THOROUGH

Reaching our full potential

The University of Saskatchewan College of Engineering is poised to achieve critical renewal during USask's Be What the World Needs campaign.



university of saskatchewan College of Engineering engineering.usask.ca







On January 31, 2023, the University of Saskatchewan College of Engineering (USask Engineering), in partnership with the host department, Civil Engineering, celebrated the achievements of alumna June Verhelst (BE'83 Civil) at the 46th C.J. Mackenzie Gala of **Engineering Excellence.**

Each year, the gala recognizes a member of the USask Engineering alumni community who has achieved a position of eminence within the engineering profession and honours their achievements.

Verhelst is Senior Vice President, Mining & Energy with Graham Construction and Engineering Inc. During her more than 25 years at

Verhelst, an avid horsewoman, was delighted to receive a custom-made western-style belt buckle to honour her selection as the C.J. Mackenzie Distinguished Lecturer. (Photos by Dave Stobbe)

Graham, Verhelst has been a key member of its operations team, working with many of Graham's largest industrial clients. Her teams deliver on major mining expansions, construction involving greenfield and brownfield mines as well as power plants, plus work in agriculture, oil and gas, and maintenance and shutdown projects.



In memoriam

In every edition of Thorough, the College of Engineering remembers with respect and fondness distinguished members of our USask Engineering community – including college leadership, faculty, and longtime alumni volunteers - who have passed.

Lee Barbour, May 24, 2023: **Distinguished Professor**

Debora Chatsis, June 5, 2022: Distinguished alumna

Ha Hoang Nguyen, September 4, 2022: Professor

Kunio Takaya, June 5, 2022: Professor, Department Head

Gerhard (Garry) Wacker, June 2, 2022: Professor, Assistant Dean

BUILDING



THOROUGH

Editor

Donella Hoffman, Communications Officer, College of Engineering

Art direction/design Roger Denis, Denis Design Works

Printer Mister Print

Publication Date June 2023

Published by the College of Engineering,

Use of the University of Saskatchewan logo is regulated by the University of Saskatchewan Board of Governors and is protected under section IX of the Canadian Copyright Act.

The College of Engineering and the University of Saskatchewan make no expressed or implied warranties of merchantability or fitness for a particular purpose or otherwise, concerning the use of any product, statement, and advice provided, and assumes no liability for any injury or damage, direct or consequential, which may be incurred from the use of such products or services herein.

Contact

College of Engineering 57 Campus Drive Saskatoon, SK S7N 5A9 Phone: 306-966-5273

General: coe.inquiries@usask.ca Alumni: carlene.deutscher@usask.ca

Donors: barb.yanciw@usask.ca

Communications: donella.hoffman@ usask.ca

NIVERSITY OF SASKATCHEWAN

College of Engineering NG.USASK.CA

RE-ENGINEERED first-year program earning top marks 31

engineering.usask.ca

USASK

21

15

FEATURES

COVER STORY:

potential

Reaching our full

Ready to grow with

Softening the edges of

engineering design 27

On the fast track 35

Saskatchewan



COLLEGE OF ENGINEERING

DEPARTMENTS

Around the college:

2023 C.J. Mackenzie Gala 1



In Memoriam

3

Dean's office:



Dean's message

5

Administrative and research appointments 7

Faculty highlights:



Faculty awards and achievements

Alumni focus:

Alumni awards and achievements

12



Student spotlight:

Learning beyond the classroom: student group updates

39



Student awards and 43 achievements

9

Kresta gratefully reflects on her five-year term as dean

Dean's Message, **June 2023**

When I joined the College of Engineering in 2018, one of my first duties was attending the C.J. Mackenzie Gala. I was overwhelmed by the warmth and passion of our community. Now, as I close out my time as your dean, l am gratefully reflecting on the contributions of many people who have helped make the last five years one of the great privileges of my career.

