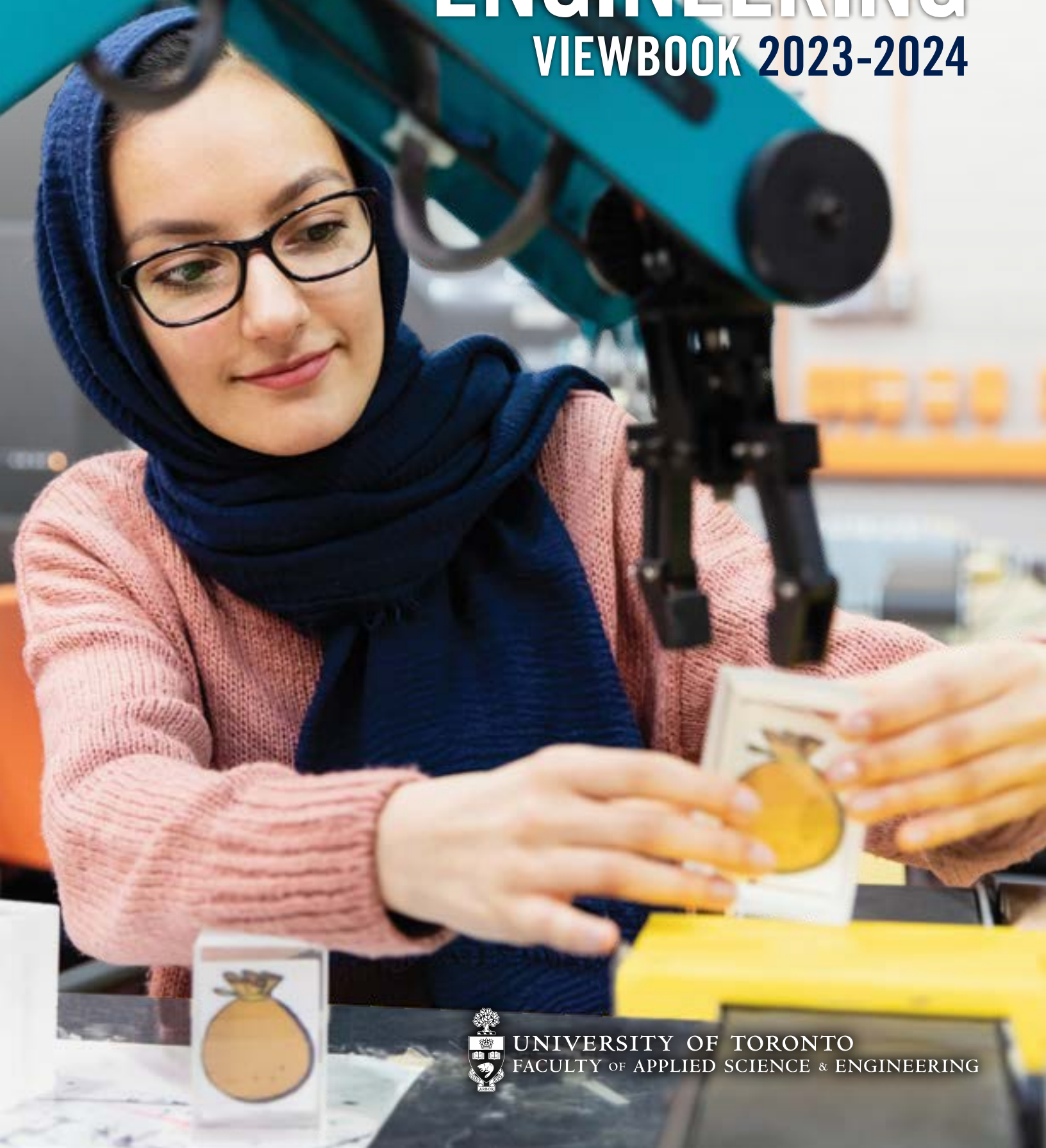


DISCOVER ENGINEERING

VIEWBOOK 2023-2024



UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Pictured below is the Stewart Blusson Visualization Laboratory, a leading-edge facility within the Myhal Centre for Engineering Innovation & Entrepreneurship. Featuring an 11 metre-wide immersive video wall with ultra-high-resolution technology, it enables students to experience larger-than-life images, videos, models and simulations.



TRADITIONAL LAND ACKNOWLEDGEMENT

We wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

150 YEARS

2023 marks
U of T Engineering's
150th anniversary

30%

International students in
first-year engineering studies

360+

Companies employ

700+

engineering co-op
students each year

#1

We are Canada's top-ranked
engineering school. U of T
Engineering placed two spots
higher than the next Canadian
school in the 2022 QS World
University Rankings for
Engineering and Technology

100+

Countries our
students call home

90+

Engineering student clubs
and teams to explore

22

Engineering minors
and certificates to
customize your degree

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#1

U of T is first in Canada and
21st in the world for producing
the most employable
graduates (QS Graduate
Employability Rankings 2022)

160+

Partner universities
worldwide for study or
research opportunities

\$15.7B

Injected into the Canadian
economy per year as a result of
U of T's research

40%

For the past five years, U of T
Engineering's first-year class
has been near or above
40% women, the highest
proportion in Canada

Engineering for the World



Learn more:
uofteng.ca/e4tw

The world is always changing — challenging how we live and interact with our environment and each other. Where most see uncertainty, engineers see immense opportunity to shape the future.

Whether you aspire to improve access to clean water, leverage AI to support health care, or create more sustainable ways to move people through urban environments, your success depends on being able to think and act with a global perspective.

U of T Engineering provides an education that builds on technical and design skills with a deep understanding of the social, economic, ethical and cultural contexts that impact engineering solutions. Through practical experience, you'll learn to collaborate with diverse team members, and develop the resilience to be at home anywhere in the world.

Our community of innovators represents more than 100 countries and a rich spectrum of backgrounds and experiences. Your courses are led by world-renowned professors who will challenge you to explore how technology, innovation and society intersect. Throughout your academic journey, you will apply your skills and knowledge in the real world by working with industry, NGOs and academic partners — both locally and abroad.

We are immensely proud of all the ways our students and alumni inspire change in their communities and around the world. We look forward to helping you harness your potential as an engineer for the world.





1 CANADA

In 2019, industrial engineering student **Natalie Enriquez-Birch** was among 22 young leaders selected to attend the Arctic Youth Ambassador Caucus in Iqaluit. In 2020, Natalie served as co-president of U of T's Engineers Without Borders chapter, and last year she held the role of Equity & Inclusivity Director within the Engineering Society.



2 COSTA RICA

Electrical and computer engineering student **Diego Amores** and his team members designed a solar panel installation for an isolated community in Costa Rica as part of their fourth-year capstone course. Diego is also pursuing a certificate in Global Engineering, which is part of U of T's Global Scholars program.



