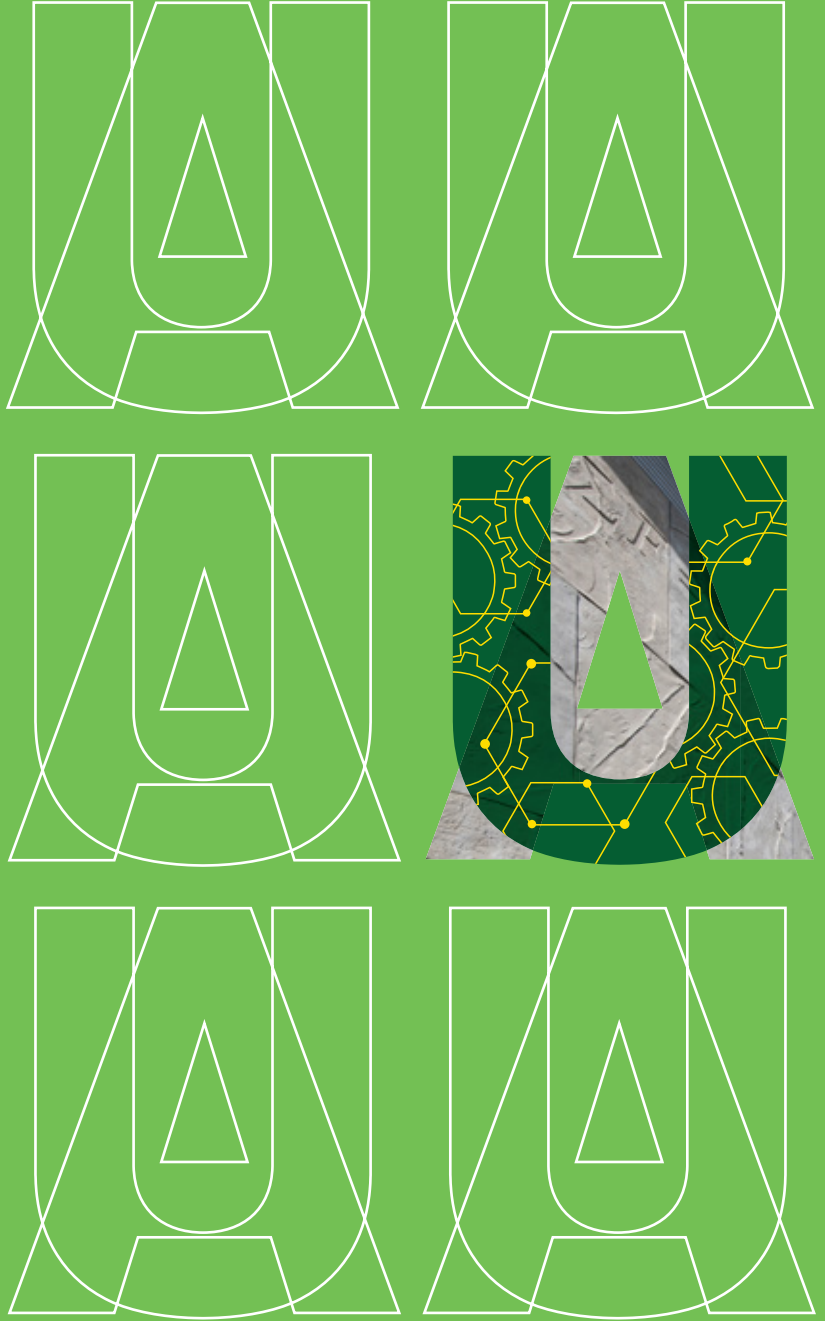


FACULTY OF ENGINEERING

2026-2027 VIEWBOOK



UNIVERSITY
OF ALBERTA

OUR VISION

is to be the most daring engineering community on the planet.

For over 110 years, the University of Alberta's Faculty of Engineering has prepared the next generation of engineers. We provide unparalleled education through our world-class facilities, innovative programming and award-winning teachers and researchers.

Territorial Acknowledgement

The University of Alberta respects the sovereignty, lands, histories, languages, knowledge systems and cultures of all First Nations, Métis and Inuit nations.

The University of Alberta, its buildings, labs and research stations are primarily located on the territory of the Nêhiyaw (Cree), Niitsitapi (Blackfoot), Métis, Nakoda (Stoney), Dene, Haudenosaunee (Iroquois) and Anishinaabe (Ojibway/Saulteaux), lands that are now known as part of Treaties 6, 7 and 8 and homeland of the Métis.



#5
ENGINEERING PROGRAM
IN CANADA



#4 FOR CHEMICAL
ENGINEERING



#4 IN CANADA AND
#16 GLOBALLY
FOR MINING
AND MINERAL
ENGINEERING



#6 FOR
ELECTRICAL
AND ELECTRONIC
ENGINEERING



#7 FOR
MECHANICAL,
AERONAUTICAL AND
MANUFACTURING
ENGINEERING



9 FULLY ACCREDITED
UNDERGRADUATE
PROGRAMS



THE ONLY ACCREDITED
PETROLEUM
ENGINEERING
SCHOOL IN CANADA



\$7.3M
IN FINANCIAL SUPPORT
AWARDED
ANNUALLY



\$70M
IN RESEARCH FUNDING
EVERY YEAR

The outside of the Donadeo Innovation Centre for Engineering on U of A's North Campus.