As you know, our annual gala honours the legacy of C.J. Mackenzie, the first dean of our college - a bridge builder, veteran, exceptional mentor, world-class researcher, and national-class leader. At the 2018 gala, we honoured Mike Marsh, a Saskatchewan builder whose career took him to the CEO's office at SaskPower. This year, we celebrated another Saskatchewan builder: June Verhelst, a graduate of the college's Department of Civil Engineering and an engineer who has had a hand in leading dozens of major industrial projects, as senior vicepresident, Mining and Energy, at Graham.

In her keynote lecture at the gala, June shared some of her experiences in building capacity - capacity in our economy, capacity for employment, building the talent pool in Graham's organization and our wider engineering community, and building capacity in our educational systems.

Building capacity is a theme that recurs throughout this issue of Thorough. We tell the stories of several USask Engineers who built their capacity in our

college and are now making an impact in Saskatchewan and beyond. Their stories show the value of a USask Engineering degree is indisputable - and that the world needs more USask Engineers.

The university has just launched a major fund-raising campaign, and our college has set goals that will help us create the visionary spaces we need to develop the USask Engineers of tomorrow, engineers the world needs.

Building capacity, specifically in our college, shaped the goals I set when I agreed to serve as dean. The college was ready for a change in culture after many years of instability in the dean's office. The budget had seen years of decline, followed by a differential cut just before my interview. Funding of student activities significantly lagged other major engineering schools across the country.

Over the last five years, I'm proud of what has been accomplished by the team in the college:

- We have increased the funding of our student design teams from \$22,000 to \$117,000 annually, thanks to the hard work of our student leaders who established our student-funded USESF endowment fund. APEGS's ongoing support of our students through its Student Experience Fund further expands this impact.
- Thanks to repeated financial modelling of fixed costs and revenue opportunities, persistent advocacy, and the wisdom and leadership of our Provost, Dr. Airini, critical base funding was recently restored to the college.
- Our college leaders have led searches that have doubled the number of female engineering faculty in our college.
- · We are now the national rockstars of engineering education in Canada, with our RE-ENGINEERED team invited to give keynote lectures and workshops at Waterloo, Queen's, UBC, McGill, and McMaster. RE-ENGINEERED changes our culture to a community of support and competency-based assessment - ensuring our students learn the critical lessons in each course before they progress. It's a game-changer and engineering schools

across the country are clamouring for us to show them how we did it.

- We are the first school in the country to provide an Indigenous module specifically designed for first-year engineering students, giving context for reconciliation within the engineering profession. I want to specifically thank Elder Tim Eashappie and his partner Kathy and their family for their tipi teachings and engagement with our students during this module. I have learned so much about teaching – and about life wisdom from Tim and Kathy.
- Dozens of MLAs, MPs as well as foreign diplomatic corps have visited our college in recent months. As hosts, our graduate students have gained invaluable experience in advocacy and communication and our guests have gained important insights about our research.
- More than a dozen of our academics have received university-level awards, and our students are recognized with national leadership roles and as Vanier Scholars.

I'd like to acknowledge two groups who keep our Thorough values strong. First, the Engineering Advancement Trust. This group of USask Engineering alumni have raised more than \$4 million since the early 1980 - all of it to directly support our students' learning experiences. Secondly, the Dean's Advisory Board, whose perspectives, advice, and advocacy are invaluable to my work as your dean.

From creating biodegradeable glitter to heating homes with canola pellets, developing robust power sources for remote communities, and using AI to support medical imaging diagnoses -USask Engineers are working to solve tough problems. We do research the world needs.

The team at USask Engineering is immensely talented and poised to take on bigger and more important challenges. There is a solid foundation here and a vision to capitalize on our strengths.

This college will continue to provide the hard-working, talented graduates and the innovative research needed here in Saskatchewan – and around the world.

Leadership and research appointments

Simonson named interim dean of **USask Engineering**



Professor Carey Simonson was appointed interim dean of the College of Engineering for a term beginning July 1, 2023.

His appointment, announced by Airini, Provost and Vice-President Academic at the University of Saskatchewan (USask), will be for up to one year or until a new dean is appointed.

Simonson completed his bachelor's, master's and PhD degrees in mechanical engineering at USask. He is well-known in the USask community as an outstanding researcher, talented mentor and a strong leader.

