

Bachelor of Engineering

Design. Create. Solve.



UNIVERSITY
of GUELPH

IMPROVE LIFE.

Bachelor of Engineering

Improve sustainability through innovation

Since 1874, engineering at the University of Guelph has focused on improving life for humans, animals, and plants through innovative engineering techniques. All of our engineering programs are developed with design engineering as a foundation; design is fundamental to all U of G Engineering disciplines.

As a student, your hands-on design projects will have you transform the theoretical into reality. Those hands-on design projects begin in your first year. Every year, you'll work alongside students from other engineering disciplines on a different design project, leading to your final capstone design course in your final year.

As an engineering student at U of G, you have seven majors to choose from, each offered in co-op. You have the opportunity to take elective courses outside of engineering, such as arts, social sciences and business. Pursue a minor after 2nd year, and expand your knowledge outside of engineering!

uoguelph.ca/engineering

Biological Engineering

Also available in co-op

uoguelph.ca/engineering/biological

As a Biological Engineer, you will work with the most complex "machines" in the world - living organisms. You will tailor your program to explore interests in the investigation of bacterial biofilms for food safety or human health applications, development of biosensors for animal health, greener alternatives to petroleum products with production of renewable fuels such as ethanol and biodiesel or sustainable bioplastics made from plant materials. The extraction and stabilization of nutraceuticals to provide health benefits, or the manufacturing of safe food products.

Pursue interests in:

- Pharmaceutical and food manufacturing
- Bioinstrumentation and biosensing
- Production of sustainable, bio-based materials

Sample Careers: Process engineer | Research and development engineer | Food product development engineer | Brew master

Biomedical Engineering

Also available in co-op

uoguelph.ca/engineering/biomedical

Biomedical Engineering is an exciting new engineering field which fuses engineering design and problem solving to improve human health. As a leader in the life sciences, the University of Guelph is the perfect place to begin your Biomedical Engineering career. Biomedical Engineering can also be an entry point into medical school. Pursue a rewarding career in public or private sectors of the health-care industry.

Pursue elective opportunities in:

- Biomechanics
- Pharmaceutical Processing
- Biosignals

Sample Careers: Prosthetic designer | Physician | Medical imaging | Human factors engineer



Our B.Eng. co-op students and grads have worked here:

- Google
- Tesla
- WSP Global
- Linamar
- Baylis Medical
- Royal Canin
- Bombardier
- Adidas
- Mondelez International
- Stryker
- OMAFRA
- Stantec
- RWDI
- ...and many other satisfied employers!

Computer Engineering

Also available in co-op

uoguelph.ca/engineering/computer

Processors small enough to be embedded in concussion detectors. Autonomous mine detecting robots. Open source operating systems. Big Data and Artificial Intelligence systems. If any (or all!) of these sound like something you want to design, then join us in Computer Engineering. In this program, you will learn how to integrate hardware and software to design these devices and more.

Pursue elective opportunities in:

- Internet of things
- Software design
- Artificial intelligence (AI)
- Robotics
- Circuit design

Sample Careers: Computer design engineer | Software engineer | Hardware engineer | Artificial intelligence developer | Wireless solutions engineer

Engineering Systems and Computing

Also available in co-op

uoguelph.ca/engineering/esc

What do prosthetic limbs, autonomous robots, and smart buildings have in common? These complex systems are all designed by multidisciplinary teams and run by microcontrollers and embedded processors. If you want to bridge the gap between disciplines while learning to design the computational brains that control these complex systems, then this program is for you. Engineering Systems and Computing is a highly flexible, interdisciplinary program that prepares you to work in today's world-changing high-tech industries.

Featured elective opportunities:

- Biomedical control systems
- Mechatronics and robotics
- Embedded systems
- Human-centred computing

Sample Careers: Software developer | Autonomous test engineer | Robotics and automation engineer | Mechatronics engineer

Environmental Engineering

Also available in co-op

uoguelph.ca/engineering/environmental

You can be the change! Learn the tools to tackle environmental challenges locally and globally. Environmental Engineering students learn about how air, water and soil pollution is generated, transported and impacts the environment. Learn how to design treatment processes to prevent pollution, control and prevent dangerous emissions, and clean up past contamination. A degree in Environmental Engineering will equip you with skills and knowledge to tackle the environmental challenges of today and design a more sustainable tomorrow.

Pursue interests in:

- Water and wastewater treatment design
- Air emission control
- Watershed system design
- Remote sensing and geographic information system (GIS) technology

Sample Careers: Air quality engineer | Environmental lawyer | Environmental affairs manager

Water Resources Engineering

Also available in co-op

uoguelph.ca/engineering/water

Water is life! Water Resources Engineers are needed who can design solutions to balance competing human needs for water with those of the environment. Global climate change has created new challenges for Water Resources Engineers in all areas of society and the environment. There are local and global opportunities for you since water is going to be one of the most important worldwide issues for your generation, and generations that follow.