3 DUBAI

Engineering Science student **Erin Richardson** and her team designed and built a unique experiment to examine the impact of spaceflight on astronauts' genes. Their experimental apparatus was tested aboard the National Research Council Canada's (NRC) Falcon-20 jet and the team travelled to Dubai to present their work at the 2021 International Aeronautical Congress.



4 FRANCE

Through the PEY Co-op Program, **Carmelle Chatterjee** worked at VALSEM Industries SAS, an anti-corrosion industrial film and packaging company based in Lachelle, France. During her 12-month work term last year, she was in charge of devising the environmental roadmap for the company, as well as developing more sustainable products. Read more about PEY Co-op on page 8.



5 NIGERIA

Jennifer (Chen Yu) Wang and three of her classmates worked virtually with students in Nigeria on a joint project to build a low-cost biogas generator for remote communities in Africa's most populous country. The project was part of the Multidisciplinary Capstone Design Course as well as the Global Classrooms project, which enables students from U of T Engineering to collaborate with peers from institutions worldwide.



6 SINGAPORE

In 2022, industrial engineering student **Kyra Nankivell** went on a six-month entrepreneurial exchange to Singapore. She sharpened her programming skills by working on augmented reality projects at Hiverlab — an emerging tech and immersive media company — and honed her business skills with a course from the National University of Singapore.



7 SYRIA

Recent civil engineering graduate **Salim Hourieh** joined U of T Engineering from Syria with an interest in sustainable urban growth. As a student, he served as vice-president of the World University Services of Canada, an organization that sponsors students from refugee camps to study in Canada. Through their efforts, Salim's team was able to directly sponsor two students to study at U of T.



8 USA

In April 2022, the University of Toronto Supermileage Team travelled to Indianapolis with their custom-built car for the three-day Shell Eco-marathon Competition on the famed Indy 500 track. More than 50 teams from across North America participated in the competition to design, build and operate the most energy-efficient vehicle possible. Read more about our vibrant student clubs and teams on page 6.

The U of T Engineering aUToronto team has placed first in the Autodrive Challenge for the past five straight years, with their most recent win in June 2022. The annual North American intercollegiate competition challenges student teams to build a fully autonomous passenger vehicle that can navigate an urban driving course successfully. The aUToronto team consists of faculty supervisors working alongside current graduate and undergraduate U of T Engineering students.



Pictured above is Zeus, a self-driving Chevrolet Bolt that U of T Engineering students retrofitted. (Photo: Chude Qian)

Innovation Starts with an Idea



Learn more:
uofteng.ca/innovation

For an idea to grow into something more, it needs a collaborative network of diverse peers, experienced mentors and an environment that invests in, and nurtures, entrepreneurial thinking.

U of T Engineering fosters the perfect ecosystem to see your ideas come to life, whether you're thinking about new ways to approach research, start a business or create a student team.

Innovation and entrepreneurship extend beyond the borders of our campus. We take full advantage of our prime location in the heart of Toronto, collaborating with our neighbours in the MaRS Discovery District, world-class hospitals, firms in Canada's financial district and major multinational organizations headquartered here.



Curious about innovation at U of T Engineering?

Tune in to our podcast *"Tell me more: Coffee with Chris Yip"* as our Dean sits down with a member of our dynamic global community to talk about what they're working on.

uofteng.ca/TellMeMore



Life in Toronto



Learn more:
uofteng.ca/toronto

With more than 140 cultures represented across 158 neighbourhoods, Toronto is a welcoming place where the world comes together. As North America's fourth-largest city and its safest, Toronto is a cosmopolitan hub for arts, culture, food, sports, technology and business.



Companies like Netflix, Twitter, Shopify, DoorDash and NVIDIA all have a strong presence in Toronto — it's no wonder the city ranks among the top five in the world for tech talent and opportunity. This makes Toronto an excellent place to find work opportunities and build your future career.



Union Station is Canada's largest transportation hub with connections to trains, subways, streetcars and buses. The station also connects to the largest underground pathway in the world, and both airports that serve Toronto: Pearson International (YYZ) and Billy Bishop (YTZ).



Fans celebrated as the Canadian men's national soccer team qualified for the 2022 FIFA World Cup for the first time in 36 years.



Toronto hosts the world at several annual festivals and celebrations, including the Toronto International Film Festival, the Indigenous Arts Festival, Pride Toronto and Caribbean Carnival.



Little Italy, Greektown and Chinatown are a few of the many cultural hubs close to campus. With more than 7,500 restaurants across Toronto, you can eat your way around the world.



Hospital Row is a stretch of world-class hospitals and research centres located next to U of T — many of which partner with our researchers and employ our students for co-op and summer work.

Vibrant Student Life



Learn more:
uofteng.ca/studentlife

From the earliest days of our Faculty's history, students have referred to U of T Engineering and its community spirit as Skule™ (pronounced "school").

Community pride, passion and camaraderie runs strong among engineering students inside and outside of the classroom.

Whatever your interests or hobbies — from designing a solar powered vehicle to playing in a music ensemble— there is a student group or co-curricular activity for you. There are more than 90 teams in U of T Engineering and another 800 across U of T. And if you can't find a club that suits your interests, you'll have the support to start your own.

Participation in co-curricular activities at The Entrepreneurship Hatchery and Troost Institute for Leadership Education in Engineering will further complement your engineering education, improving your communication, teamwork and professional skills.



@ChiragVariawa

Today @uoft_eng_fyo and @uoftengineering hosted the First-year Engineering Exam Jam!

LinkedIn@JoshuaPius

I am extremely happy to share that last Friday I was able to represent the University of Toronto Engineering graduating class of 2022 as the Valedictorian. I am beyond honoured and grateful to have received this opportunity.



@darsh_jain1

Cheers to a weekend of adventures, body positivity, rainbows and great company
🌈 #pride



@uoftengineering

Taking the world stage: #UofTEngineering @civmin student Lucia Stafford represented #Canada in the 1,500-metre race at the #Tokyo2020 Olympic Games

@uoftengineering

A cherished #UofTEngineering tradition, Skule™ Nite celebrated its 100th anniversary with an unforgettable virtual show 📺: <http://uofteng.ca/hGC0rT>



@uoftengdean

Great to check out #uoftbrog this afternoon. Cool to see the design of this next generation concrete toboggan @civmin @uoftengineering

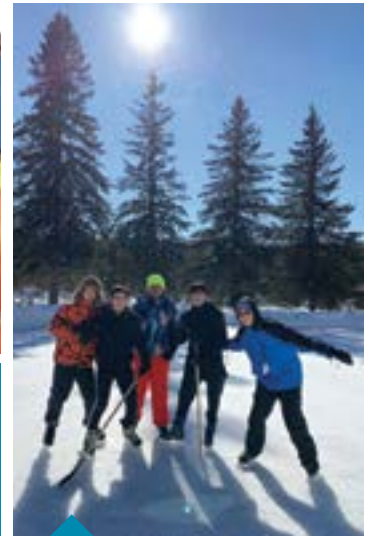




📷 @humans.of.skule

"Something I really like about UofT is that you're constantly surrounded by hard-working, smart people. Someone's always doing something interesting and there's always someone smarter than you that's willing to give you a helping hand.