He is included on Stanford University's list of the top two per cent of the most-cited scientists in various disciplines, which is one of the world's most prestigious rankings. In 2017, he received both the Teaching Excellence Award from the Graduate Students' Association and the Distinguished Graduate Supervisor Award from USask.

In 2020, Simonson joined the leadership team at USask Engineering as associate dean, graduate studies and strategic projects.

He succeeds Dean Suzanne Kresta, whose term concludes on June 30, 2023. Kresta was the first female dean of the college and our longest-serving dean since 1997. An award-winning educator and researcher who is also on the Stanford list, Kresta built a strong team in the college and leaves it poised for continued success..

Noble appointed head of **Department of Mechanical** Engineering

Associate Professor Scott Noble was appointed head of the Department of Mechanical Engineering for a five-year term starting July 1, 2023. He earned his engineering degrees at the University of Guelph and at USask, with a postdoctoral fellowship at the University of Lethbridge. Noble has made extensive contributions to research in precision agriculture and has been a leader in the administration and development of academic programs in the Department of Mechanical Engineering.

Feldman named head of **Department of Civil, Geological** and Environmental Engineering

Professor Lisa Feldman was appointed head of the Department of Civil, Geological and Environmental Engineering for a five-year term, starting July 1, 2023. She earned her degrees in civil engineering at Waterloo, UT Austin, and Western. In May 2023 she began a three-year term on the Technical Activities Committee (TAC) of the American Concrete Institute (ACI), significant recognition of her professionalism and technical expertise.







Soltan appointed Associate Dean **Research and Partnerships**

Professor Jafar Soltan was appointed Associate Dean Research and Partnerships at USask Engineering. His five-year term officially began July 1, 2022 and continues to June 30, 2027. Prior to his appointment, Soltan, a professor in the college's Department of Chemical and Biological Engineering, served as interim Associate Dean Research and Partnerships for six months, as well as Acting Associate Dean Graduate Studies and Strategic Projects.

Soltan grew up in Iran, where he earned his bachelor's degree in engineering at the Abadan Institute of Technology (now the Petroleum University of Technology) and his master's at Shiraz University. He completed his PhD in chemical engineering in 1998 at the University of British Columbia and joined USask Engineering in 2007 after working as a faculty member at Sahand University of Technology in Iran.



Baik named department head of Chemical and Biological Engineering

Professor Oon-Doo Baik was selected as department head of Chemical and Biological Engineering, effective July 1, 2022. He had served as acting head of the department for the year prior and agreed to serve an additional four years. Baik joined USask in 2002. He earned his PhD from Laval University.

Owen concludes one-year term as acting director of the Ron and Jane **Graham School of Professional** Development

Associate Professor Corey Owen served a one-year term as acting director of the Ron and Jane Graham School of Professional Development, from July 1, 2022 to June 30, 2023. Owen joined the Graham School in 2007 and teaches professional communication, composition, peer mentorship, and





rhetoric of science and technology. Director Deb Rolfes returns to her role on July 1, 2023. We thank Associate Professor Owen for his leadership during the past year.

Bradford awarded NSERC of Canada Tier 2 Canada Research Chair

Assistant Professor Lori Bradford was awarded an NSERC (Natural Sciences and Engineering Research Council) Tier 2 Canada Research Chair in Incorporating Social and Cultural Sciences in Engineering Design. Her goal is to encourage a shift in engineering culture, where future engineers consider social and cultural impacts equally with environmental and economic ones. Bradford is a joint appointment with USask Engineering's Ron and Jane Graham School of Professional Development and the School of Environment and Sustainability. She earned her PhD in Social Psychology from Lincoln University in New Zealand.

8

We proudly recognize these achievements by USask Engineering faculty members.

Faculty awards and achievements

Associate Professor Amira Abdelrasoul (Department of Chemical and Biological Engineering) was recognized by the Journal of Chemical Engineering Research and Design in 2022 as one of the world's top female chemical engineering researchers. She also received the 2021 Young Investigator Excellence Award from the Canadian Light Source. Abdelrasoul has

achieved groundbreaking advances in hemodialysis membrane science and technology.