FIRST-YEAR ENGINEERING

Your first year is all about creating a solid foundation and introducing you to the vast opportunities available in engineering. Not only will you learn and grow, but you'll also discover how to shape your future career.

First-year classes include:

- 6 courses each semester (1 course is part-time)
- 7 hours in hands-on labs per week
- 16.5 hours in classes per week, including:
 - Calculus, chemistry, physics, linear algebra, mechanics and computer programming
 - Interactive seminars

Of the six first year courses, two are collaborative, part-time classes focused on the engineering profession and professional development:

ENGG 100: SUCCESS IN ENGINEERING

In this class students learn the skills required to be a successful student and Professional Engineer, including time management and leadership.

ENGG 160: INTRODUCTION TO ENGINEERING DESIGN, COMMUNICATION AND PROFESSION

This class teaches fundamental engineering design processes and theory in a team-based, multidisciplinary context.

uab.ca/BScEngg

Discover career exploration materials developed with faculty subject matter experts at uab.ca/eecnx



Engineering students Nandana, Isabella and Michael enjoying the Engineering Students' Society GEER Lounge.



ENGINEERING PROGRAMS

Following the foundational first year, students pursue a program and choose between the traditional or co-operative (co-op) education routes.

Programs with traditional or co-op routes:

- Chemical engineering
- Chemical engineering – bioprocessing and biomanufacturing option
- Chemical engineering – clean energy and sustainable process systems option
- Chemical engineering – computer process control option
- Civil engineering
- Civil engineering – environmental engineering option
- Computer engineering
- Computer engineering – nanoscale system design option
- Electrical engineering
- Electrical engineering – nanoengineering option
- Engineering physics
- Engineering physics – nanoengineering option
- Materials engineering
- Mechanical engineering
- Mining engineering
- Petroleum engineering

Co-op only programs:

- Computer engineering – software option
- Mechanical engineering – biomedical option
- Mechatronics and robotics engineering

Bachelor of Science in Engineering – Transfer program at Campus Saint-Jean

This one-year program offers students the opportunity to complete their first-year engineering courses entirely in French and within a Francophone environment. The academic requirements and course content are identical to those of the English program offered by the Faculty of Engineering. All courses in this program must be completed within a single academic year. Students interested in this program must meet French Language Proficiency in addition to the academic requirements.

Chemical Engineering

Chemical engineers focus on processes — always looking to design, create and improve ways of turning raw materials into finished products. You can see their work in all facets of daily life, from products like food, pharmaceuticals and cosmetics to the sustainable and renewable production of energy or the development of solutions for cleaner air and water.

