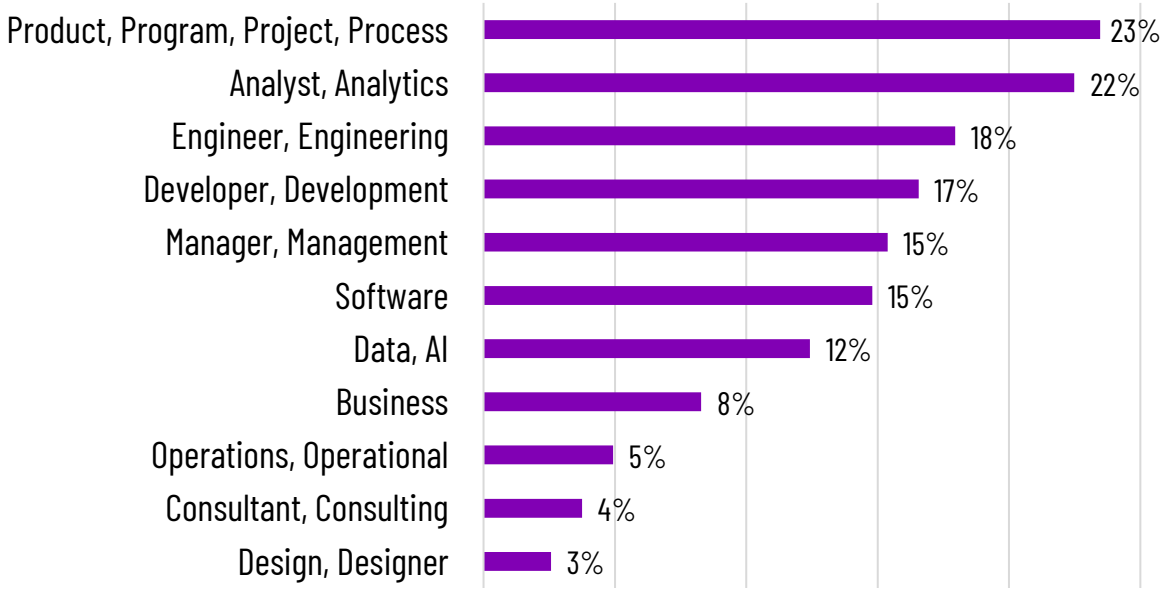
The meetings will be via Teams and students should have received email and calendar invitations.

You can contact Zac Mercer (zmercer@uwaterloo.ca), who is our Faculty Relations Manager for Graduate Work-Integrated Learning

