

# SYSTEMS DESIGN ENGINEERING

[uwaterloo.ca/systems-design-engineering](http://uwaterloo.ca/systems-design-engineering)

**OVER 200** technical electives  
to choose from

**OVER 7,000** co-op employers from  
around the globe

## *Think in systems*

Solving engineering problems always involves the modification or creation of systems. In this program, you'll examine things like ecological, transportation, physiological, energy, and communication systems. Through specialized courses, you'll learn to develop innovative solutions to the problems you uncover.

In Systems Design, you'll start by developing a strong foundation of basic engineering concepts, with an emphasis on design, creativity, and systems thinking. This program has the widest range of upper year electives, allowing you to focus your studies in the area you enjoy most, including biomechanics, robotics, environmental systems, artificial intelligence, and more. Top it off with hands-on learning opportunities and two years of work experience, and you'll have a one-of-a-kind degree that can open doors in many areas of engineering!

### YOUR FIRST YEAR

#### FIRST TERM

- > Systems Design Engineering
- > Graphics Lab
- > Fundamental Engineering Math 1
- > Matrices and Linear Systems
- > Digital Computation
- > Introduction to Design
- > Physics 1 (Statics)

#### SECOND TERM

- > Human Factors in Design
- > Numerical and Applied Calculus
- > Fundamental Engineering Math 2
- > Data Structures and Algorithms
- > Digital Systems + Lab
- > 1 Complementary Studies Elective\*

\*Complementary studies electives offer instruction in the social sciences and humanities, building knowledge of the impact technology has on society.

#### KICK-START YOUR IDEAS

##### MIOVISION

Co-founded by Systems Design grad Kurtis McBride, MioVision uses a combination of hardware and software to analyze traffic conditions in real-time, then adjust traffic lights to improve the flow of vehicles. The flexible programming and entrepreneurial culture in Systems Design, allowed Kurtis to explore different opportunities and incubate his interest in business during his undergrad here. In early 2018, MioVision raised \$15 million in additional funding and have now moved into Catalyst137: Waterloo's Hub for IoT.



UNIVERSITY OF  
**WATERLOO**



Waterloo offers the

# WORLD'S LARGEST CO-OP PROGRAM

## CO-OP AT WATERLOO = REAL WORLD EXPERIENCE

You'll have an unrivaled opportunity to gain paid work experience before you even graduate. We'll help you navigate job applications, résumés, and interviews; you'll have the added benefit of trying out different roles and/or industries to find the one that fits you while building your work experience and reinforcing your in-class learning out in the real world. It all adds up to a competitive advantage after graduation. Systems Design Engineering students are part of the Stream 4 sequence.

## STREAM 4 STUDY AND CO-OP SEQUENCE

| YEAR | TERM   | STREAM 4   |
|------|--------|------------|
| 1    | Fall   | Study (1A) |
|      | Winter | Work       |
|      | Spring | Study (1B) |
| 2    | Fall   | Work       |
|      | Winter | Study (2A) |
|      | Spring | Work       |
| 3    | Fall   | Study (2B) |
|      | Winter | Work       |
|      | Spring | Study (3A) |
| 4    | Fall   | Work       |
|      | Winter | Study (3B) |
|      | Spring | Work       |
| 5    | Fall   | Study (4A) |
|      | Winter | Study (4B) |

Fall term: September to December  
Winter term: January to April  
Spring term: May to August



There's no shortage of ways to get involved – you'll have both an outstanding education, as well as a vibrant student experience.

## BEYOND THE CLASSROOM

As a Waterloo Engineer, it's easy to get in on the action. You can join the Engineering Society, make a difference with Engineers Without Borders, or apply your studies with a student design team. If you have any questions about student life or want to shadow a current student for a day, our Engineering Ambassadors can help!

[uwaterloo.ca/engineering-student-ambassadors](http://uwaterloo.ca/engineering-student-ambassadors)

## OUT IN THE WORLD

Solutions to problems that impact both technology and society must leverage a diverse set of perspectives from multiple domains. Developing these solutions are where systems design engineers shine! These engineers can work on just about any project, including: big data analysis, developing alternative energy sources, or creating human-machine interfaces.

## EXPLORE YOUR INTERESTS

Our program lets you specialize based on your interests:

- > Human Systems Engineering
- > Intelligent Systems Engineering
- > Societal and environmental systems
- > Systems modelling and analysis
- > Biomedical systems

## EMPLOYMENT OPPORTUNITIES

- > Project management
- > Information technology design
- > User researcher
- > Artificial intelligence
- > Software engineering
- > Data engineering and analytics



**A DESIGN COURSE**  
every term

FACULTY OF ENGINEERING  
UNDERGRADUATE ADMISSIONS

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UWaterlooEngineering



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