- Aakash Budhera, EngSci 2T2
👉 - Andreea Varlan



📷 @skuleskiclub

Ice skating rink in front of our hotel
👉 Nice game of hockey played 🇮🇪

📷 @skuledragonboat

Great boat practice today! It feels great to be back on the water 🌊 and Iron Dragons is super excited for the season and what's to come!



📷 @uoftengineering

#ICYMI: This past Saturday, #UofTEngineering students came together to celebrate their achievements and look to the future in an in-person #IronRing ceremony.

Congrats from @uoftengineering
👉 🎉 🎊 🎊

📷 @itsyourgirlshelina

I dreamt of this day 5 years ago...now it's HISTORY.

I'm so proud to be the first female Engineer in my family and generation!



Residence

Living in residence is an excellent way to immerse yourself in university life. Residence is guaranteed for all new full-time students entering their first year of undergraduate study for the first time. See page 20 for details on how to apply for residence.



"Living in Chestnut Residence is a lot of fun. In addition to having meals with friends in the buffet-style dining hall and playing pool in The Urban, it's great getting to know my neighbour Professor Variawa. He is part of the faculty-in-residence program."

— **Ernie Lee**, Year 3 Civil Engineering



📷 @skuleorchestra

Last rehearsal before recording...



A Co-op Designed for Future Engineering Professionals



Learn more:
uofteng.ca/coop

You can graduate with up to 20 months of meaningful work experience while earning a competitive salary, creating an extensive network and gaining professional skills you'll leverage for years to come.

We deliver our flagship work experience program through the **Professional Experience Year Co-op Program (PEY Co-op)**, which boasts a 40-year track record. The program has been designed in collaboration with industry partners and engineering leadership experts to help you build your professional profile and prepare for long-term career success.

PEY CO-OP IN THREE STAGES

1

LAY YOUR FOUNDATION



Foundational programming begins in your first year at UofT Engineering and continues into the second year. Engage with programming designed to orient you to different industries and help you set professional goals. You'll also practice the skills you'll need to secure employment during the co-op recruitment cycle, including: developing your job search strategy; writing industry-ready resumes and cover letters; making a positive impression; and navigating complex work situations.

2

APPLY YOUR KNOWLEDGE



Apply to and interview for co-op positions that align with your goals. Through our robust network of employers, you'll have access to 1,900+ jobs around the world and across every industry sector. Students seek employment during two main recruitment cycles: in second year in preparation for an optional summer work term, and in third year in preparation for a 12-to-16-month work term.

3

SHOWCASE YOUR TALENT

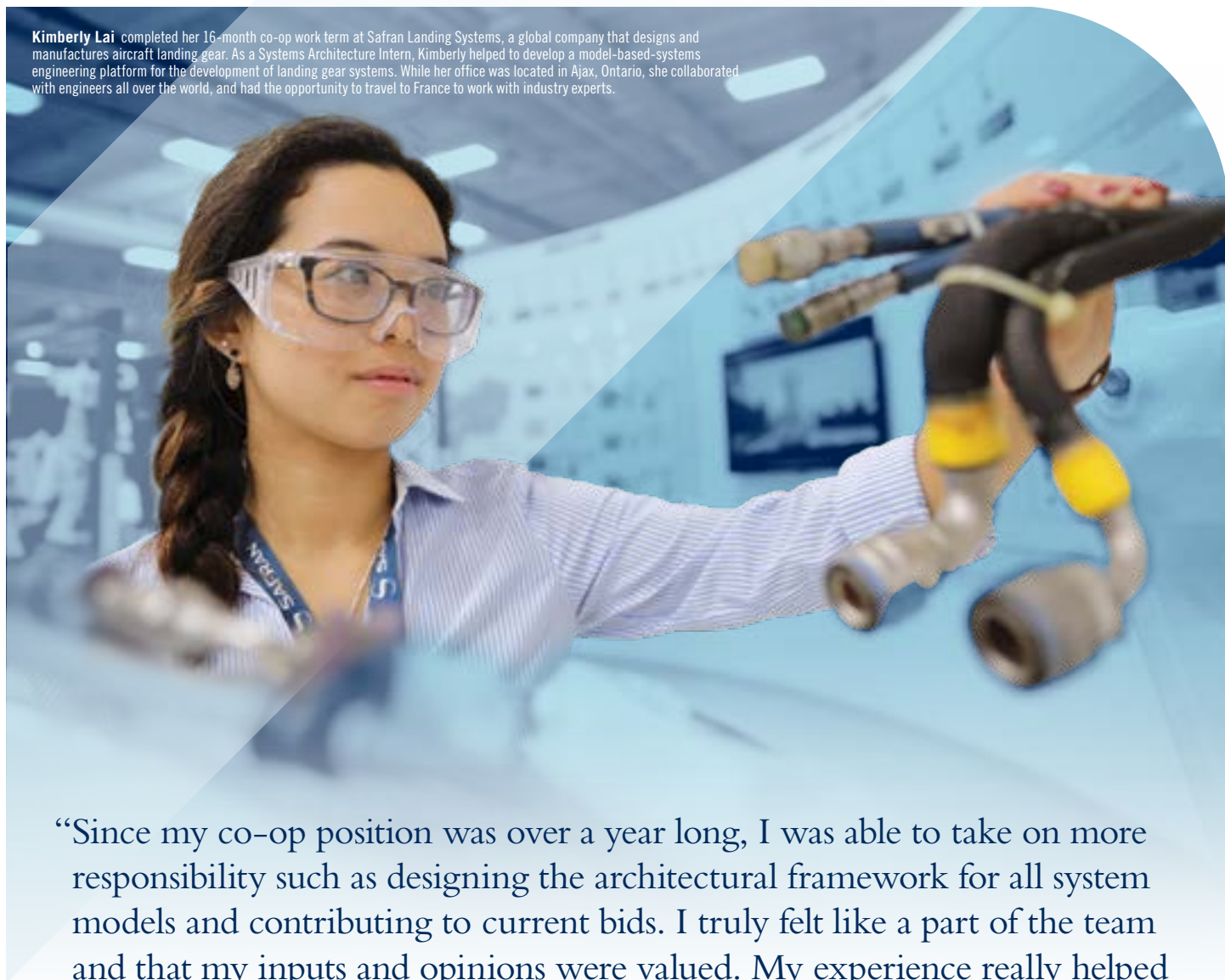


While on the job, you'll immerse yourself as a full-time employee. You will be introduced to a professional environment in your summer co-op work term and gain workplace experience. Working for 12 to 16 consecutive months after your third year will give you ample opportunity to make meaningful professional contributions and build a valuable network. If you participate in both work terms, you will have accrued up to 20 months of paid professional work experience before you graduate.