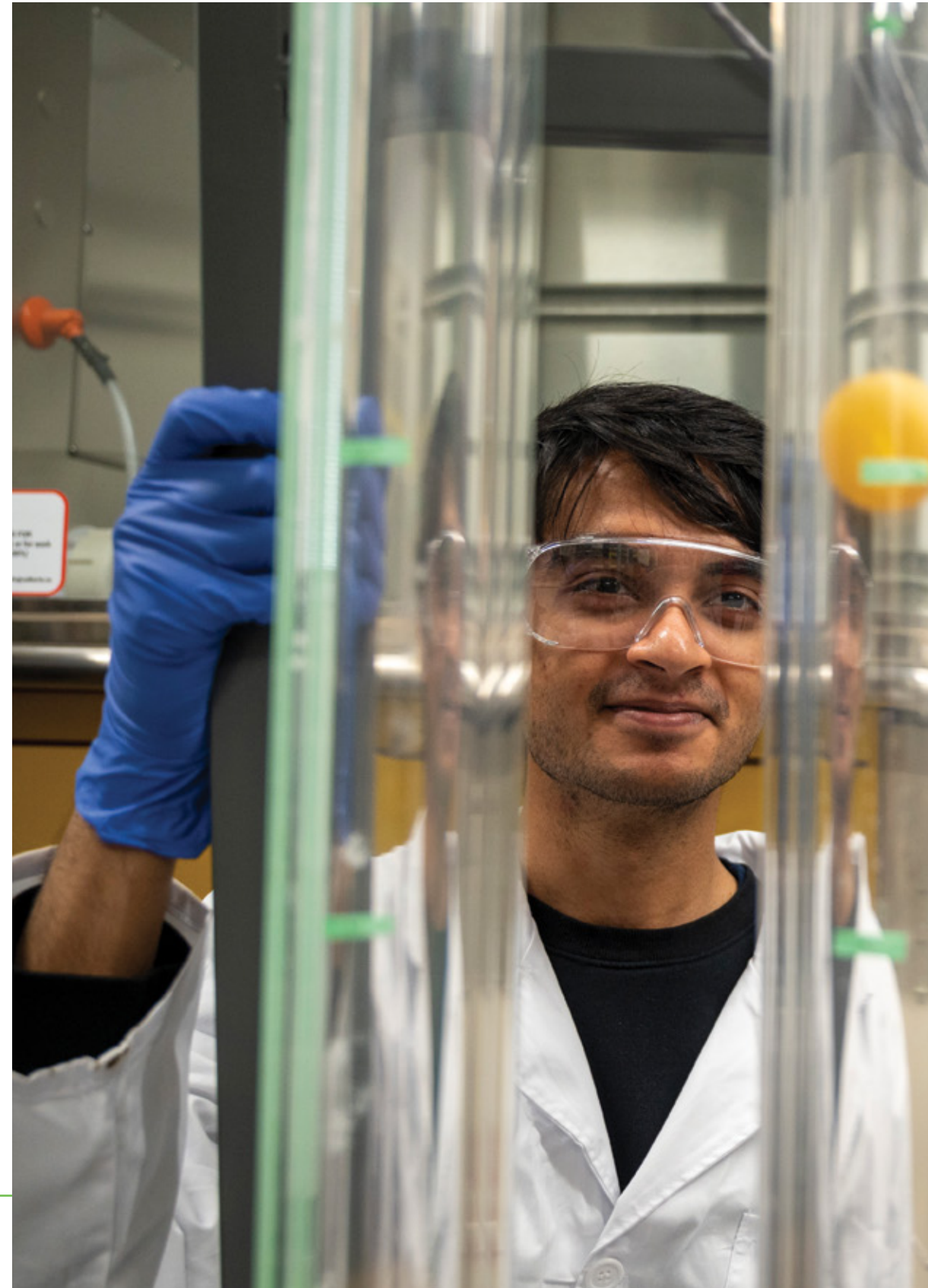
PROGRAM HIGHLIGHTS

- #4 chemical engineering program in Canada
- Chemical engineering is an in-demand career across Canada
- Our Computer Process Control option is unique in North America: a specialized undergraduate option not available elsewhere, with wide-reaching industrial applicability
- Upper-year classes include subjects like Coffee and Chemical Engineering or Energy and the Environment

KEY INDUSTRIES:

- Bioprocessing and biomanufacturing
- Carbon-neutral technologies
- Food processing
- Natural resources and critical minerals
- Oil and gas
- Pharmaceuticals
- Product development (paper, textiles, biofuels, etc.)
- Renewable and sustainable energy

Engineering student Abhijeet, running a process control experiment.



Chemical Engineering — Bioprocessing and Biomanufacturing Option

This option is built around the chemical engineering core program. Graduates from this option will be uniquely positioned to design and analyze biochemical processes and biological systems related to the manufacturing of biofuels, pharmaceuticals, biomaterials and other bioproducts.

Chemical Engineering — Clean Energy and Sustainable Processes Option

This option is built around the chemical engineering core program. Students in this option will acquire a robust understanding of the theoretical principles, as well as hands-on skills, in areas such as renewable energy production, electrochemical processes, energy storage and transformation technologies, fuel cells, hydrogen production and carbon capture and storage.

Chemical Engineering — Computer Process Control Option

This option is built around the chemical engineering core program. Additional specialized courses will help you develop skills as a Process Control and Systems Engineer. You'll also be able to contribute to the development, design, optimization, operation and control of the next generation of smart plants and sustainable chemical processes.



Throughout my years in the engineering program at the U of A, I've found astounding friendships that have changed my perspective on life and become a part of the mosaic that shapes who I am today. Whether it is having baking nights to alleviate stress or understanding the importance of taking a night to myself when things feel chaotic, the people I have met and the experiences I have had have helped me learn and grow."

NISHTHA

Recent graduate, civil engineering, from Grande Prairie, AB



Civil Engineering

Civil engineers plan, design, construct and operate. They manage airports, buildings, bridges, harbours, highways, flood control structures, transit systems, water supply and distribution systems, waste collection and storm drainage and other public works. Building better futures also means addressing environmental impacts and sustainability concerns.

PROGRAM HIGHLIGHTS

- **I.F. Morrison Structures Laboratory** — One of Canada's leading facilities that allows students to access technology and equipment used for large-scale testing of structures or structural elements
- This program builds a strong foundation in engineering principles with real-world applications
- Hands-on learning in CIV E 251 "Survey School"

KEY INDUSTRIES:

- Construction
- Energy and utilities
- Environmental
- Geotechnical
- Structures
- Transportation
- Water resources

Environmental engineering students on a canoe trip on the North Saskatchewan River.



Civil Engineering – Environmental Engineering Option

Environmental engineers protect natural ecosystems, human health and quality of life by applying engineering principles to solve environmental and public health related challenges. They tackle complex tasks like designing and managing water systems, performing environmental impact assessments and monitoring the environment.

