

USASK

Undergraduate Studies 2023-2024

ENGINEERING

BE WHAT THE WORLD NEEDS



UNIVERSITY OF SASKATCHEWAN
College of Engineering
ENGINEERING.USASK.CA

Who are **ENGINEERS?**

The answers might surprise you.

Engineering is not just for people who excel at math and science.

You'll also find students who are interested in entrepreneurship, music, the arts, social justice, technological innovation, medicine, and more!

There's a place for you in engineering.





RE-ENGINEERED

A first-year engineering program that's built to help you succeed.

- We've changed the first-year engineering timetable to help you with school/life balance.
- Course content is broader and more relevant to real-world engineering.
- You'll be placed in a Study Squad with other first-year students so you can work on assignments and homework together – a proven way to learn.
- You'll be graded on your competency and skills, not how well you can memorize large amounts of material.
- By the end of your first year, you will be better prepared for upper-years classes and ultimately your engineering career.



ACADEMIC
SUPPORTS



NO FINALS



BALANCED
SCHEDULE



CHANCES TO
TRY AGAIN



HANDS-ON
LEARNING



COMMON
BREAKS

“A lot of people don’t go into first-year university with a whole lot of connections and they did a great job putting kids into a group that they can really connect and learn with.”

Mitchel Van Kessel,
first-year engineering student



RE-ENGINEERED

Supports Redesigned to help you learn and succeed

Summer Top Ups

Your program starts with Summer Top Ups: online resources and automated assessments to help you review key high school material.

Block Registration

Instead of choosing individual courses, you will register for one block of classes that contains a schedule with all your classes and labs. There are about 50 students per block and you will have all your courses together.

Study Squads

Get instant friends and study partners from Day One with Study Squads! You will be placed in a squad and required to do certain assignments together, giving you a ready-made group for doing homework and making connections.

Study Sessions

Every Monday-Thursday there are structured study sessions where you can get help on multiple classes; it’s also a structured space to study and complete assignments.



RE-ENGINEERED *Assessment*

Refocused so you can master the skills you need

Graded on specific skills

Your grades will reflect your competency and skills, not how well you can memorize large amounts of material.

Chances to try again

You will have opportunities to improve your grades during our Fall and Winter Top Ups. Our goal is to ensure you feel confident in the skills you'll need during your degree and your engineering career.

No penalty for early mistakes

We care about your learning and we want you to improve. If you get a better grade on your second or third try - that's the grade that will count!



RE-ENGINEERED

Classes

Revitalized course content to help you build a strong foundation

Strong transition to engineering

- Summer Top Ups before you start classes in fall so you know you're prepared for first year
- Introduction to engineering: scope of the profession and career paths

Broader exposure to natural sciences

- Strong introduction to natural sciences in Fall Term
- Short courses in chemistry, biology, physics and geology rather than one natural science elective

Introduction to all engineering disciplines

- Spend a day with each of your top discipline choices before you choose your major in the Winter Term

- Take part in the Discipline Bridge Course at end of Winter Term to get motivated and excited about second-year engineering

Holistic approach to the engineering profession

- Business content focussed on awareness of entrepreneurship and how it connects to design
- Learn Indigenous cultural context, setting the stage for the integration of Indigenous content in the curriculum

Greater employability after first-year

- Proficiency in one computer-programming language
- Training in basic first-aid, CPR, and WHMIS and understanding of an engineer's professional obligation for health and safety



NO FINAL *exams*

In your first year of engineering at USask, the final exam periods in December and April will be used for discipline-specific, hands-on learning.

"It's not about competition for grades. It's about making it more accessible for the students to get what they need out of the courses to be successful as engineering students, and then as engineers."

Dr. Joel Frey, PhD, PEng

RE-ENGINEERED First-Year Redesign Team Member

MORE ON
RE-ENGINEERED



Even more **HANDS-ON LEARNING**

Practical experience in our labs and beyond is a key part of your USask Engineering degree.

Discipline experience course

Not sure what Engineering major to choose? In December, instead of writing finals, you will spend a week learning about the different majors you can take at USask. Get hands-on experience in the labs, talk to engineers who work in the field, and really get to know each discipline before you pick your major!

Virtual reality

Design and test bridges and trusses in our first-year virtual reality lab. No worries if your bridge collapses, you can try again in seconds!

Small class sizes

In-depth experiences in our labs, more time with your professors, and one-on-one help from our teaching assistants – it's all possible at USask Engineering with our small class sizes and labs.

