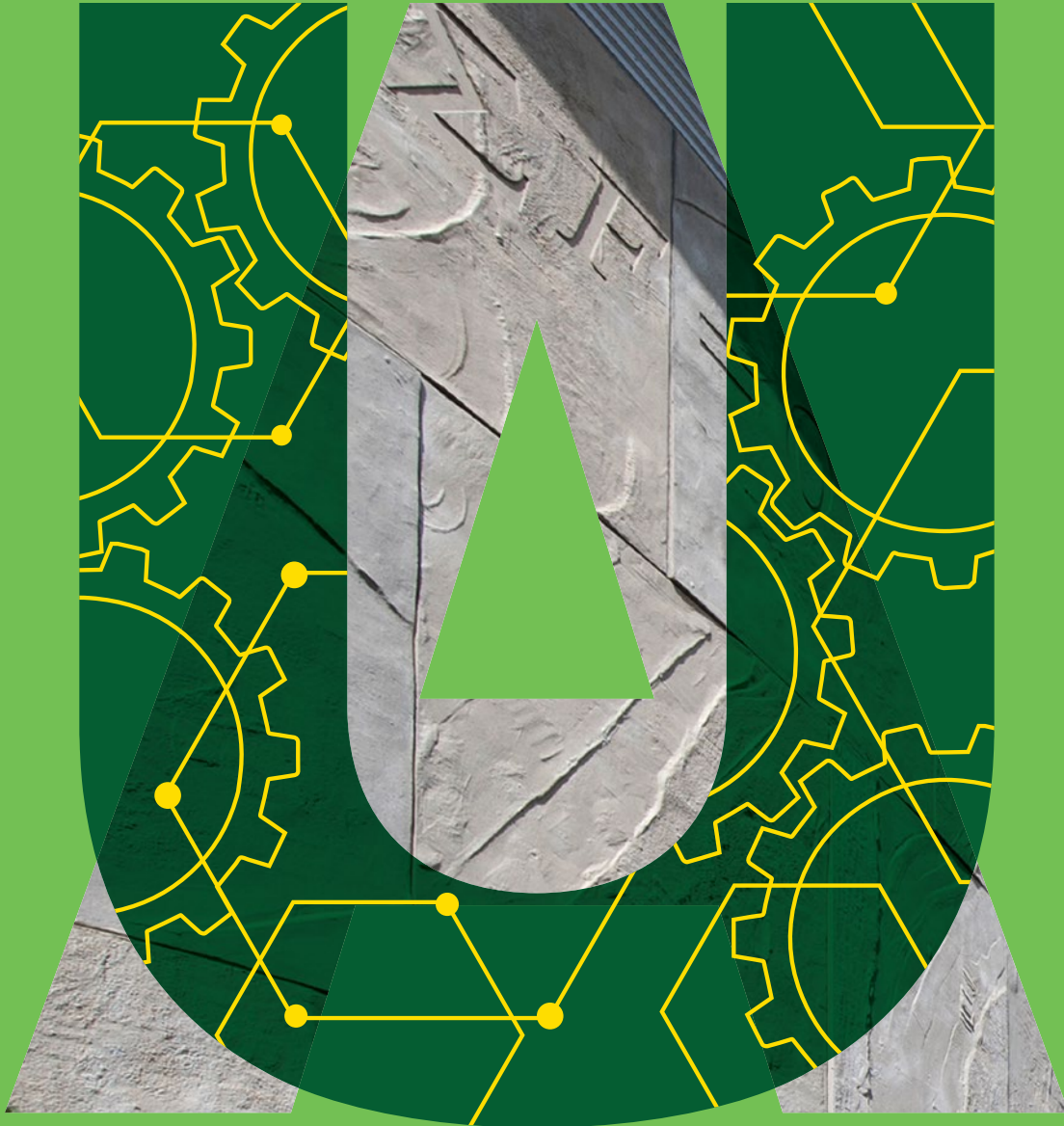




UNIVERSITY
OF ALBERTA



FACULTY OF
ENGINEERING

VIEWBOOK 2025-2026

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 acknowledges that we are located on Treaty 6 territory, and respects the histories, languages, and cultures of First Nations, Métis, Inuit, and all First Peoples of Canada, whose presence continues to enrich our vibrant community.