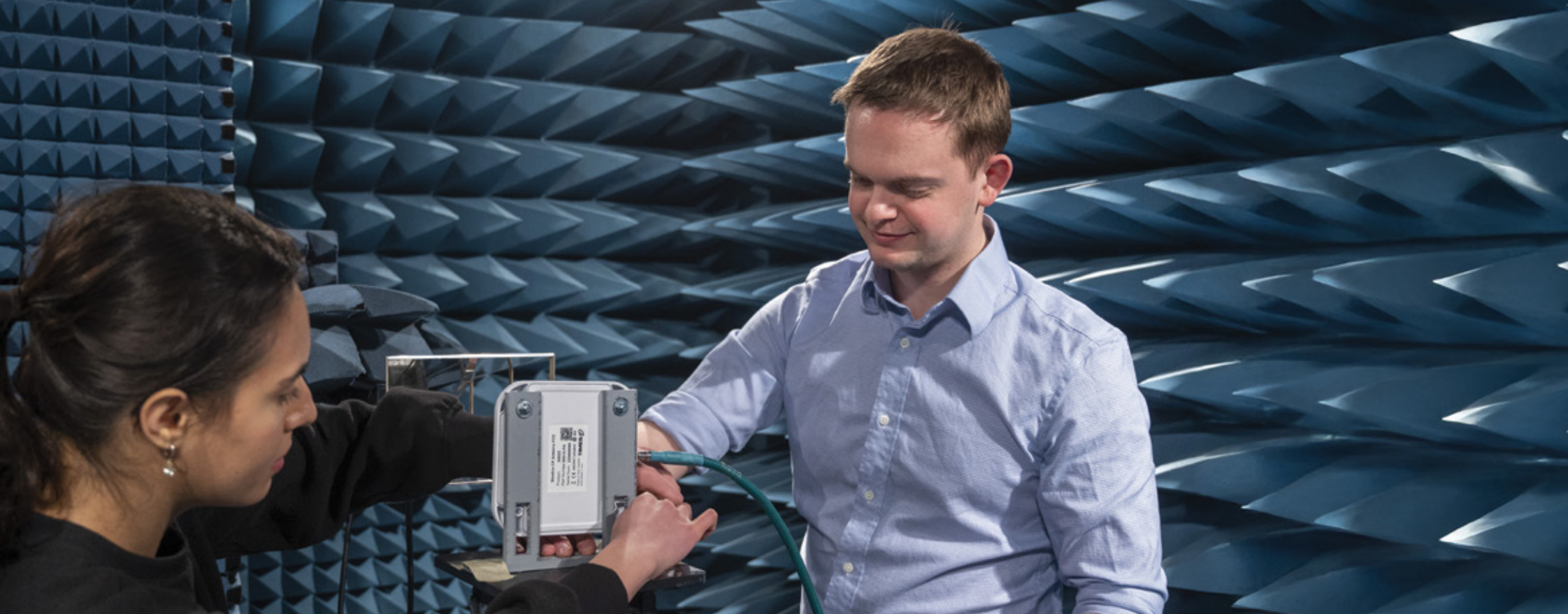
PROGRAM HIGHLIGHTS

Access labs such as the Natural Resources Engineering Facility (NREF) for hands-on learning with specialized equipment such as:

- Sand filter apparatus for granular filtration of contaminated water
- Sedimentation column
- High-volume sampler for particulate matter in the air

KEY INDUSTRIES:

- Environmental and geoenvironmental consulting
- Mining
- Oil and gas
- Public health
- Utilities
- Waste management



PhD student Christopher and MSc student Romina preparing antenna measurements in the M3 Laboratory's near-field anechoic chamber.

Computer Engineering

Computer engineers play a key role in the design, construction and operation of the computer systems and software that change our lives on a daily basis. When people say “there’s an app for that,” it’s likely attributed to the work of computer engineers.

PROGRAM HIGHLIGHTS

- Courses cover topics in computer hardware, software, machine learning and artificial intelligence
- Flagship hackathon coding competition hosted annually by the Computer Engineering Club

KEY INDUSTRIES:

- Artificial intelligence
- Cybersecurity
- Manufacturing
- Medicine
- Technology
- Transportation

Electrical Engineering

From the devices we use every day – advanced robotics and instrumentation to large-scale telecommunications and data storage applications – electrical engineers focus on the design and development of electrical, electronic and electromagnetic systems. They also develop electrical devices and work with systems that transmit, distribute, store, control and use electromagnetic energy or electrically coded information.

PROGRAM HIGHLIGHTS

- #6 electrical engineering program in Canada

KEY INDUSTRIES:

- Computers and semiconductors
- Energy
- Manufacturing
- Telecommunications
- Transportation

Engineering Physics

Engineering physicists focus on areas as diverse as applied science, information technology and health and safety. This area of engineering has helped discover breakthroughs in sectors such as energy and medical robotics.

PROGRAM HIGHLIGHTS

- Students start with a strong foundation in math and physics
- Participate in research projects in areas such as fusion energy, microelectronics, robotics systems and fibre-optic communications

KEY INDUSTRIES:

- Automotive
- Aviation and aerospace
- Consumer electronics
- Defense
- Medical research and equipment

Computer Engineering – Software Engineering Option

Software engineering applies engineering principles to designing, developing and maintaining reliable, scalable and efficient software systems. This program equips students with the skills to develop large-scale, complex systems, including emerging artificial intelligence technologies. While computer science focuses on algorithms and computation, software engineering emphasizes the structured creation of secure, maintainable and practical software solutions.

PROGRAM HIGHLIGHTS

- Learn how to design, build, test and maintain modern, intelligent software
- Co-op opportunities with top tech companies for real-world experience

KEY INDUSTRIES:

- Automotive and aerospace
- Finance and banking
- Gaming and entertainment
- Healthcare
- Technology



Engineering students in the Elko Engineering Garage.

Materials Engineering

What if you could design the future? Materials engineers do exactly that! They're the innovators who figure out how stuff works – from the rare metals in your phone to the plastics in your sneakers. By blending science and creativity, they make materials stronger, lighter and even more eco-friendly.

Imagine crafting materials for space missions, sports gear, or medical devices! You'll learn to solve real problems (like making cars greener or recycling tech smarter) while using cool tools and tech. If you love puzzles, sustainability or building things that change the world, this is your playground.

U of A students working on a car powered by a hydrogen fuel cell they have designed and built from scratch.

PROGRAM HIGHLIGHTS

Excel in cutting-edge fields—our programs lead in:

- Corrosion/wear-resistant supermaterials (think indestructible engines!)
- Manufacturing
- Mineral processing
- Nanoscale technology
- Renewable energy innovation
- Welding/joining

KEY INDUSTRIES:

- Advanced manufacturing
- Aerospace and space exploration
- Biomedical technology
- Electronics and nanotechnology
- Renewable energy
- Sustainable construction



Students working in the Machine Shop in the Mechanical Engineering Building, a space that supports researchers, students and other groups both on and off-campus in completing project builds.