CO-OP IN MANAGEMENT SCIENCE & ENGINEERING

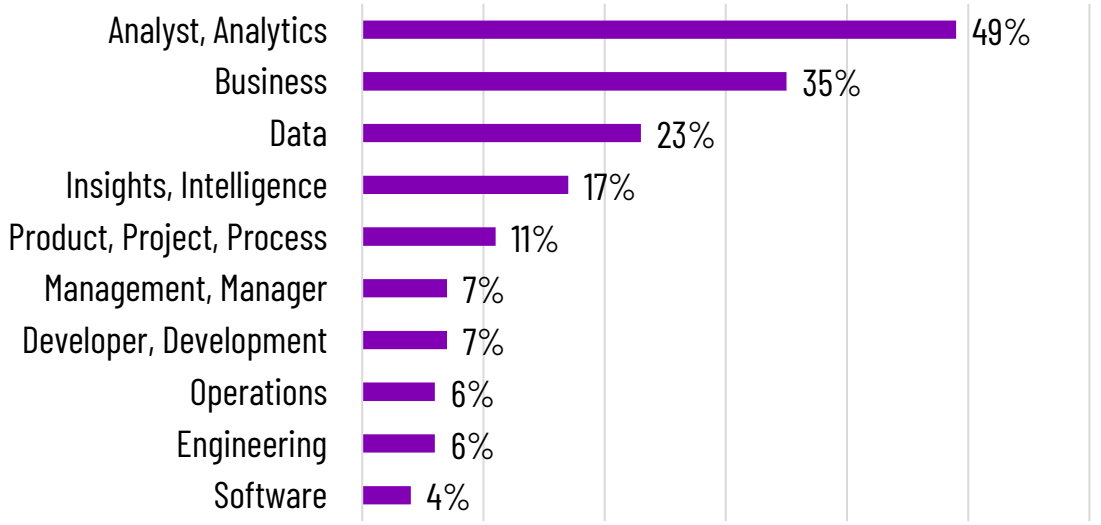
POSITIONS

UNDERGRADUATE



Most common position keywords, sample of 507 positions over 12 months

GRADUATE



Most common position keywords, sample of 100 positions over 12 months

"Full-Stack Developer"

"Product Manager"

"Business Analyst"

"Data Analyst"

"Data Scientist"

"Machine Learning Engineer"

"Software Developer"

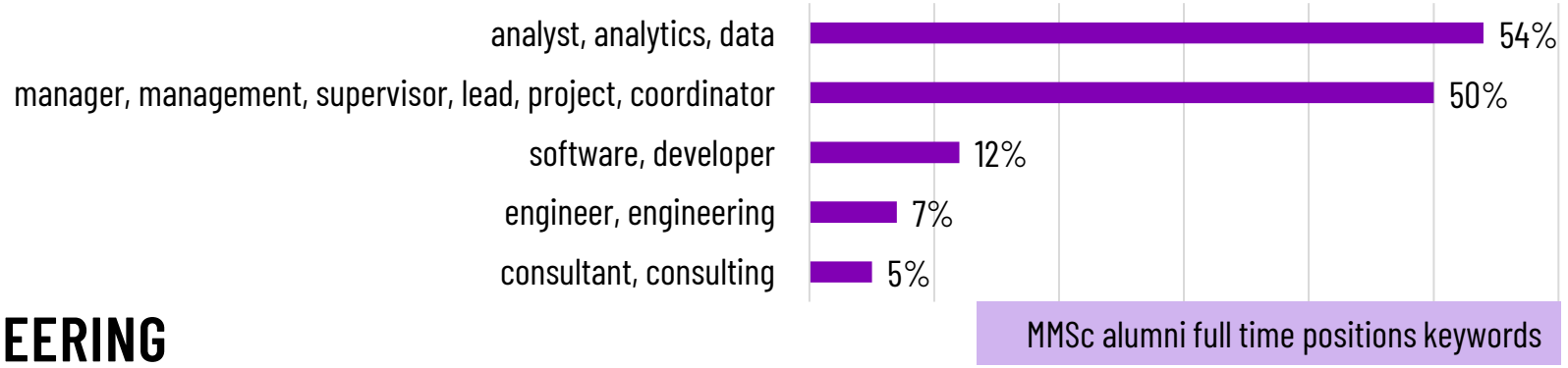
"Project Manager"

"Business Systems Analyst"