TOP IN CANADA



#2 FOR MINING AND MINERAL ENGINEERING AND **#10** GLOBALLY



#2 FOR MECHANICAL ENGINEERING



#4 FOR CHEMICAL ENGINEERING



#6 FOR ELECTRICAL AND ELECTRONIC ENGINEERING



#6 FOR MATERIALS ENGINEERING



9 FULLY ACCREDITED UNDERGRADUATE PROGRAMS



THE ONLY ACCREDITED **PETROLEUM ENGINEERING** SCHOOL IN CANADA



\$6.6M IN FINANCIAL SUPPORT AWARDED ANNUALLY



\$65M 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:

- Engineering fundamentals: calculus, chemistry, physics, linear algebra, mechanics and computer programming
- Hands-on labs
- Interactive seminars

Students also take two collaborative 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



Current engineering students in the 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

First-Year engineering in French:

The Campus Saint-Jean cohort

Campus Saint-Jean, in collaboration with the Faculty of Engineering, allows students to complete their first year of a Bachelor of Science in Engineering (BSc Eng) in French. Students starting at Campus Saint-Jean enjoy smaller class sizes for first-year courses and more individual support from teachers and professors. Students interested in this stream must meet French Language Proficiency in addition to the academic requirements.



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

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

- Top 4 chemical engineering program in Canada
- Our computer process control option is unique in North America: a specialized undergraduate option not replicated elsewhere, with wide reaching industrial applicability.

KEY INDUSTRIES:

- Bioprocessing and biomanufacturing
- Food processing
- Pharmaceuticals
- Product development (paper, textiles, biofuels, etc.)
- Renewable and sustainable energy

COURSE EXAMPLES:

CME 494: Special Topics in Chemical and Materials Engineering (Coffee and Chemical Engineering, Energy and the Environment)

CH E 485: Fuel Cells and Their Applications

MAT E 466: Special Topics in Materials Engineering (Electrochemical Energy Storage)

CH E 465: Chemical Engineering Design II

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.

KEY INDUSTRIES:

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

PROGRAM HIGHLIGHTS

Access labs with specialized equipment in the Natural Resources Engineering Facility (NREF) for hands-on learning; sand filter apparatus for granular filtration of contaminated water, sedimentation column or a high volume sampler for particulate matter in the air.

COURSE EXAMPLES:

ENV E 400: Advanced Environmental Engineering I

ENV E 440: Facility Design



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

4th year, 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 Structure 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.

KEY INDUSTRIES:

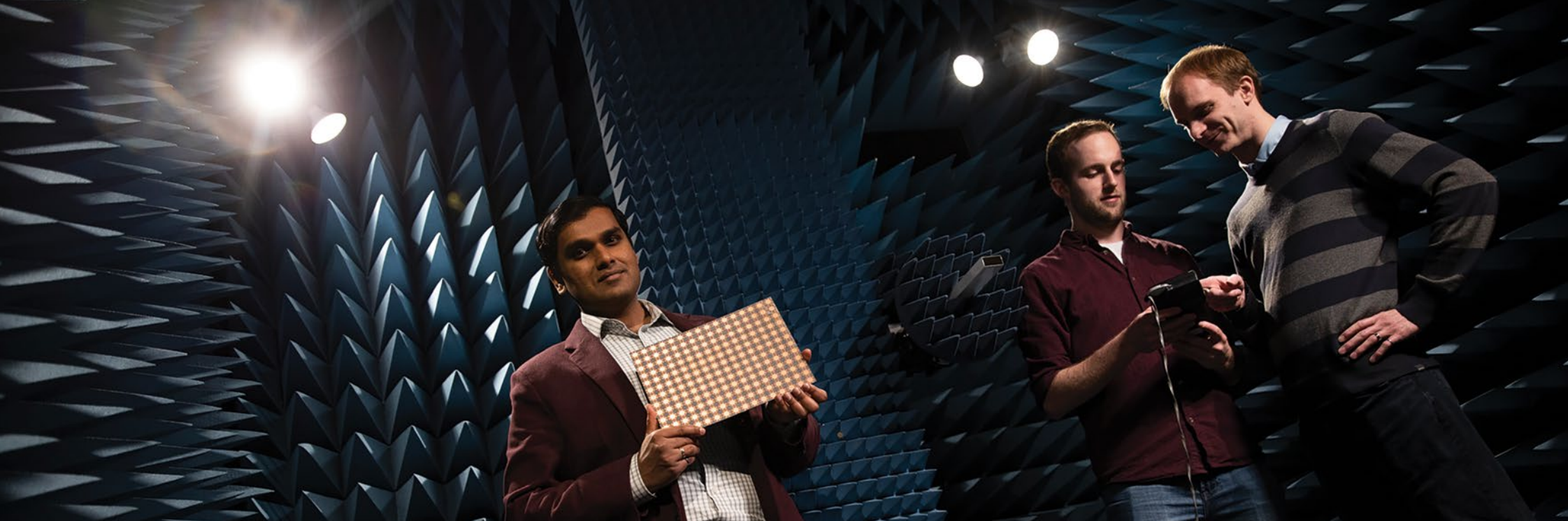
- Construction
- Environmental
- Geotechnical
- Structures
- Transportation
- Water resources

