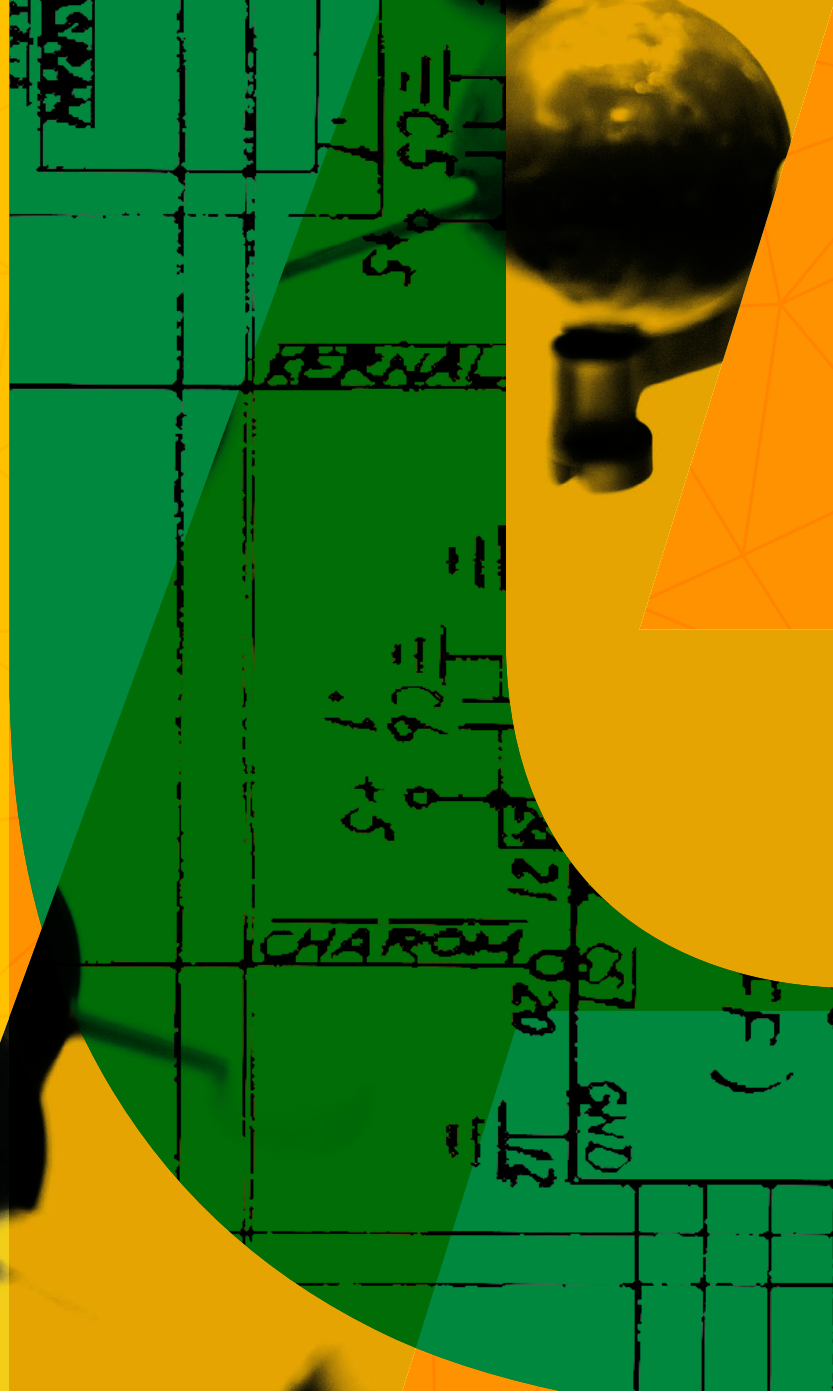
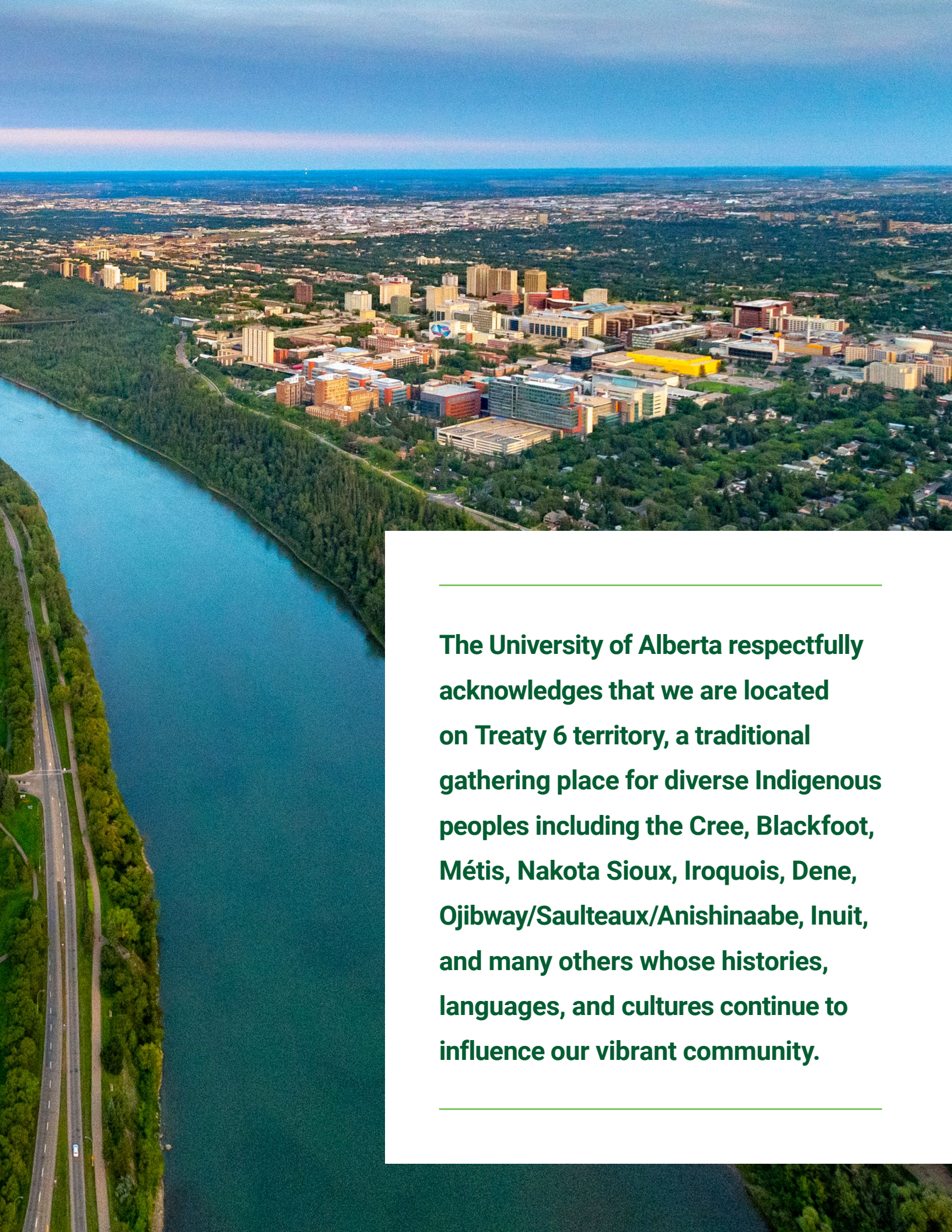