Bridge course

Transition from first-year engineering to your second year with our Discipline Bridge Course! Instead of writing final exams in spring, engineering students do hands-on work in their chosen discipline, such as learning how to survey, build rockets, or write code.

Co-op internship

Get real-world experience before you graduate! Expand your skills beyond the classroom and build your resume.



UNIVERSITY OF STRATHCLYDE

What our students say about

RE-ENGINEERED

What was it like getting chances to try again on tests and quizzes?

"The amazing thing with CBA (competency-based assessment) is that normally on your first try, you get nervous and you fail, or you don't know something that's really specific. But with CBA, before your second try they give you feedback, they give you something you can improve so you're going to get a better grade. This was amazing because I could show my abilities or my knowledge in a second chance and I could learn from my mistakes from the feedback provided."

-Maria Emilia Guerra, first-year engineering student

How did you feel about your experience in RE-ENGINEERED?

"I think the RE-ENGINEERED program is a great way to tackle engineering differently. I think it did a great job preparing us for what's to come. And, you know, I have a lot more experience and skills than I would in a regular year."

-Maria Emilia Guerra

How did you get help if you needed it?

"The instructors were very vocal with communication and often they'd email you within the day at most. And every day there's help sessions after classes on the specific subject so you can go to the

Engineering Building and get real help from the TAs (teaching assistants) who mark your projects and know actually exactly what they're looking for in the assignments."

-Logan Kleppe, first-year engineering student

What did you think of not writing finals?

"Not having finals was good. I like assignments way more than tests and I think most people do. Most classes had two big tests worth 15, 20 percent each. So relative to other courses in university, it was all assignments. That was enjoyable."

-Jesse Horsman, first-year engineering student



First-year engineering student Maria Emilia Guerra moved to Canada from Ecuador for the RE-ENGINEERED program. She was the winner of a USask International Excellence scholarship.



Engineering grad Stephanie Lipoth during her co-op work term

Kickstart your career WITH CO-OP

The Engineering Co-operative Internship Program is a full-time, paid work-integrated learning placement, which includes between four and twenty months of engineering work experience in industry. By participating in the co-operative internship program, students apply the theoretical knowledge acquired throughout their undergraduate studies to a practical and challenging workplace environment.

Competitive salary

Co-op students and interns earn a competitive salary, may receive benefit packages, and earn vacation pay, all while maintaining their full-time student status. In 2022, the average student salary was \$25.50 per hour and ranged from \$16 to \$36, depending on the industry and the student's year of study.

Flexible term lengths

4, 8, 12 and 16-month work term options. Students can do more than one internship with a maximum of 20 months of work experience.

Get real-world experience

Students develop a professional network, hone their engineering skills and can gain engineering-focused work experience.

Easy to join

Our non-competitive program is open to all engineering students. To be eligible for the program, you must have a 65% sessional weighted average.

Be supported

Students receive support from an industry mentor and a workplace supervisor throughout their work term placement.

EXPLORE CO-OP





Learn skills needed by **INDUSTRY**

The Ron and Jane Graham School of Professional Development in the College of Engineering helps you elevate your skills as a professional engineer.

Specialized certificates in communication

Be more marketable to future employers! Our new certificates are easy to earn and only take three courses to complete.

Leadership and Negotiation

You will be challenged to develop your abilities to guide, motivate and support others toward common goals. You will also learn more about the fundamental elements of negotiation.

Persuasive Communication

You will learn how to use the art of persuasion in written and oral communication and will study what makes a message convincing.

Technical and Professional Writing

You will be equipped with tools to analyze your purpose and audience before you begin writing. You will learn the composition, editing and technical skills needed to craft well-written material.

ABOUT CERTIFICATES



Technological Innovation Certificate (TIC)

Learn about business fundamentals and the processes you need to design and commercialize technologically innovative solutions.

Students in the Graham School of
Professional Development



Indigenous engineering: **TĀWAW! WELCOME!**

We honour and share Indigenous ways of knowing as an integral part of our teaching, learning and research at USask Engineering.

Applying to the College of Engineering

To apply to USask Engineering you need these high school classes: Chemistry 30, Physics 30 and Pre-Calculus 30, with a minimum grade of 70 percent in each. If you don't have those classes or need to improve your marks, there are programs to help.

INDIGENOUS STUDENT ACHIEVEMENT PATHWAYS (ISAP) STEM ACCELERATOR CERTIFICATE

This program is based in USask's College of Arts and Science. It's for students who want to enrol in colleges such as Engineering, but who need high school science courses or who have been away from school more than three years and want to refresh their knowledge.