JOINING CO-OP IS EASY!

Opt in to PEY Co-op by indicating your interest during the U of T Engineering application process (see page 20 for details).

Kimberly Lai completed her 16-month co-op work term at Safran Landing Systems, a global company that designs and manufactures aircraft landing gear. As a Systems Architecture Intern, Kimberly helped to develop a model-based-systems engineering platform for the development of landing gear systems. While her office was located in Ajax, Ontario, she collaborated with engineers all over the world, and had the opportunity to travel to France to work with industry experts.



“Since my co-op position was over a year long, I was able to take on more responsibility such as designing the architectural framework for all system models and contributing to current bids. I truly felt like a part of the team and that my inputs and opinions were valued. My experience really helped me grow professionally and as an individual. It allowed me to gain deep insight into what working in the aerospace industry is like.”

— **Kimberly Lai**, recent Engineering Science graduate



Leverage U of T Engineering's connections to **360+ companies** worldwide, including Honda, IBM, Sanofi Pasteur, Shell and more.



You'll have access to **1,900+ positions** across a broad range of industries and geographies; one in 10 students works outside Canada.



All co-op positions are paid. Last year, students earned an average 12-month salary of **\$53,000 CAD** (highest annual salary was \$101,000 CAD).



Graduate with **up to 20 months** of professional experience from two different companies across two work terms after second and third year.



Your co-op experience can count toward obtaining your **P.Eng. designation**, giving you a head start on earning your professional engineering license after graduation.

Your Success is Our Success



Learn more:
uofteng.ca/success

Our tight-knit community thrives because success is a shared goal. You'll find support among your fellow classmates, in your professors and teaching assistants, and in the staff members who facilitate a range of specialized services that address the needs of engineering students. In addition to the engineering-specific services listed below, every student has access to robust university services including the Health & Wellness Centre, Academic Success Centre, Accessibility Services and the Centre for International Experience.

MENTAL HEALTH & ACADEMIC SUPPORT FOR ENGINEERING STUDENTS

The **First Year Office** team supports your transition to life as a UofT Engineering student. This includes a dedicated team of academic advisors who provide personalized guidance as you navigate your first year. After first year and for the remainder of your degree, your **departmental advisor** will support you through your academic journey.

The **Registrar's Office** oversees all administrative aspects of your education, including financial aid and course scheduling. The Registrar's Office facilitates access to a **learning strategist**, an **advisor for international students**, a **wellness counsellor** and an **accessibility advisor**.

The **Mental Health Programs Officer** supports students in navigating mental health resources and leads initiatives within UofT Engineering to support student well-being. This role works closely with the Skule™ Mental Wellness Director, who creates student programming and opportunities centred around enhancing mental health and wellness within the community.

A **Student Life Programs Coordinator** supports engineering students living at Chestnut Residence by overseeing programming and working collaboratively with the First Year Office and Faculty in Residence.

UofT Engineering's **Office of Diversity, Inclusion & Professionalism** joins several other groups and positions within the Faculty that are dedicated to creating an environment and culture free of harassment, discrimination and intolerance.

To succeed in your studies and beyond, you'll need a strong foundation in leadership, communication and math. We created the **Troost Institute for Leadership Education in Engineering**, **Engineering Communication Program** and the **Math Aid Office** to support your development in these areas.

The **Engineering Career Centre** facilitates the PEY Co-op experience at UofT Engineering and offers a range of programming to help prepare you for your future career.

As a UofT Engineering student, you will be eligible to join **UofT Engineering CONNECT**, an online network of more than 12K alumni, students, faculty, staff and industry leaders. It's a great way to access alumni mentors, potential job leads and more.

94%

of first-year engineering students move into second year. For those who choose a different path, academic advisors help them to navigate program transfers.



Your professors are more than teachers and renowned researchers. They are mentors, collaborators and advocates for your success

MEET PROFESSOR JASON BAZYLAK

Professor Bazylak teaches Engineering Strategies & Practice, a first-year design course in the Core 8 programs. He guides teams of students as they work with real clients on design challenges. His passion for the community extends far beyond the walls of the classroom. He is an active member of the Engineering Positive Space committee and serves as the Dean's Advisor on Indigenous Initiatives.

U of T Engineering students, staff and faculty came together with Indigenous community members for the First Nations House Tipi Raising in August 2021. The tipi raising is a step toward creating more Indigenous spaces on campus.



Our Diverse Community

 Learn more:
uofteng.ca/diversity

Diversity deepens the engineering creative process and enriches the student experience. We are committed to creating an equitable and inclusive community, and to increasing access to engineering studies for communities that have historically been underrepresented within the profession.



A U of T dance troupe performs at the Myhal Centre for Engineering Innovation & Entrepreneurship open house event in 2018.

ADDITIONAL WAYS U of T SUPPORTS AND PROMOTES EQUITY AND INCLUSION:

Student-run associations such as the National Society of Black Engineers, Women in Science and Engineering, Queer Sphere, Muslim Students' Association and the Indigenous Students Association host a range of special events and outreach activities year-round. The Engineering Society also has a dedicated Equity & Inclusivity Director.

All U of T students can access **on-campus medical and mental health support and services** through doctors, counsellors and psychologists. Students also have access to 24-7 counselling support offered in numerous languages.

Students with disabilities can connect with **Accessibility Services** to discuss adaptive technology, accommodations and success strategies.

Indigenous students can tap into a network of centres and resources across campus, such as **First Nations House**.

The **Sexual & Gender Diversity Office** provides programming, resources and advocacy on sexual and gender diversity. The St. George campus also has several gender-neutral bathroom facilities.

The **Multi-Faith Centre** supports spiritual well-being and encourages interfaith dialogue. There are dedicated spaces for prayer and meditation across U of T.

The **Anti-Racism & Cultural Diversity Office** provides a safe space for students, faculty and staff to hold conversation and improve inclusion across the University community.

Customize Your Education



Learn more:
uofteng.ca/customize

Through discipline-specific specializations, multidisciplinary minors and certificates, and unique professional opportunities, you can customize your UofT Engineering degree to meet your own developing interests at every stage of your academic journey.

Academic flexibility combined with a wide range of optional curricular and co-curricular opportunities means that you graduate equipped with the engineering competencies, professional confidence and global perspective to address complex challenges.