Assistant Professor Donna Beneteau

(Department of Civil, Geological and Environmental Engineering) was recognized for her contributions toward improving diversity and inclusion in the mining industry. She received the 2022 Diversity and Inclusion Award from the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) after being nominated for recognition by her peers.

Assistant Professor Lori Bradford (Ron

and Jane Graham School of Professional Development) won the USask Graduate Students' Association Advising Excellence Award. Bradford is the NSERC (Natural Sciences and Engineering Research Council of Canada) Tier 2 Canada Research Chair in Incorporating Social and Cultural Sciences in Engineering Design.

Professor Ajay Dalai (Department of Chemical and Biological Engineering), who for 25 years has made significant impacts in the fields of bioenergy, heavy oil and gas processing, and environmentally safe remediation of wastewater and waste gas streams, received USask's 2022 Distinguished Researcher Award. He is the Canada Research Chair in Bioenergy and Environmentally Friendly Chemical Processing.

Professor Emeritus Delwyn Fredlund

(Department of Civil, Geological and Environmental Engineering) was the 2023 winner of the Sir John Kennedy medal from the Engineering Institute of Canada. Fredlund, who spent 34 years at the College of Engineering, is an expert in unsaturated soil mechanics.

Dean Suzanne Kresta (Department of Chemical and Biological Engineering) was awarded a Queen Elizabeth II Platinum Jubilee Medal for her contributions as the first female Dean of Engineering in the province of Saskatchewan. Kresta became dean of the college in 2018 and since that time has realized several significant goals as dean, including the launch of RE-ENGINEERED, the college's completely renewed first-year program. Several spaces in the college have been renovated to support student learning and two new Canada Research Chairs have been appointed in the college.

Associate Professor Xiaodong Liang

(Department of Electrical and Computer Engineering) won USask's 2022 New Researcher Award. She is the Canada Research Chair in Technology Solutions for Energy Security in Remote, Northern, and Indigenous Communities. Liang was also elected a fellow of the Institution of Engineering and Technology (IET), recognizing her significant and ongoing engineering achievement.



Associate Professor Kerry McPhedran (Department of Civil, Geological and Environmental Engineering), the Saskatchewan Centennial Enhancement Chair in Water Stewardship for Indigenous Communities, was part of the team that won USask's 2022 Publicly Engaged Scholarship Award. McPhedran collaborated with Dr. John Giesy from the Western College of Veterinary Medicine and Dr. Markus Brinkmann from the School of Environment and Sustainability on COVID-19 wastewater surveillance.



Assistant Professor Emily McWalter

(Department of Mechanical Engineering) won the 2022 Provost's College Award for Outstanding Teaching for the College of Engineering. "Dr. McWalter has guickly established herself as a thoughtful, engaged, and dedicated faculty member in the Department of Mechanical Engineering. (She) is an innovative teacher who seizes every opportunity to enhance her teaching," states her nomination.





10

Professor Venkatesh Meda (Department of Chemical and Biological Engineering) was named the 2022 Educator of the Year by the Saskatoon Engineering Society. Meda's students ranked him highly for bringing real-world scenarios to class and for delivering relevant and impactful material. Meda was also inducted as a 2023 Fellow of the Engineering Institute of Canada for his "excellence in engineering and services to the profession and to society." **RE-ENGINEERED Team:** The team that designed and taught the College of Engineering's RE-ENGINEERED first-year program was awarded the 2023 D2L Innovation Award in Teaching and Learning, presented by the Society for Teaching and Learning in Higher Education (STLHE). The award recognizes innovative approaches that promote studentcentred teaching and learning.

Sumner receives USask's Master Teacher Award



Professor David Sumner (Department of Mechanical Engineering), known for his genuine interest in his students and his legendary chalkboard artistry, received the University of Saskatchewan 2022 Master Teacher Award.

Sumner teaches third- and fourthyear mechanical engineering classes including aerodynamics, fluid mechanics and thermodynamics. He has also taught the capstone class in his department. Along with emphasizing problemsolving via design, Sumner said he also tries to convey the importance of ethics, professionalism, communication, teamwork, safety and sustainability.