COURSE EXAMPLES:

CIV E 439: Water Resources Engineering Design

CIV E 460: Civil Engineering Design Project

CIV E 489: Geotechnical Design



Electrical and computer engineering professor, Ashwin Iyer, and PhD students Braden Smyth and Stuart Barth inside the anechoic chamber, a room designed to stop reflections or echoes of either sound or electromagnetic waves.

Nanoengineering

Nanotechnology is the study, design and fabrication of materials less than a micrometre (0.000001 metres) in size. New discoveries in nanotechnology have thousands of potential consumer and industrial applications, ranging from the speed of computers to the quality of drinking water in developing and remote communities.

PROGRAM HIGHLIGHTS

- Our campus is home to the \$52M Nanotechnology Research Facility (nanoFAB)
- NanoFAB offers opportunities for you to learn from some of the foremost experts in the world!



U of A's NanoFAB facility.

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

COURSE EXAMPLES:

- ECE 325:** Object-Oriented Software Design
- ECE 403:** Integrated Circuit Design
- ECE 447:** Data Analysis and Machine Learning for Engineers
- ECE 449:** Intelligent Systems Engineering
- ECE 492:** Computer Engineering Design Project

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

- Top 6 electrical engineering program in Canada

KEY INDUSTRIES:

- Defence
- Energy
- Manufacturing
- Telecommunications
- Transportation

COURSE EXAMPLES:

- ECE 430:** Power System Analysis
- ECE 460:** Control Systems II
- ECE 490:** Electrical Engineering Design Project I

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 areas including 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

COURSE EXAMPLES:

- ECE 452:** Computation for Nanoengineering
- ECE 478:** Microwave Circuits
- ECE 494:** Engineering Physics Design Project I

Materials engineering

Materials engineers study the interrelationships between structure, properties, processing and performance, as well as the characterization of materials. Spatial reasoning skills help in developing, modifying and applying processes for the conversion of raw materials into useful engineering materials with specified desirable properties. They help make materials lighter, more environmentally friendly and more economically viable.

PROGRAM HIGHLIGHTS

- Top 6 materials engineering program in Canada
- Our materials engineering programs are recognized for excellence in the innovative areas of welding and joining, nanofabrication, mineral processing, biomedical engineering, wear-resistant engineered materials and renewable energy technologies.