There'll be friendly faces!

Our Indigenous Student Ambassadors in the college are here to support you and create social, academic, and professional events. We also invite you to participate in the USask Chapter of AISES (American Indian Scientists and Engineering Society).

My name is Patrick Nelson, and I am in my fourth year of civil engineering. I grew up on my family farm outside of Birch Hills, Saskatchewan. My family was one of the many that came to Saskatchewan on Red River Carts and I identify as being Anishinaabe and Swampy Cree Métis.

I chose to become a student ambassador to try and help others. Not everyone always feels like they fit in and providing some camaraderie among students is extremely critical to success.

PATHWAYS TO ENGINEERING



Left: Engineering students help raise the college's tipi



Build your skills beyond the **CLASSROOM**

Our student groups are well-established and successful.

They allow you to develop leadership and team-building skills, while creating lifelong friendships.

There are student groups for the engineering majors in our college and the very active Saskatoon Engineering Students' Society. Or, you may want to join one of these design groups!

- **Huskie Formula Racing (FSAE)**
- **Steel Bridge Design Team**
- **USask Aero Design Team**
- **USask Sled Dogs Quarter-Scale Tractor Team**
- **USask Space Design Team (USST)**

Left: USask Aero Design Team

**STUDENT
GROUPS**



Chart your COURSE

Experience different engineering majors before you choose

In our RE-ENGINEERED first-year program, you will be introduced by the end of Term One to each of the eight engineering disciplines offered at USask Engineering.

In these intensive, multi-hour classes, you will compare and contrast the various disciplines and do a hands-on learning activity to develop a skill that can be used in any branch of engineering. You will learn about the variety of work that engineers do!

Before the end of Term Two, you will choose your discipline, or major. Your school year will wrap up with a Discipline Bridge Course that gets you excited about your chosen major and prepares you for your second year. And at the beginning of your second year, you will be welcomed to your discipline at our annual Hard Hat Ceremony.

Bachelor of Science in Engineering: Eight majors

• Chemical Engineering

- Bioprocessing Option
- Mineral Processing Option
- Petroleum Option

• Civil Engineering

• Computer Engineering

- Computer Software
- Digital Signal Processing and Applications
- Digital Systems

• Electrical Engineering

- Digital Signal Processing and Applications
- Power and Energy
- Sensors, Circuits, and Devices

• Engineering Physics

• Environmental Engineering

• Geological Engineering

- Mining Option

• Mechanical Engineering

- Mining Option







CIVIL ENGINEERING

Civil engineers design, construct and maintain structures like roads, highways, bridges, and airports; help create safe and sustainable small- and large-scale water resource projects such as dams, canals, and pipelines; and they work to protect and enhance our environment through waste management systems, land reclamation, and water quality protection.

Careers

- Designing houses, skyscrapers, hockey arenas, schools and almost any other structure
- Helping people travel quickly and safely by designing roads, highways, railways and bridges
- Using the environment to help protect people and nature through building reservoirs, dams, canals, and land reclamation



CHEMICAL ENGINEERING

Chemical engineers—sometimes known as process engineers—design, implement and improve technology to make our lives more comfortable and safe, while minimizing the effect that we have on the environment. They take raw materials, living cells, chemicals, microorganisms or other energy sources to create useful products.

Careers

- Developing new materials to make items like make-up or pharmaceuticals
- Devising innovative fuel and biological fuel cells
- Solving environmental and pollution problems and designing clean energy systems
- Devising technologies to extract and refine metals and minerals
- Improving food, beverage and drug processing
- Developing enhanced oil recovery systems and carbon-capture processes



COMPUTER ENGINEERING

Computer engineering is the design, development and integration of computer programs and technology into devices and systems that improve how we interact with our world every day – computer technology is built into almost every new product. Computer engineering graduates design smart devices such as cellular phones, GPS navigators, video entertainment systems, medical imaging, monitoring devices and much more.

Careers

- Creating high-tech products like iPhones or security systems
- Developing satellite-based communication systems, wireless networks and devices that comprise the Internet
- Designing robotic equipment for everything from medicine to mining
- Working at tech companies like Apple, Amazon, and Google



ELECTRICAL ENGINEERING

Electrical engineering is the design and management of power systems, communication networks and the electronic products that are transforming our way of life. Electrical engineers also design systems and networks that will deliver services such as internet, text, voice and video information around the globe.