Pursue electives in:

- Water conservation
- River restoration
- Storm water management
- Meteorology and geology

Sample Careers: Watershed manager | Municipal coordinator | River control engineer | Emergency spill response engineer | Water resources designer

Mechanical Engineering

Also available in co-op

uoguelph.ca/engineering/mechanical

Designed around a framework of sustainability, Mechanical Engineering empowers you to design systems and develop technology that improves the quality of life. With unique options to challenge and inspire you, Mechanical Engineering provides you with the skills required to design, manufacture and maintain all types of mechanical systems. From designing wind turbines, developing robotics and automated systems, to improving prosthetic limbs, you will be entering into one of the most popular and employable fields in the industry.

Focus on areas such as:

- Sustainable energy
- Mechatronics
- Manufacturing system design
- Biomechanics
- Biomedical

Sample Careers: Aerospace project coordinator | Manufacturing engineer | Robotics and automation engineer | Mechanical design engineer

Undeclared

Admission in first year only

uoguelph.ca/engineering/undeclared

This option is designed for students who know they want to study engineering, but are not yet sure what major they want. Selecting undeclared, you'll take the same courses in first semester as all other engineering students in your cohort. Yes, you can get your choice to major in any of the 7 regular majors (non co-op option) as an Undeclared you are guaranteed your regular stream spot. You will need to select your major no later than the start of your 3rd semester. If you want to pursue co-op, you should apply to the co-op program you are most interested in directly from high school because space in co-op is limited.

First Year Courses

Semester 1:

- General Chemistry I (CHEM*1040)
- Engineering and Design I (ENGG*1100)
- Calculus I (MATH*1200)
- Physics with Applications (PHYS*1130)
- Depending on program, one of:
 - Engineering Analysis (ENGG*1500)
 - Introductory Programming for Engineers (ENGG*1410)
 - Introduction to Programming (CIS*1500)

Semester 2:

- Engineering Mechanics I (ENGG*1210)
 - Calculus II (MATH*1210)
 - Introductory Electricity & Magnetism (PHYS*1010)
 - 2 others** as described in the program guide: uoguelph.ca/engineering/beng-program-guides
- **courses will vary depending on your major**

Choose Guelph.

The U of G Engineering Difference

- U of G Engineering was Canada's first recipient of the Women-Friendly Engineering School Award.
- Collaboration is pivotal at Guelph Engineering. By working in a team with engineers from other disciplines, you gain unique perspectives. Explore collaborative opportunities with programs such as agriculture, arts, business, and veterinary sciences. Solve real world problems by partnering with industry.

As a student...

- You will have a flexible and common first semester allowing you to interact with all engineering disciplines.
- Choose from over 40 minors to complement your degree. Popular choices for Engineering minors are business, arts, or international development.
- With five courses in your first semester, you will have the opportunity to participate in extracurricular activities.
- U of G has one of the largest intramural programs in Canada!
- From football to figure skating, Varsity Gryphon Engineers compete on and off the field.
- Join the more than 200 clubs on campus. Be part of engineering-specific clubs such as: Guelph Innovator; The Engineering Society; Women in Engineering and Science; Engineers Without Borders; Formula SAE Racing Team; Concrete Toboggan; Guelph Hyperloop

How co-op works

- All seven engineering majors are offered in Co-op.
- Co-op work terms begin in the summer of your second year and give you paid work experience; you will complete one 4-month work term and two 8-month work terms! The 8-month work terms are a hit among employers - there's so much more opportunity for breadth of learning and contribution to the company.
- Work internationally in Australia or Europe, for example. Co-op work terms are not restricted to local companies!

Regular Stream

Year	Fall	Winter	Summer
1	Semester 1	Semester 2	Off
2	Semester 3	Semester 4	Off
3	Semester 5	Semester 6	Off
4	Semester 7	Semester 8	Graduate!

Co-op Stream

Year	Fall	Winter	Summer
1	Semester 1	Semester 2	Off
2	Semester 3	Semester 4	4-month co-op
3	Semester 5	8-month co-op	
		4-month co-op	4-month co-op
4	Semester 6	Semester 7	8-month co-op > 4-month co-op
5	< 8-month co-op 4-month co-op		Graduate!

Admission Requirements*

- English (ENG4U)
- Advanced Functions (MHF4U)
- Calculus and Vectors (MCV4U)
- Physics (SPH4U)
- Chemistry (SCH4U)
- 1 additional course

*All must be at the 4U/M level.

Attend our fall event!

🍁 Fall Preview Day

Find dates and details here:
admission.uoguelph.ca/connect-with-us

Follow Engineering on social!



Have Questions?

Contact our recruitment officer:

✉ enginfo@uoguelph.ca

📞 519.400.9913

🌐 uoguelph.ca/engineering/welcome