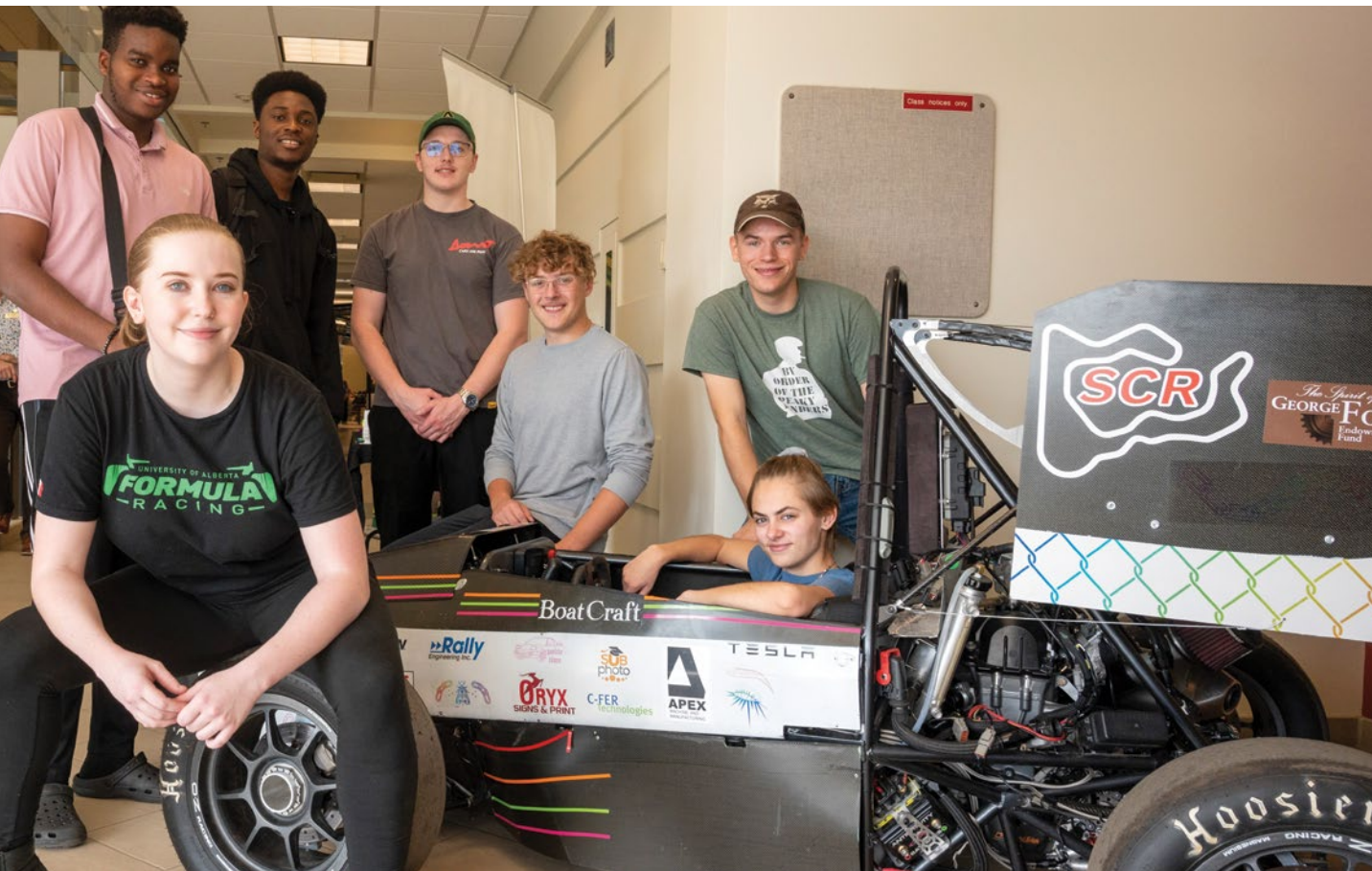
KEY INDUSTRIES:

- Construction
- Defence
- Electronics
- Healthcare
- Machine manufacturing
- Transportation

COURSE EXAMPLES:

- CME 494:** Special Topics in Chemical and Materials Engineering (Coffee and Chemical Engineering, Energy and the Environment)
- CH E 485:** Fuel Cells and Their Applications
- MAT E 465:** Materials Design Project
- MAT E 466:** Special Topics in Materials Engineering (Electrochemical Energy Storage)

U of A students posing with the formula-like race car that they designed and built.