Careers

- Designing powertrain technology and control systems for vehicles
- Building instruments to be used in agriculture, medicine, manufacturing and more
- Developing green energy technologies such as solar panels and wind generators



ENGINEERING PHYSICS

Engineering physics is a bridge between pure and applied science, using fundamental concepts in today's rapidly changing and highly technical engineering environment. This program enriches you with analytical skills in mathematics and scientific reasoning, as well as technical skills in the design, construction and operation of systems including nanotechnology, space instrumentation, particle accelerators and more.

Careers

- Developing modern sensors for satellites that measure the earth and the atmosphere
- Designing and testing advanced medical imaging and radiation detection equipment
- Working on the next generation of communications by designing wireless devices and fibre optics



ENVIRONMENTAL ENGINEERING

Environmental engineering is the application of science and engineering principles to protect and improve public health and the environment. Learn about water treatment, water and air pollution control, land protection and reclamation, industrial and hazardous waste containment and treatment, and municipal solid waste management, including the recycling of materials and energy recovery.

Careers

- Developing waste management and land reclamation methods
- Designing and testing systems to ensure we leave our world and natural surroundings as we found them before a project begins - like reclaiming mining and oil and gas sites
- Working in agriculture to design and improve systems that protect our food sources, animals and the environment



GEOLOGICAL ENGINEERING

Geological engineering connects the worlds of nature and engineering. It applies engineering principles to the natural materials and fluids found in the earth. Geological engineers work to find and develop the resources that society needs for its survival and to discover how to sustainably dispose of waste. Geological engineers also work to design and develop stable building foundations, bridges, dams, highways, landfill sites and waterways.

Careers

- Travel the world working with mining and petroleum companies
- Keep people safe by ensuring we have stable building foundations
- Help solve problems as a geological engineering consultant
- Oversee large projects like rock excavation, pressure grouting, stability of slopes, and fills
- Leverage nature and its natural properties to build systems to improve our world



MECHANICAL ENGINEERING

Design, develop, build and test everything from engines, to power systems, to medical devices to mining equipment. Essentially, if it moves, a mechanical engineer was likely involved.

Careers

- Designing and manufacturing vehicles, from automobiles to spacecraft
- Building advanced renewable energy systems like wind turbines and solar collectors
- Helping people by designing devices for biomedical applications
- Creating robotic systems to improve our world
- Feeding people through a variety of applications in agriculture, mining, and more

Undergraduate scholarships and bursaries
for USask Engineering students total nearly
\$2 million!



SCHOLARSHIPS & BURSARIES

In 2021-2022, there were more than 800 awards available for undergraduate students in USask Engineering, with a total value of nearly \$2 million!

Guaranteed Entrance Scholarships

As a USask Engineering student, you will be automatically considered for a Guaranteed Entrance Scholarship when you apply for admission. These scholarships recognize academic achievements and are awarded based on admission average.

Best and Brightest

UP TO \$40,000

Apply for admission by: DEC. 1 • Apply for awards by: DEC. 15

Best and Brightest Entrance Scholarships include USask's highest valued, renewable entrance scholarships and are awarded based on academics, leadership and contributions to school and community life. These scholarships require the submission of a separate awards application after you apply for admission.

Competitive Entrance Awards

UP TO \$40,000

Apply for admission by: FEB. 15 • Apply for awards by: MARCH 1

Competitive Entrance Awards include numerous scholarships and bursaries for a variety of students with diverse experiences. Applicants can be considered based on academic achievement, financial need and/or contributions to school and community life, and some awards recognize particular backgrounds, acknowledge contributions to certain clubs and/or reward achievement in music and athletics. All entering students are encouraged to apply.

**EXPLORE
AWARDS**





TUITION & FEES

Tuition

The typical tuition cost for a domestic USask Engineering student in 2022-2023 was \$9742. Tuition for international engineering students was \$35,071.

Fees

In addition to tuition, you will also pay student fees. These fees provide services like health and dental insurance, athletic facilities, a bus pass for the city's transit system, and more.

Student fees for full-time students enrolled in the 2022-2023 fall and winter terms are \$1,050.29.

TUITION & FEES



I am an
ENGINEER





**USask Engineers are
engineers the world needs.**

These are just a few of our alumni
who are making a difference.

#EngineersTheWorldNeeds



INNOVATOR

Lance Pitka (BE '16, MSc '18, Electrical) is the co-founder of tech firm Rivercity Innovations (RCI). Its mission is to find innovative solutions to energy concerns and issues around the world.