Mechanical Engineering – Biomedical Engineering Option

By applying engineering principles to medical problems, biomedical engineers improve people's quality of life and help save lives! In collaboration with medical professionals, biomedical engineers design therapeutic systems, software, equipment and devices to advance human health outcomes.

PROGRAM HIGHLIGHTS

- Complete mechanical engineering degree with dedicated courses in biomedical engineering
- Co-op program only with optional placements in biomedicine

KEY INDUSTRIES:

- Government
- Healthcare
- Medical sector
- Research

Mechanical Engineering

Mechanical engineers constantly create, rethink and redesign the machines and mechanical systems we depend on. From tiny life-saving devices to the engines, machines and plants that power our world, mechanical engineering's impact is profound.

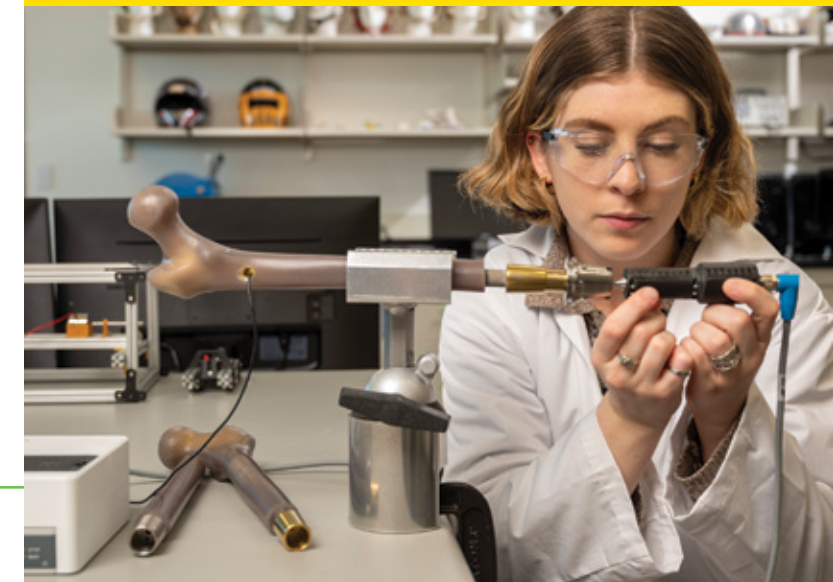
PROGRAM HIGHLIGHTS

- #7 mechanical engineering program in Canada
- The Machine Shop: an open lab designed to allow students and visitors to observe research
- Hands-on vehicle build and competition in second-year design course (MEC E 260)

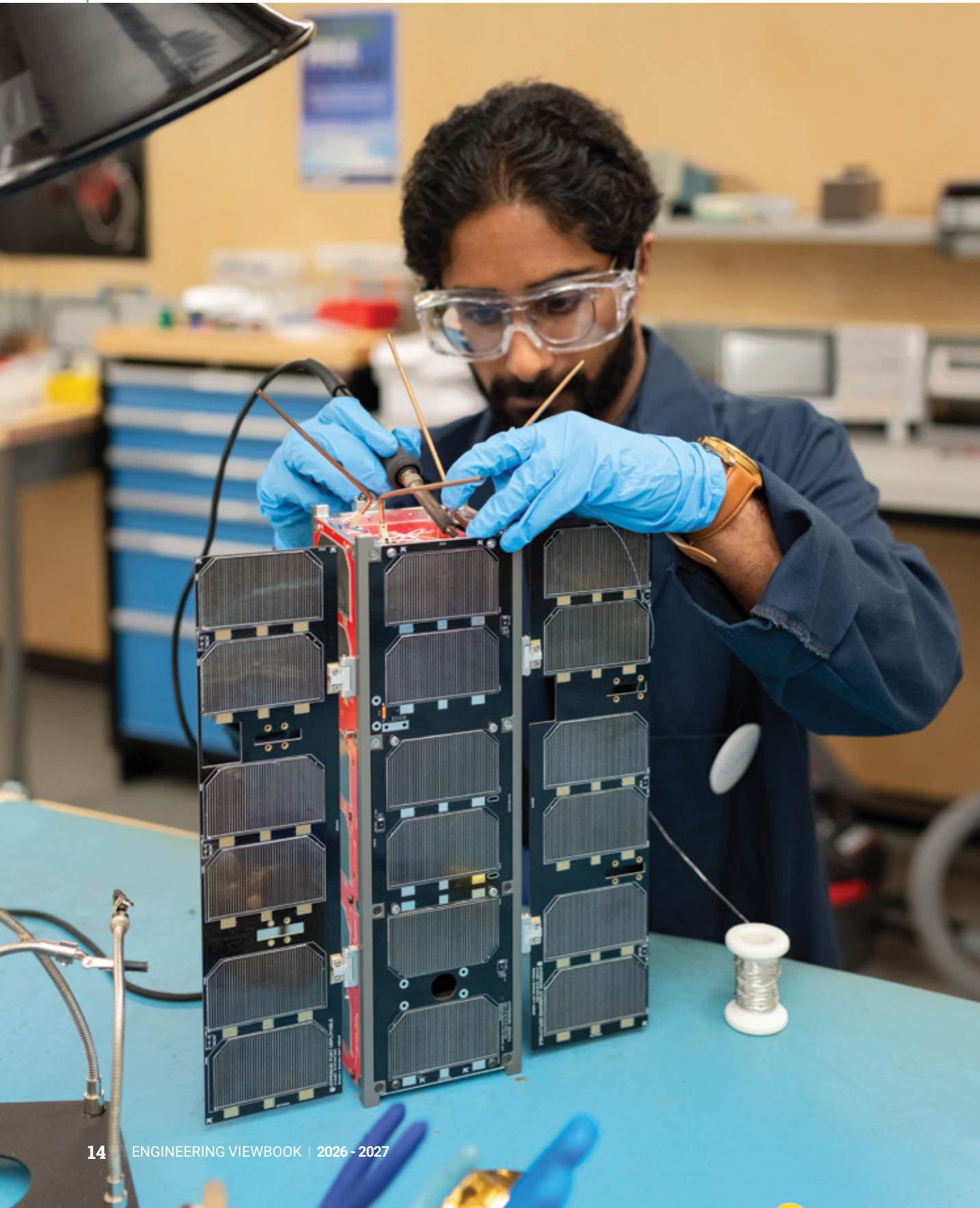
KEY INDUSTRIES:

- Building systems
- Defence
- Energy
- Healthcare
- Manufacturing
- Transportation

Master's student Delaney studies osseointegration in a bone implant in the Faculty of Engineering's Biomedical Engineering Department.



Nikhil, a current engineering student working in the Elko Engineering Garage.



Engineering students participating in a design competition.

Mechatronics and Robotics Engineering

Mechatronics and robotics engineers design intelligent systems by integrating mechanical, electrical and computing technologies including artificial intelligence. This interdisciplinary field drives innovation in both automation and human-machine interaction, leading to advances in autonomous vehicles, healthcare robotics, smart manufacturing and other cutting-edge technologies across diverse industries.

PROGRAM HIGHLIGHTS:

- First mechatronics and robotics engineering degree program in the Prairie provinces
- Hands-on design projects in every year of the co-op program, providing real-world experience

KEY INDUSTRIES

- Advanced manufacturing
- Automotive and autonomous vehicles
- Bionic and prosthetic systems
- Construction and building automation
- Entertainment and gaming
- Micro- and nano-robotics
- Surgical robotics
- Telerobotics



Engineering students working in the U of A water flow research facility.

Mining Engineering

Mining engineers are involved in every aspect of responsible resource extraction and manage projects that provide the world with precious and base metals. These critical minerals and clean energy sources are required to construct the modern amenities we all rely on: cell phones, computers, electric vehicles, solar panels, healthcare, infrastructure and much more.

PROGRAM HIGHLIGHTS

- #4 mining engineering program in Canada
- #16 mining engineering globally
- 100% graduate employment rate

KEY INDUSTRIES:

- Automation
- Energy
- Environment
- Mining
- Research

Petroleum Engineering

Petroleum engineers use fundamental scientific knowledge and technology to solve real-life problems by exploring oil, natural gas, geothermal energy resources and underground storage of hydrogen and carbon dioxide. By developing new technologies, they explore the management of subsurface energy resources safely and economically while preserving and protecting the environment.

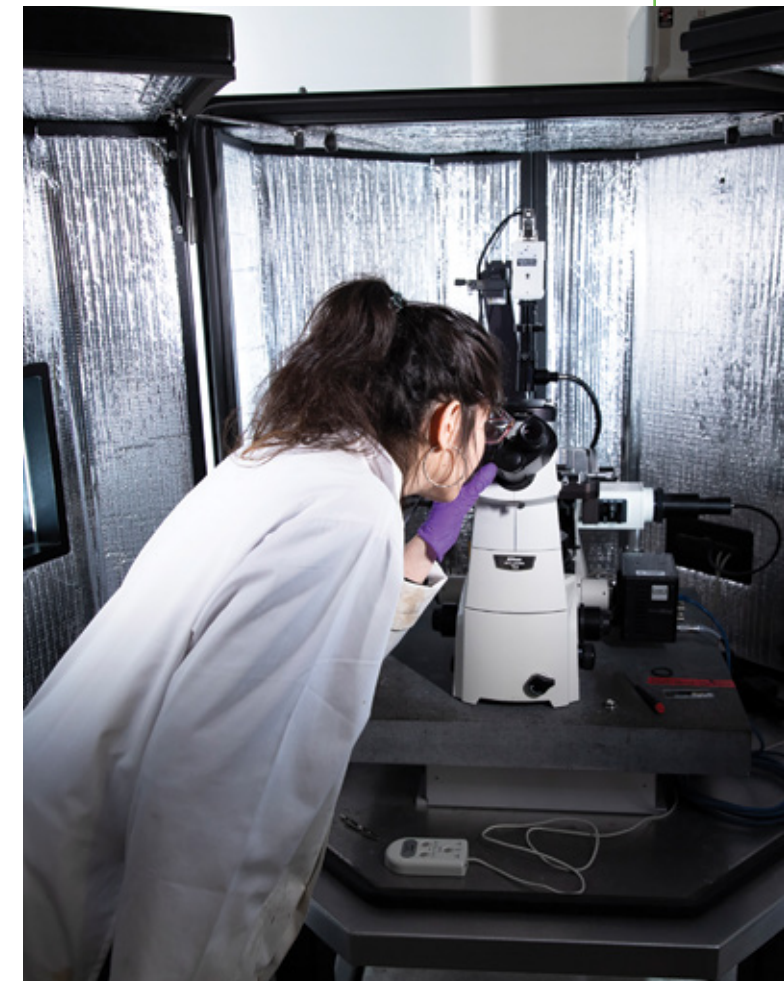
PROGRAM HIGHLIGHTS

- The only accredited petroleum engineering degree program in Canada
- #2 petroleum engineering program globally
- Situated in Canada's primary energy innovation and production region, the program offers opportunities to contribute to numerous research and collaborative partnerships within the energy industry