"He is keenly aware that service to the public is paramount in his role as a professional engineer and this makes him an outstanding model for his students and colleagues," stated Jim Bugg, head of the Department of Mechanical Engineering.

The Master Teacher Award is not the first recognition Sumner has received for his teaching. In 2021 he won the Saskatoon Engineering Society (SES) Educator of the Year Award and he was the 2013 winner of the Provost's Award for Outstanding Teaching in the College of Engineering.

Alumni awards and achievements

Our USask Engineering alumni are certainly engineers the world needs, as shown

by their impressive Mai achievements. 40 i

Rahim Ahmad (BE'13 Civil) received the 2023 Most Promising Member Award from APEGS. Ahmad, principal engineer at Associated Engineering, works with municipalities across Western Canada. He also was elected a member of the APEGS council in 2023. Away from the office, Ahmad is a board member with the Saskatoon Open Door Society and volunteers with the Ahmadiyya Muslim Community.

Mark Boots (PhD '13 Engineering Physics) was named one of Canada's Top 40 Under 40 in 2021. Boots, who did an Engineers Without Borders Venture Fellowship, is the founder and current chief technical officer of Viamo, which uses the availability of cellphones in developing countries to get information to people who are hard to reach by traditional media or the internet.



John Desjarlais (BE'11 Mechanical) was honoured with a 2022 Community Service Award from the American Indian Science and Engineering Society (AISES). Desjarlais is the current president of Saskatchewan's professional chapter of AISES. Earlier this year, he received a Queen's Platinum Jubilee Medal for Public Service and Reconciliation.

Ron (BE'62 Civil) and Jane (BEd'62) Graham have received the 2022 Mitchell Family Award, presented to USports Alumni of the Year. It recognizes community leaders who attribute their success, in part, to lessons learned and skills they developed as university athletes. The Grahams are generous donors to USask, supporting Huskie Athletics and teaching and learning initiatives within the College of Engineering, to name only two areas touched by their generosity.



Shawn Haeusler (BE'05 Mechanical) of Mosaic and Geoff Witwicki (BE'04 Ag and Bioresource) from Thyssen Mining, were part of the team who received the 2023 Exceptional Engineering/Geoscience Project award for the Mosaic K1/K2 Shaft Decommissioning Project. Two custom-designed concrete plugs were installed 366 metres (1200 feet) below surface to prevent migration of brine up the shafts, protecting nearby aquifers.

Digvir Jayas (PhD'87 Agricultural) received the 2022 Engineers Canada Gold Medal Award, which recognizes the exceptional achievements of engineers who, through their work and service, have improved the lives of Canadians and others across the world. His work to find better ways to dry and store grain has made a huge difference in the lives of countless farmers. Jayas was also invested into the Order of Canada in 2022 for "vital scientific and humanitarian contributions" to improve the quality and quantity of international food supplies.

Nicholas Kaminski (MSc'19 Civil) was named to the Top 10 Under 40 by the Canadian Consulting Engineer magazine, recognizing up-and-coming consulting engineers across Canada, Kaminski, a structural engineer and assistant department head for KGS Group in Regina, also won a 2021 Emerging Leader Award in the Initiative category from the Construction Canada magazine.

Lesley McGilp (BE'99 Mechanical) was named the 2022 Saskatoon Engineering Society Engineer of the Year. The award recognizes the outstanding work of an engineer, specifically their accomplishments in engineering and their service to the profession and community. McGilp, Director of Clean Energy Systems with March Consulting Associates, is the chair of the alumni-led Engineering Advancement Trust.

Dr. Adam McInnes received the 2022 Friend of the Professions Award from APEGS, which recognizes exceptional

achievements or unique contributions by a non-engineer or geoscientist. McInnes, an MD who is pursuing his PhD in Biomedical Engineering, established several postsecondary educational opportunities that combine engineering and health. He helped to found the Canadian Space Technology Advocacy Group to promote space exploration and a healthcare hackathon called Med.Hack(+).