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

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

- #2 mechanical engineering program in Canada
- The Machine Shop: an open lab designed to allow students and visitors to observe research

KEY INDUSTRIES:

- Defence
- Energy
- Healthcare
- Manufacturing
- Robotics
- Transportation

COURSE EXAMPLES:

- MEC E 415:** Busting Myths with Analysis
- MEC E 464:** Design for Manufacturing
- MEC E 466:** Building Systems Design
- MEC E 537:** Aerodynamics

Grad student, Paniz, using a robotic arm to help her lift a heavy item.

Biomedical engineering option

By applying engineering principles to medical problems, biomedical engineers improve people's quality of life, and they help save lives too! 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

COURSE EXAMPLES:

- BME 320:** Human Anatomy and Physiology: Cells and Tissue
- MEC E 485:** Biomechanical Modelling of Human Tissues and Systems





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

- Top 2 Mining Engineering program in Canada
- Top 10 Mining Engineering globally

KEY INDUSTRIES:

- Automation
- Energy
- Environment
- Mining
- Research

COURSE EXAMPLES:

MIN E 402: Mine Design Project I

Petroleum engineering

Petroleum engineers use fundamental scientific knowledge and technology to solve real-life problems, 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.
- Situated in Canada's primary energy innovation and production region, you'll have an opportunity to contribute to numerous research and collaborative partnerships within the energy industry.

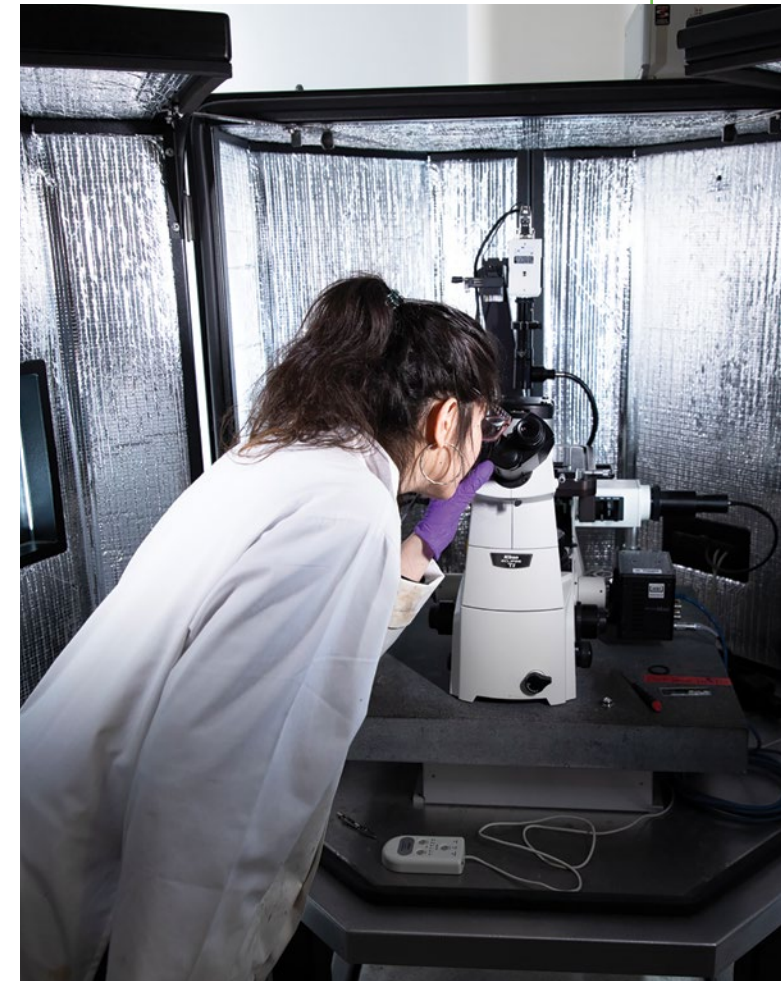
KEY INDUSTRIES:

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

COURSE EXAMPLES:

PET E 496: Petroleum Engineering Design Project

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

4th year, 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 95% of our students obtain a work placement



Recent co-op placements:

- Alberta Health Services, Edmonton (Computer engineering – Software)
- ATCO, Edmonton (Chemical engineering)
- PCL, Edmonton (Mechanical engineering)
- Rocket Factory Augsburg, Germany (Mechanical engineering)
- Red Bull Advanced Technologies, RB17 Hypercar Project, UK (Electrical engineering)
- Stantec, Edmonton (Civil engineering)

uab.ca/enggcoop

“

I worked for 12-months with the Electronics team at Red Bull Advanced Technologies, the high performance engineering arm of Oracle Red Bull Racing. I was responsible for an entire part of an electrical system on the RB17 Hypercar Project and was also tasked with building some calculators and simulation tools. My work has contributed towards shaving off several kilograms on the vehicle, saving us a few tenths per lap!”

SARTHAK

5th year, electrical engineering co-op



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 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

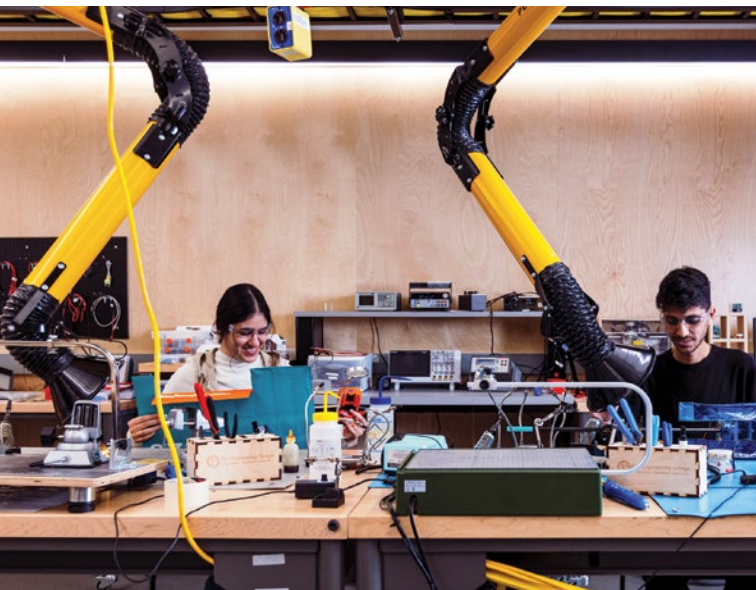
ACADEMIC AND WELLNESS SUPPORTS

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
- Tutoring
- Career resources
- Preparing to graduate

uab.ca/engghelp



Engineering Student Success Centre (ESSC)

In one of our central engineering buildings, first-year engineering students can access free group and one-on-one tutoring to help develop their academic skills and ensure their success.

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 be trained to use 3D printers, woodworking, metalworking, textiles and electronics equipment for their personal, extracurricular, academic or research-related projects.

uab.ca/engglife

Engineering students working in the ELKO Engineering Garage.

“

It is such a beautiful thing that we have been able to build a group of volunteers, students and faculty that love space and will do whatever it takes to see our satellite succeed. Launching something you created into space is a dream for many, but with AlbertaSat we get to turn that dream into a reality, and I am so proud to be part of that during my degree at the U of A.”

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.

AUTONOMOUS ROBOTIC VEHICLE PROJECT (ARVP)

This student robotics group recently won 3rd (out of 35 universities!) at the international student marine robotics competition in San Francisco, California called Robosub 2023. The club's winning design was a fully autonomous robotic submarine capable of cruising through water, shooting torpedos and picking up objects.