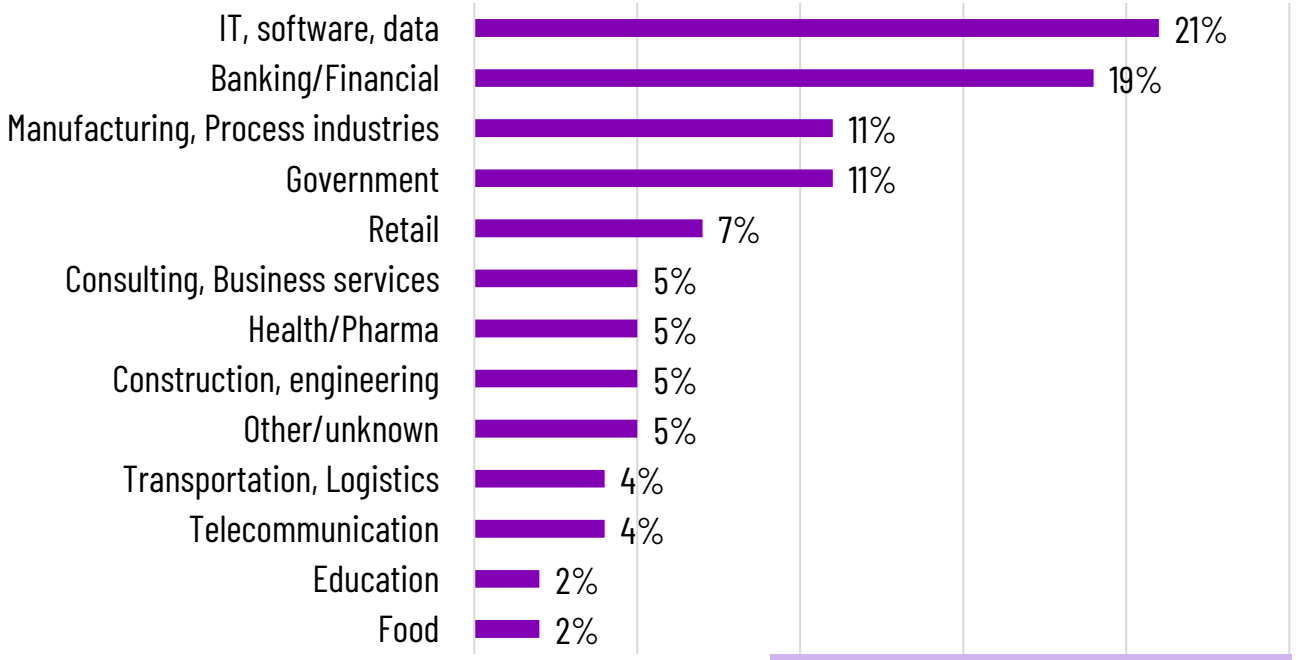
"Data Engineer"

MANAGEMENT SCIENCE & ENGINEERING
PROFESSIONAL MASTERS (MMSC)

ALUMNI CAREERS & INDUSTRIES



MMSc alumni full time positions keywords



MMSc alumni employment by industry

DEPARTMENT CONTACTS

Your Point of Contacts

Associate Chair for Graduate Studies

- Mediating for professors and students regarding academic issues
- **Prof. Sibel Alumur Alev** sibel.alumur@uwaterloo.ca

Graduate Administrators

- Advise on program changes, scholarships, general program information, pointing to additional campus support.
- *MASc and PhD Programs:* **Lisa Hendel,** lhendel@uwaterloo.ca
- *MMSc and GDDA Programs:* **Brenna Costa,** mse-grad-mmsc@uwaterloo.ca

Cooperative Education

- All Coop related issues
- **Sami Nakhoul** snakhoul@uwaterloo.ca
- **Zac Mercer,** zmercer@uwaterloo.ca

Other Department Contacts

Department TA Officer

F. Safa Erenay, safa.erenay@uwaterloo.ca

Teaching Assistantship related issues

Financial Coordinator

Rosalind Klein, r4klein@uwaterloo.ca

Student travel claims

Administrative Assistant to the Department

Heidi Janssen, heidi@uwaterloo.ca

Appointment with the Chair

IT Specialist

Zivojin Pantic, zivojin.pantic@uwaterloo.ca

IT support for students

Undergraduate Studies Advisor & Coordinator

Shelley Vossen, svossen@uwaterloo.ca

Management Engineering Program.

Support Services & Accreditation Coordinator

Jill Miller, je2miller@uwaterloo.ca

OBA, Scheduling, General Inquires

In need of HELP!

- If you feel overwhelmed or anxious and need to talk to somebody, please contact the University's Campus Wellness services, either Health or Counseling Services.
- **On campus services and contacts**
  - Campus Wellness
  - Sexual Violence Prevention and Response Office (SVPRO)
  - Office of Equity, Diversity, Inclusion & Anti-racism (EDI-R)
  - Office of Indigenous Relations
  - Special Constable Service

- **Other emergency contacts can be found at:** https://uwaterloo.ca/campus-wellness/urgent-help-and-emergency-contacts

QUESTIONS?