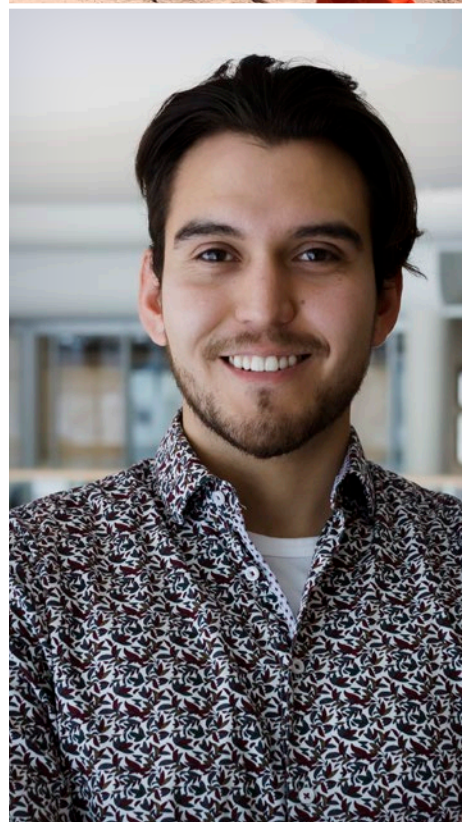
EXPLORER

Grad Doug Campbell (BE '08, Mechanical) wants to be ready for Canada's next call for astronauts. Campbell, who also holds two Master's degrees in biomedical engineering, graduated from a two-year private program specializing in training for space and deep sea exploration.



CREATOR

Meet Tara Reichert (BE '03, Civil), who combines art and engineering as a civil engineer. Tara oversaw construction of a 20-storey condominium building at Saskatoon's River Landing development. She has since established Levity Engineering and Consulting.



DEFENDER

The opportunity to work outdoors, seeking to solve problems that are causing damage to the biosphere spurred Harrison Bull (BE '17, Chemical) to pursue a master's degree in civil engineering. Originally from the George Gordon First Nation, Harrison is now researching water treatment and environmental remediation.



ENGINEERS

are creative problem solvers.

They are in demand and are working every day to make our world a better place.

Engineers in demand: The Government of Canada trend analysis on jobs predicted a shortage of Computer Engineers and Mechanical Engineers starting in 2019 and lasting until 2028.

Job opportunities in Saskatchewan: Saskatchewan is a great place for engineers to work and live. For all eight of our engineering disciplines, the Government of Canada job analysis predicts that the next three years will have good job prospects.*