START
HERE

APPLY

During the application process, you'll decide how you want to begin your journey at UofT Engineering. There are two pathways you can choose from:

THE TWO PATHWAYS

CORE PROGRAMS

CORE 8, DECLARED ENGINEERING

If you know what you want to study during your degree, you can apply directly to a Core 8 program: Chemical; Civil; Computer; Electrical; Industrial; Materials; Mechanical; or Mineral. (See pages 15 to 18 for details)

TRACKONE, UNDECLARED ENGINEERING

If you're unsure of how you'd like to focus your first year, the TrackOne program allows you to explore several areas across engineering. At the end of first year, you will declare which of the Core 8 programs you will join in second year for the remaining three years of your undergraduate degree. (See page 14 for details)

ENGINEERING SCIENCE

Engineering Science (EngSci) is a direct-entry program designed for those seeking a unique academic challenge. The first two years of the program — called the Foundation Years — are common to all EngSci students. In the latter half of your program, you will specialize in one of eight exciting majors. (See page 18 for details)

FIRST YEAR

First year is about establishing fundamental knowledge in math, applied and basic sciences, and design. For this reason, the first-year curricula for the Core 8 programs and TrackOne are very similar. Topics covered in the first year of all Core Programs include:

- » Math (linear algebra, calculus)
- » Physics
- » Chemistry (physical chemistry and/or materials science)
- » Programming (Python or C)
- » Engineering Design, Communication and Practice

The Foundation Years establish breadth and depth in engineering principles and design. Topics include but

FOUNDATION YEAR 1

- » Calculus, Algebra
- » Mathematical Computation
- » Computer Programming (Python and C), Algorithms
- » Electric Circuits
- » Physics, Material Science
- » Engineering Design, Communication and Practice

Optional curricular and co-curricular opportunities

Here are just a few of the many ways you can add to your academic journey through optional curricular and co-curricular opportunities:



Focus your career trajectory while earning a competitive salary through the immersive **PROFESSIONAL EXPERIENCE YEAR CO-OP PROGRAM** (page 8)



Advance the frontiers of engineering through a **SUMMER RESEARCH POSITION** either on campus or at a partner university internationally

SECOND YEAR

Expand your knowledge with more courses in your discipline. Gain a greater depth of understanding through enhanced lab experiences and design opportunities.

Some students enrolled in the PEY Co-op Program pursue a summer work term after their second year.

THIRD YEAR

Deepen your knowledge further by choosing an area of focus within your Core 8 program (see pages 15 to 18 for discipline-specific areas). Consider taking electives that allow you to complete a multidisciplinary minor or certificate (see page 19).

If you opted into the PEY Co-op Program, this year is particularly important in securing your 12- to 16-month position after third year. (See page 8 for details.)

FOURTH YEAR

Apply the skills and knowledge you've developed with the opportunity to complete a team-based design project.



GRADUATION

Whether you plan to work in industry, start your own business or pursue further studies, you will graduate equipped with strong technical fundamentals, practical engineering knowledge and perspectives to address any challenge. Students in the Core Programs graduate with a Bachelor of Applied Science (BASc) degree, and Engineering Science students graduate with a Bachelor of Applied Science in Engineering Science (BASc in EngSci).

mathematics, science, are not limited to:

FOUNDATION YEAR 2

- » Ordinary Differential Equations, Probability and Statistics, Vector Calculus
- » Digital and Computer Systems
- » Quantum Mechanics, Thermodynamics
- » Electromagnetism, Waves
- » Systems Biology
- » Engineering, Society and Critical Thinking

With the Foundation Years complete, you will now focus your studies on one of eight EngSci majors. Consider taking electives that allow you to complete a minor or certificate (see page 19).

If you opted into the PEY Co-op Program, this year is particularly important in securing your 12- to 16-month position after third year. (See page 8 for details.)

Within your EngSci major, you'll have the opportunity to apply your knowledge, skills and talents through a team-based design project and an individual research thesis.



Solve a real-world challenge faced by a company through a collaborative industry-sponsored project at the **UofT INSTITUTE FOR MULTIDISCIPLINARY DESIGN & INNOVATION**



Go global by **STUDYING ABROAD** at 160+ partner universities worldwide



Join the **ALUMNI MENTORSHIP PROGRAM** and benefit from the insight and experience of our UofT Engineering alumni



Strengthen your leadership competencies through the **TROOST INSTITUTE FOR LEADERSHIP EDUCATION IN ENGINEERING**



Turn your idea into a startup through **THE ENTREPRENEURSHIP HATCHERY**



Gain complementary perspective on your studies through an **ENGINEERING MINOR OR CERTIFICATE** or through an **ARTS & SCIENCE MINOR** (page 19)

Engineering Programs at a Glance

You can combine any of our 10 academic programs with a range of leadership, entrepreneurship, extracurricular and career-building opportunities — like our co-op program. All of our programs are fully accredited* and our degrees are recognized worldwide.

5,600+

Undergraduate students

1,600+

International students

270+

Faculty members

25+

Research institutes

18

Buildings

9

Academic departments

* Canadian Engineering Accreditation Board



TrackOne, Undeclared Engineering

TrackOne is a first year designed for students interested in exploring all fields of engineering before joining one of the Core 8 programs in second year. As a TrackOne student, you'll spend your first year taking a wide range of courses. This approach helps you discover your interests within U of T Engineering while developing a strong foundation in key engineering principles. After successfully completing TrackOne, you are guaranteed* a spot in the Core 8 program of your choice — Chemical, Civil, Computer, Electrical, Industrial, Materials, Mechanical or Mineral — for the remaining three years of your BSc degree.

DID YOU KNOW?

The TrackOne community organizes study groups, game nights, beach parties and an annual dinner-dance called the Eight Ball. Alumni of the program often sew a TrackOne patch onto their coveralls or jackets.

HELPING YOU DECIDE

The "Introduction to Engineering" course explores how each engineering field contributes to society, helping you choose your best fit within the Core 8 programs as you transition to second year. Support from a dedicated TrackOne advisor will also help you with your decision. The TrackOne curriculum is designed to parallel the courses taken by first-year students in the Core 8 programs, allowing students a smooth transition into second year.

*TrackOne students who achieve a minimum average of 60% in both semesters are guaranteed entry to the Core 8 program of their choice in second year.



Learn more:
uofteng.ca/trackone

Chemical Engineering

Chemical engineers combine chemistry, biology, math and design to solve global challenges and create innovative processes and products. As one of the top chemical engineering programs in Canada, U of T Engineering is at the forefront of research to develop renewable fuels and energy sources, use biotechnology to clean up pollution, manufacture products sustainably, create artificial organs, and fortify foods to address malnutrition. You'll put theory into practice in innovative courses and laboratories, including the unique Unit Operations Lab, filled with large-scale industrial equipment including a two-storey distillation column.

AREAS OF FOCUS

- » Biomolecular & Biomedical Engineering
- » Bioprocess Engineering
- » Chemical Engineering
- » Environmental Science
- » Informatics
- » Materials Development & Process Engineering
- » Pulp & Paper
- » Surface & Interface Engineering
- » Sustainable Energy

DID YOU KNOW?