UNIVERSITY OF ALBERTA

November 2024

Engineering our Next Generation Fund & The Spirit of George Ford Endowment Fund in Mechanical Engineering

Impact Report 2023-24 | Faculty of Engineering



The University of Alberta respectfully acknowledges that we are located on Treaty 6 territory, a traditional gathering place for diverse Indigenous peoples including the Cree, Blackfoot, Métis, Nakota Sioux, Iroquois, Dene, Ojibway/Saulteaux/Anishinaabe, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

Contents

THANKS TO YOU

Exceptional Experiential Engineering Education

Thank you for helping us shape our students' future.

The Faculty of Engineering aspires to ensure every student has access to experiential education — opportunities outside the classroom to ensure that they not only graduate with future-ready skills but also make a positive impact in our community. In the past year, we were able to fund activities that engaged more than 500 students, and that number is growing because of your support.

The Engineering Our Next Generation Fund (ENG Fund) ensures that we are ready to help our students seize exciting opportunities as they arise. This fund supports different student projects and initiatives from year to year. The Spirit of George Ford Endowment Fund in Mechanical Engineering operates much the same as the ENG Fund, providing opportunities to students to apply and deepen their classroom learning.

Your support of the ENG Fund and the Spirit of George Ford Fund enhances the engineering learning experience.

Rocketing to the Top

The Student Team for Alberta Rocketry Research (STARR) continues its stellar run.

The ENG Fund provided STARR with the funds it needed to build Ringo III, a rocket built in the Elko Engineering Garage on the U of A campus.

In August 2024, STARR representatives travelled to Timmins, Ontario, to compete in Launch Canada. They finished first overall and, for the third consecutive year, finished first in scientific payload design. This is incredibly impressive given that STARR is only on its fourth rocket iteration.