Learn more at arvp.org

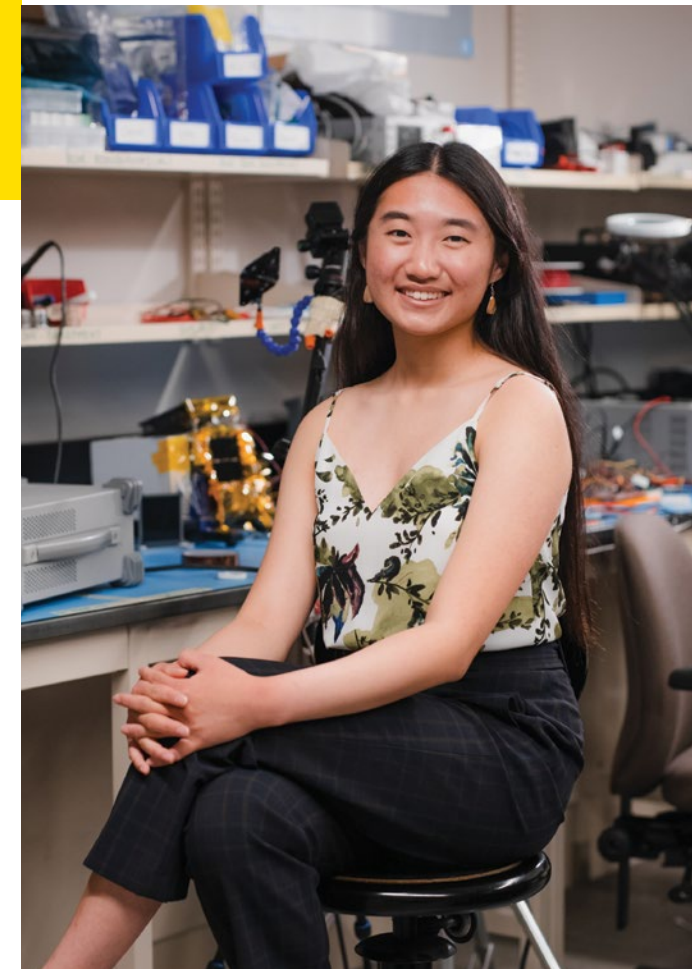
Other clubs include:

- Aero Design
- AlbertaLoop
- AlbertaSAT
- Association of Korean Canadian Scientists and Engineers
- Diversity in Engineering (DivE)
- EcoCar
- Engineers in Action
- Formula SAE (Society of Automotive Engineers)
- Future Creators
- Great Northern Concrete Toboggan (GNCTR)
- Institute of Electrical & Electronics Engineers (IEEE)
- Level 7
- Mission SpaceWalker
- Renewable Energy Design
- Robogals
- RoboMaster

JOANNE

5th year, mechanical engineering co-op

Joanne is a member of AlbertaSat – a U of A student group that recently launched its second satellite, Ex-Alta 2, into space!



- Society of Photo-Optical Instrumentation Engineers (SPIE)
- Space Exploration Alberta Robotics (SPEAR)
- Student Team for Alberta Rocketry Research (STARR)
- UAlberta Aerial Robotics Group (UAARG)
- Alberta Bionix
- UAlberta Permaculture
- University of Alberta Women in Science and Engineering (UA-WiSE)
- Engineering Discipline Clubs
- Engineering Students' Society (ESS)

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.



POLINA

5th year, environmental engineering co-op, from Germany

Polina is also a Fem+ mentor, helping high school students explore futures in engineering!

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 and to learn more about engineering as a career and the available university supports to help you succeed.

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



In my first year, I sought out support from the Academic Support Centre on campus and learned how to work through my blocks, and almost instantly my grades skyrocketed. If you are struggling with any aspect of your university experience, please know you are not alone and there are supports available to you. I have seen first-hand that there is a light at the end of the tunnel."



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

Volunteer as a DiscoverE junior instructor

Wrapping up Grade 12 and looking for a great summer volunteer opportunity? Get a jump start on your passion for engineering with our DiscoverE program.

As a junior instructor, you'll be eligible to receive a scholarship for your undergraduate studies. You'll also build up your leadership skills and inspire future generations of engineers by sharing your passion and skills!

uab.ca/DiscoverE



**THIS COULD
BE YOU!**

Jennifer (right), and Makenna (left) both 5th year engineering students, working as mission specialists for **Mission SpaceWalker**, alongside their crewmate Shahrukh (middle) from the National Research Council.

“

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

5th year, mechanical engineering

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, including Jennifer, 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.



Students working in the Engineering Student Success Center.

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/enggyf

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

Important deadlines and to apply: uab.ca/apply




FIND YOUR **PURPOSE**

uab.ca/engineering

ASK US

You've got questions.
We've got advisors.
engginfo@ualberta.ca
uab.ca/advising

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