In a fourth-year course called **Chemical Plant Design**, you'll work in a team to design an industrial processing plant in just 10 weeks.

SAMPLE PEY CO-OP EMPLOYERS

Environment & Climate Change Canada
Peel Plastic Products Ltd.
Sanofi Pasteur
Thermo Fisher
VALSEM Industries SAS (France)

SAMPLE CAREER TRAJECTORIES

Advanced Manufacturing of Biochemicals
Bioprocessing
Finance
Food Fortification
Management Consulting



 Learn more:
uofteng.ca/chemical



Civil Engineering

Civil engineering focuses on the design, infrastructure and sustainability of the structures and systems that support our daily lives, from the deepest tunnels to the tallest buildings. You will learn from global experts in some of the world's most advanced and unique facilities. Your courses in applied structural mechanics, fluid mechanics, geology and engineering ecology will prepare you to create solutions that will directly impact quality of life, from designing disaster-resistant structures to building systems that supply clean water to remote communities.

AREAS OF FOCUS

- » Building Science
- » Construction Management
- » Environmental Engineering
- » Mining & Geomechanics
- » Structural Engineering
- » Transportation Engineering & Planning

DID YOU KNOW?

To learn the art and science of land and water surveying, civil and mineral engineering students take part in a two-week camp at beautiful Gull Lake, located three hours north of Toronto. In 2020, U of T Camp celebrated its 100th anniversary.

SAMPLE PEY CO-OP EMPLOYERS

Aecon Construction
CMW Geosciences (Australia)
Ferrovia Agroman (U.S.)
Toronto Hydro
Toronto Transit Commission

SAMPLE CAREER TRAJECTORIES

City Planning
Energy Use and Supply
Environmental Management
Transportation and Infrastructure
Water Treatment and Sustainable Use

 Learn more:
uofteng.ca/civil

Electrical & Computer Engineering

Electrical and computer engineers engage with many pressing challenges of our time, including the communication and control of digital information, and the generation and distribution of energy. In the first two years of both programs, you'll study design, math, digital systems, electronics, communication systems, computer architecture and software. In your upper years, you'll focus on two of six cutting-edge focus areas. The electrical and computer engineering (ECE) programs are housed within the same department, giving you access to a breadth of engineering theory and practice to launch your career in fields like artificial intelligence, health care, sustainability and more.

AREAS OF FOCUS

- » Analog & Digital Electronics
- » Communications, Signal Processing & Control
- » Computer Hardware & Networks
- » Electromagnetics & Energy Systems
- » Photonics & Semiconductor Physics
- » Software

DID YOU KNOW?

Our ECE department is ranked number one — and one of the largest — in Canada. Toronto has the highest concentration of artificial intelligence startups in the world*, and working in many of them are our students, professors and alumni.

*Source: torontoglobal.ca/ai

SAMPLE PEY CO-OP EMPLOYERS

IBM
Intel
NVIDIA (U.S.)
Scotiabank
Tesla

SAMPLE CAREER TRAJECTORIES

Machine Learning & Artificial Intelligence
Big Data
Computer Security
Medical Device Design
Sustainable Energy



photo credit: Gillian Foster Photography

 Learn more:
uofteng.ca/ece



Industrial Engineering

Industrial engineers improve the way people interact with technologies and systems. They help organizations run safely, efficiently and sustainably. You will begin the program by learning the foundations of industrial engineering: operations research, programming and human-centered design. In your upper years, you'll take courses ranging from engineering psychology to data analytics to business process optimization. Industrial engineers see “the big picture,” and apply their expertise everywhere, from streamlining health-care systems to rethinking supply chains and the online user experience in the era of artificial intelligence.

AREAS OF FOCUS

- » Human Factors
- » Information Engineering
- » Operations Research
- » Artificial Intelligence & Machine Learning

DID YOU KNOW?

Industrial engineering is closely tied to business and health care. Uof T's connections to Toronto's financial district and hospitals give you a significant career advantage.

SAMPLE PEY CO-OP EMPLOYERS

Environment Canada
Ernst & Young (Trinidad and Tobago)
Honda
Royal Bank of Canada
Walmart

SAMPLE CAREER TRAJECTORIES

Big Data Analytics
Health-care Engineering
Financial Analysis and Planning
Management Consulting
Project Management

 Learn more:
uofteng.ca/industrial

Materials Engineering

Materials engineers design and develop new materials and advance processes for producing materials sustainably. You'll learn how to manipulate the structure and properties of materials at molecular and atomic levels from professors who have expertise with a range of applications, including renewable energy, biomaterials, automotive and aerospace. You'll graduate with a solid foundation in how materials behave, and experience in using state-of-the-art characterization techniques and computer simulations.

AREAS OF FOCUS

- » Biomaterials
- » Computational Materials & AI
- » Design of Materials
- » Manufacturing with Materials
- » Sustainable Materials Processing

DID YOU KNOW?

The Department of Materials Science & Engineering is home to the Forensic Engineering certificate — a program that is unique in Canada.

SAMPLE PEY CO-OP EMPLOYERS

Celestica
Enbridge
Flyability SA (Switzerland)
Litens
National Research Council of Canada

SAMPLE CAREER TRAJECTORIES

Advanced Electronics
Biomaterials Engineering
Clean Technologies
Forensic Engineering
Manufacturing



 Learn more:
uofteng.ca/materials



Mechanical Engineering

Mechanical engineers understand the world as parts in motion: from cars to medical devices, all design uses mechanical engineering principles. Our program is renowned for its applied approach, where you can put theory into practice through unique experiential opportunities both in the lab and in the field. You'll take courses in physics, risk assessment, thermodynamics, biomechanics and sustainable energy. You will also have the opportunity to learn about the physical principles of design: how individual components come together, and how to manufacture objects to make them safe, economical and easy to use.

AREAS OF FOCUS

- » Bioengineering
- » Energy & Environment
- » Manufacturing
- » Mechatronics
- » Solid Mechanics & Design

DID YOU KNOW?

Our M-Space rapid prototyping lab allows students to 3D-print mechanical parts and build entire mechatronics systems, complete with embedded controllers and custom-made printed circuit boards.

SAMPLE PEY CO-OP EMPLOYERS

BMW (U.S.)
Bombardier
General Motors Canada
Magna Group
Ontario Power Generation

SAMPLE CAREER TRAJECTORIES

Advanced Manufacturing
Artificial Intelligence
Communications Systems
Robotics
Sustainable Energy

 Learn more:
uofteng.ca/mechanical



Mineral Engineering

Everything that humans use is either caught, grown or mined. Mineral engineering is the applied science of our interaction with the planet. What sets the Lassonde Mineral Engineering program apart is our broad approach to the discipline. Here, you'll learn mineral exploration, mine design and management, mineral processing and mining finance from researchers at the Lassonde Institute of Mining, as well as industry professionals. Your degree will give you the expertise to lead the way in making mining more sustainable, safe and productive.