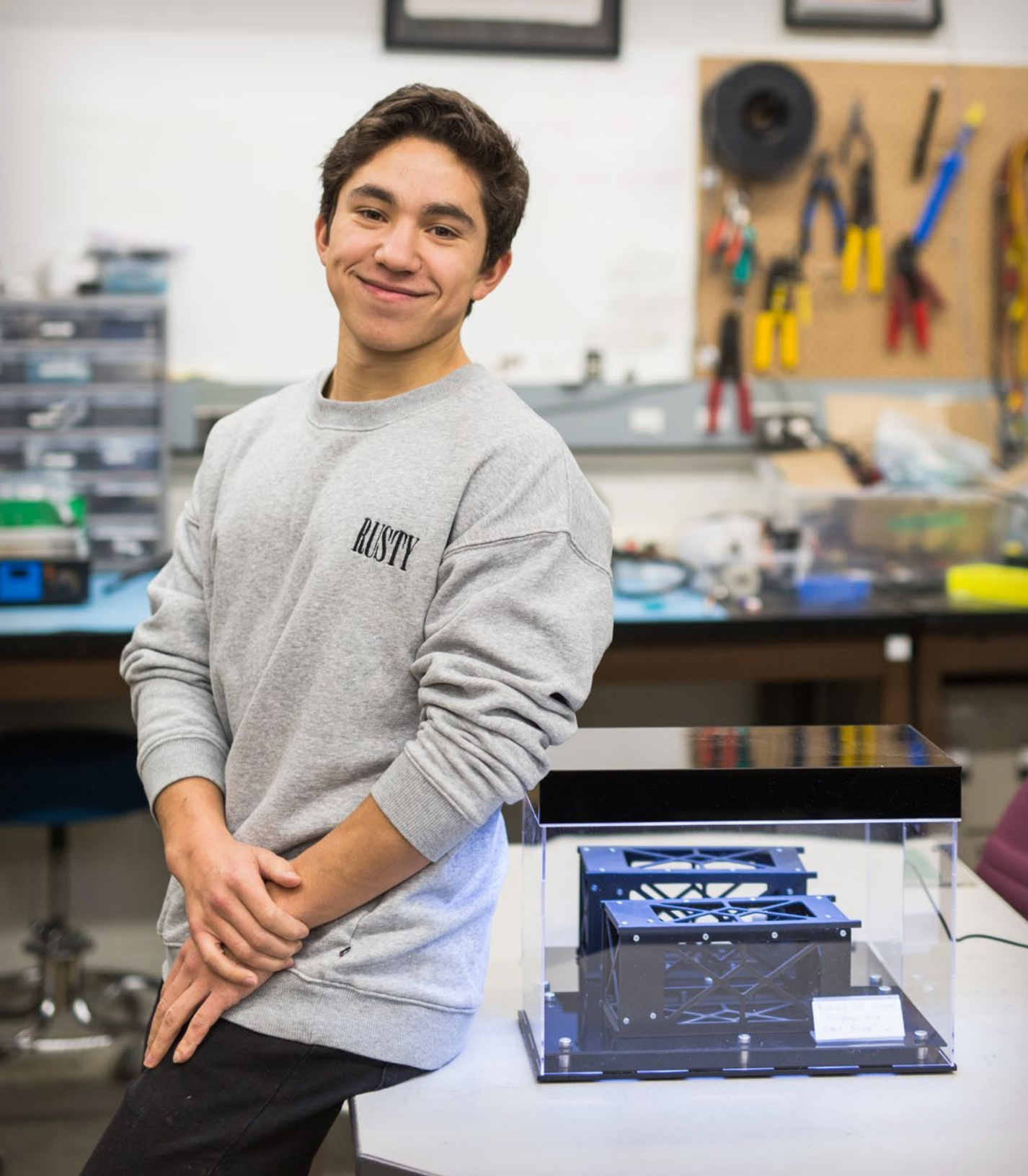
Above-average salaries: Engineers enjoy high salaries. In Saskatchewan, the average engineering salary in 2022 was \$112,940.+ The highest-paying discipline in Saskatchewan is Geological/ Mining/ Petroleum engineering with an average wage of \$127,845.

SALARY SURVEY



*Source: Government of Canada Job Bank Trend Analysis

+Source: 2022 Salary Survey: Association of Professional Engineers and Geoscientists of Saskatchewan



APPLY

Required high school classes

- Chemistry
- Physics
- Pre-Calculus

NOTE: a minimum grade of 70% is required in each of these courses

Required academic average

Minimum admission average: 75%

Applications are considered up until the deadline. Admission is offered on an ongoing basis until all seats are filled. Applicants who do not meet the admission average but otherwise qualify for admission may be placed on a waitlist.

English proficiency

If your first language is not English, you may have to prove proficiency in English before admission.

Application deadline

Deadline to apply for admission for 2023 Fall Term: **May 1, 2023**

Questions?

Email engineer.recruit@usask.ca

HOW TO APPLY





RESIDENCE

Voyageur Place

Located at the heart of the USask campus, Voyageur Place is made up of four halls that are all connected by tunnels and skywalks to other buildings on campus, a popular feature during the winter. Voyageur Place buildings offer traditional, dormitory-style, single and double units and are very popular with first-year students.

Features:

- Unlimited meal plan
- Fully furnished
- Utilities, internet, laundry, storage areas
- Games rooms, study rooms, lounges with TVs
- Co-ed, male-only, and female-only halls
- Parking available for a fee

College Quarter

At College Quarter, students live together in a lively, multi-cultural environment in fully furnished two-, three- and four-bedroom units. You are only a short walk from academic and student services buildings on campus, plus you are part of an engaged student community with a friendly, inclusive atmosphere. College Quarter suites are bright and modern, as are the lounges and study spaces, which offer beautiful views of the surrounding area.

Features:

- Partial meal plan
- Fully furnished with kitchenette
- Utilities, internet, laundry
- Lounges and study area
- Parking available for a fee

EXPLORE
RESIDENCES



Engineers the **WORLD NEEDS**



[Admissions.usask.ca](https://admissions.usask.ca)



[Engineering.usask.ca](https://engineering.usask.ca)



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Email: engineer.recruit@usask.ca

BE WHAT THE WORLD NEEDS



UNIVERSITY OF SASKATCHEWAN

College of Engineering

[ENGINEERING.USASK.CA](https://engineering.usask.ca)

USask is located on Treaty 6 Territory
and the Homeland of the Métis