KEY INDUSTRIES:

- Carbon capture and storage
- Environment
- Geothermal energy
- Government
- Hydrogen storage
- Oil and natural gas
- Research

Student working in the oil sands laboratory.



I joined the Petroleum Engineering Club, the SPE (Society of Petroleum Engineers) U of A Chapter in my third year as the President and have continued in this role into my final year at U of A. Getting involved with student groups has helped me so much in my classes, building relationships with my professors and classmates, and networking with industry professionals."

COLBY

Recent graduate, petroleum engineering, from Brandon, MB

WORK EXPERIENCE DURING YOUR DEGREE

Co-op Program

Since 1981, the Faculty of Engineering's Co-operative Education and Work-Integrated Learning Canada (CEWIL) accredited co-op program has been a national leader in cultivating talent and preparing students for the demands of an ever-changing global economy. Students learn from industry leaders and make meaningful contributions to their communities.

- 2nd largest co-operative education program in Western Canada
- 2,200 placements a year
- Up to 20 months of paid, hands-on training and practical experience prior to graduation
- A dedicated team of professionals supporting you
- Over 93% of our students obtain a work placement

Recent co-op placements:

- Alberta Health Services
- ATCO
- Drivewyze
- PCL
- Red Bull Advanced Technologies, RB17 Hypercar Project, Milton Keynes, UK
- Rocket Factory Augsburg, Germany
- Space Engine Systems
- Stantec

uab.ca/enggcoop



OVER **480**
COMPANIES
HIRED CO-OP
STUDENTS
THIS PAST YEAR



“

I interned with the Autonomous Systems team at Bremery e.V., a Formula Student team based in Bremen, Germany. My work focused on implementing telemetry systems and developing a small-scale prototype of the vehicle to help bridge the gap between simulation and full-scale testing. I also travelled with the team to events across Europe, including Barcelona, the Netherlands, and the iconic Hockenheimring race track.

LYNDEN

6th year, computer engineering – software option

Engineering Career Connections

Delivers innovative, engineering-tailored career development resources and networking opportunities that empower our students to find their purpose.

From the beginning of your program, traditional and co-op students will have access to:

RESOURCE VAULT

Actionable career advice, information and tools to help you explore career possibilities and succeed in finding employment.

CAREER EVENTS

Direct insights into industries and career path options, plus opportunities to form connections and develop professional networks.

ENGG CAREER NEWS

A curated weekly newsletter that keeps subscribers informed about career opportunities, recruitment events and more.

uab.ca/eec

Experiential Learning and More

Expand your knowledge and apply for a certificate or minor (based on completion of specific academic courses and a minimum GPA), or get involved in research!

Certificates and minors

- Opt to add a certificate in sustainability or certificate in innovation and entrepreneurship.
- Engineering students are eligible to add an optional minor in arts or science to their area of study. This requires careful degree planning with an advisor.

Undergraduate research

Imagine being involved in leading-edge research for affordable solar energy or in the development of new materials that fight bacteria. You can enhance your educational experience by getting involved with high-level research projects being conducted by your own professors, through programs like:

- Co-op
- I-STEAM Pathways
- Undergraduate Research Initiative

International experiences

The Faculty of Engineering is committed to offering a global learning environment and supporting student career aspirations through exchange programs and work or education abroad!

uab.ca/engg-el



ACADEMIC AND WELLNESS SUPPORTS

It's simple – we're here to help you succeed! In addition to the diverse range of academic and wellness supports provided at the University of Alberta, the Faculty of Engineering offers a comprehensive range of student services customized specifically for engineering students.

This includes:

- Academic advising
- Career resources
- Preparing to graduate
- Tutoring

uab.ca/engghelp



Engineering Student Success Centre (ESSC)

This centre is here to support you! ESSC provides free group and one-on-one tutoring to help develop academic skills and ensure success in any engineering program.

Student Spaces

INNOVATION, CREATIVITY, AND ENTREPRENEURSHIP (ICE) ENGINEERING INCUBATOR

Whether you're curious about venturing into the dynamic world of entrepreneurship, developing a new prototype or looking to scale an existing tech-based initiative – we support students and alumni through this journey.

ELKO ENGINEERING GARAGE

Discover this 6,000 square foot makerspace on the second floor of the Engineering Teaching and Learning Complex (ETLC). Students and staff have access to 3D printers, woodworking, metalworking, textiles and electronics equipment for their personal, extracurricular, academic or research-related projects.

uab.ca/engglife

Current engineering students working in the Engineering Student Success Center (ESSC).

“

I participated in a number of research projects during my degree, including the development of a portable laser system to drastically reduce the cost of soil testing for rural communities, and I took on various student group leadership positions. These opportunities allowed me to explore and find a career path perfectly suited to me.”