AREAS OF FOCUS

- » Environmental Impact & Risk Assessment
- » Mine Design
- » Mineral Processing
- » Mining Economics & Finance
- » Surface & Underground Mining
- » Water Management

DID YOU KNOW?

Toronto is the mining finance capital of the world and home to more than 1,600 mining company headquarters. Students can meet many professionals through participation in industry events.

SAMPLE PEY CO-OP EMPLOYERS

Kinross Gold Corp.
Franco-Nevada Corp.
Teck Resources Limited
Teranga Gold
Vale

SAMPLE CAREER TRAJECTORIES

Consulting
Mine and Business Management
Financial Institutions
Sustainable Mining Practices
Strategic Planning

 Learn more:
uofteng.ca/mineral

Engineering Science

One of the most distinguished engineering programs in the world, Engineering Science (EngSci) is for students who are excited about collaborating with diverse peers to tackle global challenges. In your first two years, you'll be immersed in engineering, math, science, computing, design and social science. In your last two years, you'll build on this multidisciplinary foundation in one of eight majors for accelerated, discipline-specific learning. Teamwork, resiliency and determination are keys to success in this rigorous program. You'll thrive in a supportive and close-knit student community with instructors and staff who create an enriched and unique learning experience.

ENGINEERING SCIENCE MAJORS

- » Aerospace Engineering
- » Biomedical Systems Engineering
- » Electrical & Computer Engineering
- » Energy Systems Engineering
- » Engineering Mathematics, Statistics & Finance
- » Engineering Physics
- » Machine Intelligence
- » Robotics Engineering

DID YOU KNOW?

UofT is one of the few institutions worldwide to offer a program that integrates enriched science fundamentals with engineering. The EngSci curriculum is nimble, with dynamic majors that evolve and anticipate emerging technologies.

SAMPLE PEY CO-OP EMPLOYERS

Advanced Micro-Devices (AMD)
Intel
Loblaw Companies Limited
Reshenie (South Korea)
Royal Bank of Canada

SAMPLE CAREER TRAJECTORIES

Roughly half of EngSci grads pursue graduate studies in engineering and science or professional degrees such as business, medicine and law. Many enter the workforce in a wide range of careers across all industries or start their own companies.



 Learn more:
uofteng.ca/engsci

Engineering Minors & Certificates

Learn more:
uofteng.ca/minors

An engineering minor or certificate is a powerful way to graduate with an extra set of credentials, or explore an area of interest, while earning your degree. You can also pursue a minor through the Faculty of Arts & Science — such as Bioethics, Indigenous Studies and Urban Studies.

You can obtain a minor or certificate by focusing your elective courses on the topics below — six courses for a minor and three for a certificate. When you graduate, your minor or certificate will appear on your transcript.

76%

of our students graduated
with a minor or
certificate in 2021



ADVANCED MANUFACTURING MINOR

The Canadian manufacturing sector is booming. Courses in this minor cover an array of topics that can be broadly applied to areas such as biomedical, automotive, aerospace and energy.



GLOBAL LEADERSHIP MINOR (STARTING 2023-2024)

Part of U of T's first tri-campus, interdivisional, undergraduate program, this minor focuses on developing knowledge of global issues within an engineering framework and how engineers can influence, lead and improve conditions around the world.



ARTIFICIAL INTELLIGENCE ENGINEERING MINOR

Toronto is a global hub for AI. By exploring concepts such as data mining, neural networks and deep learning, you will be prepared to create solutions to the complex challenges facing this growing field.



MUSIC PERFORMANCE MINOR

This unique program is designed for exceptional musicians who are interested in combining their artistic and technical pursuits. Through our partnership with the Faculty of Music, you will have access to a performance-based program, including courses typically only offered to music students.



BIOENGINEERING MINOR

This minor provides in-depth knowledge from molecular and cell-scale engineering, to translation of technologies ranging from sustainable energy and renewable bioproducts to patient care.



NANOENGINEERING MINOR

Reflecting a growing focus on engineering materials and devices at the nano scale, this minor is applicable to many sectors including electronics, communications, energy and medical diagnostics.



ENGINEERING BUSINESS MINOR

This minor represents a powerful collaboration between U of T Engineering and the Rotman School of Management. Our most popular minor, it provides knowledge of finance, economics, business management and marketing from an engineering perspective.



ROBOTICS & MECHATRONICS MINOR

With an emphasis on a systems view, explore fundamental paradigms, enabling technologies, design and applications of robotics and mechatronics.



ENVIRONMENTAL ENGINEERING MINOR*

Delve into topics such as ecological impact, risk assessment, environmental microbiology, hydrology, preventive engineering, climate change, and the social and environmental impact of technology.



SUSTAINABLE ENERGY MINOR*

The need for greener, more sustainable energy resources is critical. Topics in this minor focus on the sustainable use of energy, energy-demand management and public policy related to sustainability.

ENGINEERING CERTIFICATES

- » Artificial Intelligence Engineering
- » Communication
- » Engineering Business
- » Engineering Leadership
- » Entrepreneurship, Innovation & Small Business
- » Forensic Engineering
- » Global Engineering**
- » Mineral Resources
- » Music Technology
- » Nuclear Engineering
- » Renewable Resources Engineering
- » Public Health and Engineering

*part of U of T's Sustainability Scholar designation ** part of U of T's Global Scholars designation

How to Apply



Learn more:
uofteng.ca/apply

The U of T Engineering admissions committee carefully considers each applicant's academic performance and activities outside the classroom. Once we have received your application through the Ontario Universities' Application Centre (OUAC), we will send you a link to complete a mandatory Online Student Profile (OSP). Your OSP will be used along with your academic transcripts and OUAC application to make an admission decision.

1

APPLY ONLINE

Submit your application online through the **Ontario Universities' Application Centre (OUAC)** at ouac.on.ca starting in early October. Shortly after you submit your application, we will send you an email acknowledgement with instructions on how to access your account on the Engineering Applicant Portal. The OUAC application deadline is January 12, 2023. For early consideration, 101 applicants should apply by December 1, 2022 and 105 applicants should apply by November 7, 2022.

2

SUBMIT YOUR ONLINE STUDENT PROFILE AND DOCUMENTS

Log in to your **Engineering Applicant Portal** to complete your Online Student Profile (OSP) — where you can tell us about yourself, your academic history, extra-curricular involvement and the engineering programs you are interested in. Upload transcripts through the portal for your high school studies to date. Your application will be reviewed once your OSP is complete. For full deadline details, please visit uofteng.ca/deadlines.

3

APPLY FOR RESIDENCE

Residence is guaranteed for all new full-time students entering their first year of university in an undergraduate program for the first time.