STARR also travelled to New Mexico in June to compete at Spaceport America Cup 2024, the world's largest intercollegiate rocket engineering conference and competition, where they were named the top Canadian team and finished sixth out of the more than 100 teams in the competition.

STARR is now hard at work developing mechanical and fluid systems and exploring supersonic aerodynamics to develop the first all-Canadian-student regeneratively cooled bi-propellant liquid rocket engine.

Your support is helping the students involved in STARR gain the skills and experience they need to someday work in the aerospace industry. Thank you for helping them reach their goals.

RINGO III on display

STARR with their winning RINGO III rocket at Launch Canada 2024

Your Support Provides a Leg Up

The Alberta Bionix student group strives to create a more physiologically inclusive world through the development of accessibility technologies.

Your donation provided the financial backing that Bionix needed to build its prototype leg prosthesis. In this ongoing project, the team used machine learning algorithms to control mechanical and electrical systems.

Next up for Bionix is developing and refining pumping and fluid systems to create a total artificial heart prototype.

Students involved in the Alberta Bionix group are investigating advances that could help future patients and, through hands-on learning, are seeing how engineering can improve the world.

The Bionix team 3D print leg prosthetic concept

Indigenous STEM Students Branch Out

The Indigenous in STEM Student Association (ISSA) aims to cultivate community and mentorship through peer support to empower success and encourage prospective students.

This year, the ENG Fund supported an industry mixer for Indigenous students in STEM. One of the outcomes of the mixer was that two of the attending students were hired for summer positions. Thanks to your support, these students had the opportunity to gain valuable industry experience they may not have otherwise had.

What's next for ISSA? Members are working to establish resources in the College of Natural and Applied Sciences that are complementary to those provided by First Peoples' House, but that address the needs of Indigenous students specific to STEM.

Sticky Space Robots

Mission SpaceWalker is an all-women team that works hard to propel Canadian space research and diversify the space industry.

Makenna Kuzyk aboard the NRC's Falcon 20

Thanks to your generous donation, Mission SpaceWalker explored electroadhesion technology during their CAN-RGX flight. The team designed two custom robots equipped with electroadhesive pads on their wheels, aiming to demonstrate a technology that could pave the way for advancements in robotics in a zero gravity environment.

The Spirit of George Ford Fund fully funded Mission SpaceWalker's experiments aboard the National Research Council's Falcon 20 aircraft as part of the Canadian Reduced Gravity Experiment Design Challenge (CAN-RGX).

The team has completed research activities including floating in microgravity and experimenting on stratospheric balloons, and they undertook the Glacial Analog Project, which focused on obtaining and analyzing water samples from the Athabasca Glacier. Beyond advancing knowledge in various areas, the group's activities share the goal of inspiring the next generation of women in STEM through impactful outreach events, conferences, and academic publications.

Did You Know?

Over 50 U of A engineering graduates are current or former employees of MDA Space.

Mission SpaceWalker

Your Support Means Big Impact

500+
students engaged

20 project groups

11 discipline clubs

5 social mission groups

7
top 3 finishes

in research-based competitions

600+
hours

students gave back to their community

77%
of students involved

in a student group/ project described their involvement as the most valuable part of their degree thus far

Your support, via the ENG Fund / Spirit of George Ford fund, helped make the following possible this year:

- The Autonomous Robot Vehicle Project (ARVP) updated their Arctos robot and achieved the highest-scoring competition run in the team's history at the International RoboSub Competition.
- Formula SAE Racing Team built their first EV race car.
- Ecocar designed and built "Lucy," a hydrogen fuel-cell car. "Lucy" is the most efficient car in the history of the U of A EcoCar team. The team achieved first place at the International Shell EcoMarathon, including taking home the Safety Award, with an efficiency of 323 km/m3, approximately 4,000 km on 1 kg of hydrogen.
- Alberta Loop was able to enhance wireless communication and failsafes to their pod, leading to a second consecutive first place finish at the Global Hyperloop Competition.

“Experiential learning can really make a difference in preparing undergraduate students to launch their careers. Contributing to the ENG Fund is a small way I can support our future innovators.”

– David G. Filipchuk, P.Eng., President and Chief Executive Officer, PCL Construction

“U of A student groups really are the reason I was able to enter the space industry.”

– Casia McLeod, Systems Engineer for Canadarm3, MDA Space and U of A Engineering Alumna

Where You Helped

- Infrastructure- 12.6%
- Automotive/Robotics - 25.2%
- Space/Aerodynamics- 44.1%
- Sustainability/Environment - 18.1%

How You Helped

- Sponsorship - 20%
- ENG Fund - 65%
- SoGF Fund - 15%

Leading with Purpose.

UNIVERSITY OF ALBERTA

For more information, please contact:

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