ABHAY

4th year, mechanical engineering – biomedical option

Student Clubs and Groups

We don't just want you to learn here; we want you to love it here! Joining the Faculty of Engineering offers you the chance to thrive in a vibrant, diverse community.

Cool club examples:

AUTONOMOUS ROBOTIC VEHICLE PROJECT (ARVP)

This is a student-run robotics project focused on the annual RoboSub Competition. Members learn to solve complex design problems, manage projects, and develop worldwide professional connections.

This student robotics group recently won 3rd (out of 35 universities!) at the international student marine robotics competition RoboSub in San Francisco, California.

arvp.org

ECOCAR

This student group designs and builds ultra-efficient cars fueled by hydrogen cells. This year they won the prestigious international Shell Eco-Marathon competition.

ualberta-ecocar.ca

FORMULA SAE (SOCIETY OF AUTOMOTIVE ENGINEERS)

This student club builds a formula-style race car and competes at the world's largest engineering competition series each year.

ualbertafsaе.com



PREPARING FOR UNIVERSITY

Bridge2Engg

Bridge2Engg is a pre-university support program designed to proactively help with your transition to engineering at the University of Alberta. The program focuses on connecting you with staff and students, garnering excitement about your program and building an understanding of how to succeed in your first year.



Choose from three levels of engagement:

LEVEL 1: FOUNDATIONS

Free to all admitted students, this program provides introductory support videos, links and documents developed by current students in engineering and a Discord server to interact with new students and Bridge2Engg student staff.

LEVEL 2: ACADEMIC ESSENTIALS

Targeted review content in calculus, physics, chemistry and an introduction to coding.

LEVEL 3: ENGG CAMP

A two week virtual program in August, where you'll collaborate with new and senior engineering students to solve real-world engineering problems, learn more about engineering as a career and access university supports that help you succeed.

To get involved visit uab.ca/b2e or email b2e.info@ualberta.ca



I grew up in a family of engineers, so I had a passion for STEM from a young age. I participated in a program called Technovation in high school, which provided young women an opportunity to be exposed to STEM and help solve a current world issue. This program gave me the confidence to pursue a field that is currently underrepresented and the passion to make a difference in the world."

CHARLISE

1st year engineering student, from Chestermere, AB



Students attending the Dean's Welcome Breakfast for the fem+ Mentorship Program in the Engineering Teaching + Learning Complex Solarium

fem+ Engineering Mentorship Program

Thinking about engineering, but unsure if it's the right fit? Consider an engineering student mentor! fem+ is a hybrid 7-month program for women, non-binary and 2SLGBTQ+ high school students interested in exploring engineering's possibilities!

Applications are only open in September.

uab.ca/fem or email femprog@ualberta.ca



**THIS COULD
BE YOU!**

“
Studying microgravity is essential for space exploration and scientific research, and I am so thankful I was given the opportunity to contribute. Microgravity was the most incredible thing I’ve ever experienced; it is an incredible feeling!”
JENNIFER
Mechanical engineering co-op graduate, 2024

Students for the Exploration and Development of Space (SEDS)

SEDS is a student-run non-profit with the mission to strengthen Canada’s future in space by providing post-secondary students with unique projects, research programs and professional development opportunities in the Canadian governmental, industrial and institutional space sectors.

Jennifer and Makenna’s team recently flew their robotics experiment as part of the Canadian Reduced Gravity Experiment held by SEDS on the National Research Council’s Falcon 20 aircraft.

Engineering student working in the Elko Engineering Garage.



This project was made possible because of U of A’s **Elko Engineering Garage**, which offers training on various machinery, from 3-D printers to vinyl cutters, for all U of A students, regardless of their degree.

SEDS members prepared their robots for flight in the Mechanical Engineering Workshop and made their experiment’s electroadhesive pads in the Innovations in Manufacturing, Polymers and Advanced Composite Materials (IMPACT) Lab.

Jennifer (right) and Makenna (left), both recent graduates from the U of A mechanical engineering program, working as mission specialists for **Mission SpaceWalker** during their degree. They are joined by their crewmate Shahrukh (middle) from the National Research Council.



READY, SET, APPLY!

Engineering requires an aptitude for math and science, but also offers the opportunity for unlimited creative expression, exploration and innovation.

Where others see problems, confusion and mediocrity, you see solutions, clarity and creativity. Are you up for the challenge?

ACADEMIC REQUIREMENTS

Admission to the Faculty of Engineering is competitive, most students enter directly from high school.

Required Alberta Grade 12 courses (or equivalents):

- English 30-1
- Math 30-1
- Math 31 (calculus)
- Chemistry 30
- Physics 30

Transfer admission and processes:
uab.ca/enggy

Programs and admission requirements:
uab.ca/programs

Historical admission averages by faculty:
uab.ca/averages

Apply for scholarships and awards:
uab.ca/awards

University access program for Indigenous students – Transition Year Program:
uab.ca/typ

Engineering students Lavanya, Michael and Isabella in the Innovation, Creativity and Entrepreneurship (ICE) Engineering Incubator. The ICE Engineering Incubator is a space where students, faculty and staff can learn to turn their business ideas into reality.

Important deadlines and to apply: uab.ca/apply




FIND YOUR PURPOSE

uab.ca/engineering

ASK US

You've got questions,
and we've got advisors.
enginfo@ualberta.ca
uab.ca/advising

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**UNIVERSITY
OF ALBERTA**