You will need to indicate your interest in residence by completing the **First Year StarRez application** by March 31, 2023, and receive and accept an offer of admission by June 1, 2023. Students must meet all deadlines and all deposit requirements to maintain their eligibility. For full details, please visit uofteng.ca/housing.

4

TRACK THE STATUS OF YOUR APPLICATION

Log in to your **Engineering Applicant Portal** account regularly to see what documents have been received in support of your application and to provide updated grades, transcripts and achievements. This is also where you can ensure that your Online Student Profile is complete and track your admission status. When a decision is made, it will be posted here first. Most admissions decisions are made between February and May.

Academic Requirements

CANADA

ONTARIO: English (ENG4U); Advanced Functions (MHF4U); Calculus and Vectors (MCV4U); Chemistry (SCH4U); Physics (SPH4U); and an additional U or M course

ALBERTA/NW TERRITORIES/NUNAVUT: Math 30-1; Math 31; Chemistry 30; Physics 30; and ELA 30-1

BRITISH COLUMBIA/YUKON: Pre-Calculus 12; Calculus 12 or AP Calculus; Chemistry 12; Physics 12; and English Studies 12 or English First Peoples 12

MANITOBA: Pre-Calculus Math 40S; AP Calculus 42S or Calculus 42U or Calculus 45S + Advanced Mathematics 45S; Chemistry 40S; Physics 40S; and ELA 40S

NEW BRUNSWICK: Calculus 120; Pre-Calculus A120; Pre-Calculus B120; Chemistry 121 or 122; Physics 121 or 122; and English 120, 121 or 122

NEWFOUNDLAND/LABRADOR: Math 3200; Math 3208; Chemistry 3202; Physics 3204; and English 3201

NOVA SCOTIA: Pre-Calculus 12; Calculus 12 or AP Calculus; Chemistry 12; Physics 12 and English 12

PRINCE EDWARD ISLAND: Mathematics 621A or 621B; Mathematics 611B; Chemistry 611 or 621; Physics 621; and English 621

QUEBEC CEGEP: 12 academic courses including one course in Algebra, and two courses each in Calculus, Chemistry, Physics and English.

QUEBEC HIGH SCHOOL: Present requirements according to the provincial curriculum that your school is following. Please refer to the appropriate province for our requirements.

SASKATCHEWAN: Pre-Calculus 30; Calculus 30; Chemistry 30; Physics 30; and ELA A30 + B30

Note: Please email engineering@utoronto.ca if your school does not offer Calculus

Finances

 Learn more:
uofteng.ca/finances

The cost of a university education includes tuition, incidental fees, books, supplies and living expenses. To help you plan ahead, use the University's financial planning calculator and explore scholarship opportunities and financial aid programs you may be eligible for.

SCHOLARSHIPS & AWARDS

All high school applicants to UofT Engineering are automatically considered for most admission scholarships on the basis of their academic achievement and extracurricular involvement (as detailed in the Online Student Profile). Some scholarships and awards require a separate application. Engineering applicants are also eligible for several University-wide scholarships. Major UofT scholarships requiring nomination include the **National Scholarship** for Canadian high school students and the **Lester B. Pearson International Scholarship** for international students.

FINANCIAL AID

UNIVERSITY OF TORONTO ADVANCE PLANNING FOR STUDENTS

We are committed to ensuring that no admitted domestic student¹ is unable to enrol in or complete their studies due to lack of financial means. This commitment led to the creation of a unique financial aid program called **University of Toronto Advance Planning for Students (UTAPS)**. Through a non-repayable grant, UTAPS covers unmet financial need after a student has received a maximum amount of support through government assistance (e.g., OSAP for Ontario students).

U.S. STUDENT AID

U.S. citizens can apply for financial assistance from the U.S. William D. Ford Federal Direct Loan Program. UofT is a recognized post-secondary institution for Federal Direct Loans (PLUS/Subsidized/Unsubsidized). Education Savings Plans and U.S. Federal Education Tax credits are also applicable. For details, please visit uofteng.ca/usloans.

SPONSORED STUDENTS

As a top-ranked world institution, the University of Toronto is an approved destination for most countries' national mobility scholarship programs.

COSTS

2022-2023 tuition and incidental fees for full-time studies are presented below in Canadian dollars; 2023-2024 fees are subject to change. For a list of housing options and costs, visit uofteng.ca/housing.

	DOMESTIC	INTERNATIONAL
Tuition	\$14,180 (Ontario residents) \$14,600 (non-Ontario residents)	\$63,500
Incidental Fees	\$1,878.00	\$1,878.00 ²
Residence & Meal Plan	\$11,628– \$22,447	\$11,628– \$22,447
Books & Supplies	\$1,500– \$2,000+	\$1,500– \$2,000+
PEY Co-op	You can opt into PEY Co-op during the UofT Engineering application process as outlined on page 20. The total PEY Co-op program fee is \$3,640, payable in six installments over three years starting in your second year. There is no cost to participate in PEY Co-op programming in your first year.	

1. International students are not eligible for need-based financial aid
2. International students are required to purchase health insurance through UHIP (\$756 for 2022-2023)

INTERNATIONAL

AMERICAN SYSTEM: Grade 12 at an accredited high school with a high GPA. Competitive candidates should have two years of Chemistry and Physics, as well as senior Calculus (AP, Honors or equivalent). Those unable to take more than one year of Chemistry or Physics, or who are not taking an AP course in that subject, should contact Engineering Admissions prior to applying. For 2023 admission, UofT is test-optional; however, we encourage students to submit any completed SAT, ACT or AP exams.

BRITISH PATTERNED SYSTEM: Three A-Levels including Mathematics and Physics. Chemistry is strongly recommended as the third A-Level. Applicants are required to present at least AS-Level Chemistry.

INDIAN SYSTEM: Mathematics, Chemistry and Physics at the Grade 12 level. Completion of the All India Senior School Certificate awarded by CBSE, or the Indian School Certificate awarded by CISCE, or Year 12 State Board Exams with excellent results.

INTERNATIONAL BACCALAUREATE (IB) DIPLOMA: Mathematics Analysis and Approaches HL (recommended) or SL or Mathematics Applications and Interpretations HL; Physics, Chemistry and English at either level.

Note: UofT Engineering does not grant advanced standing for A-Levels, AP or IB courses

ENGLISH LANGUAGE REQUIREMENTS

If your first language is not English, you must present proof of English facility prior to admission consideration, unless you have completed four years of full-time study in an English language school in a country where the predominant language is English. For applicants who are required to present proof of English facility and are taking Grade 12 English (e.g., ENG4U), you must achieve at least 70% in this course. For details on required scores and acceptable tests, please visit uofteng.ca/elt.



UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

DEFY
GRAVITY



IT'S EASY TO STAY ON TOP OF WHAT'S HAPPENING AT U of T ENGINEERING

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Visit uofteng.ca/tours to register for a student-led tour