Samia Sami (BE'21 Electrical) was named one of Canada's Top 30 Under 30 Sustainability Leaders for 2022. Sami, an engineer-in-training at SaskPower, has a passion for sustainability and engineering. She is designing transmission stations to support the goal of generating 50 percent of Saskatchewan's electricity from renewables. She has also helped 12 Canadian mosques implement sustainability initiatives via the Greening Canadian Mosques program.

David Sanscartier (Post-doctoral Fellow '12) was part of the team from the Saskatchewan Research Council (SRC) that won the APEGS 2023 Environmental **Excellence Award for Project CLEANS** (Clean Up of Abandoned Northern Sites). The project, led by the SRC, involves remediation of 37 abandoned uranium mines, mainly around Uranium City in northern Saskatchewan. The project will allow those living in the area, primarily Indigenous people, to safely use their traditional lands.

Wayne Timm (BE'82 Electrical) was awarded the 2023 Outstanding Achievement Award from APEGS. Timm, a senior engineer at SaskPower, was recognized for his wide-ranging expertise in the power generation field. He has worked on several significant projects including the Shand Power Station, Cory Cogeneration Station, Nipawin Hydroelectric Station and the Boundary Dam Carbon Capture Project. He is also involved in hydroelectric power standards development with the Institute of Electrical and Electronics Engineers (IEEE).









Michele Tuchscherer (BE'15 Chemical) received the 2022 Promising Member Award from APEGS. While working at Nutrien, she gained extensive experience in operations, research & development, process modeling, metallurgical testing, commissioning, and circuit optimization. She received Nutrien's Our World Award for Innovation for developing a scavenger flotation circuit to address the recovery of ultrafine potash and the high capital cost and environmental impact of fine tailings management.

Dennis Whyte (BE'86 Engineering Physics) won a 2022 USask Alumni Achievement Award in recognition of his lifetime accomplishments since graduating from USask. Whyte is the director of the Massachusetts Institute of Technology (MIT) Plasma Science and Fusion Centre. He is leading the development of SPARC, a prototype fusion reactor that he believes will play a significant role in the transition to carbon-free energy.



Got something to celebrate? Let us know!

at engr.comm@usask.ca

2021 Engineering Advancement Trust (EAT) Service Awards

The Engineering Advancement Trust

USASK ENGINEERING

The EAT Alumni Service Awards recognize each honouree's selfless volunteerism, long-term dedication, and passion for engineering education. Because of their dedication, the EAT continues to flourish today.

Art Bergan (BE'61: MSc'64: PhD'72 Civil): Professor Emeritus Art Bergan was an inaugural member of the Engineering Advancement Trust board in 1978. For decades, he guietly contributed his time, energy and ongoing financial support to advance the College of Engineering. As an alumnus, industry leader and renowned researcher and faculty member he was a valued mentor to many.

We'd love to let the USask Engineering community know about your recent awards or achievements. Drop us a line

Russ Renneberg (BE'79): Russ Renneberg has displayed a longstanding dedication to the EAT board - serving for over 20 years, including a two-year term as chair. He never hesitates to act as a champion for the college and the Engineering Advancement Trust. In 2021, his generous multi-year pledge to the EAT was leveraged by alumni trustees who added their own gifts to create a matching gift incentive during the EAT's annual appeal.

Bruce Sparling (MSc'85 Civil): As an alumnus, professor and Associate Dean Academic at the College of Engineering, Bruce Sparling played a vital role in the ongoing success of the EAT. Bruce's guidance and connection to students, along with his awareness of program and faculty needs ensured that gifts to the EAT were invested for the maximum benefit of students and key learning outcomes.

Ready to grow with Saskatchewan

The University of Saskatchewan College of Engineering produces well-trained, hard-working engineering grads. These engineers and the college's research expertise are critical components of a growing Saskatchewan economy.

BY JOANNE PAULSON

Jason Mewis needs engineers. He's added 10 people to his Saskatoon-based engineering firm this past year and he's ready to hire more.

Mewis (BE'95 Civil) is the owner and founder of Engcomp, the company he started as a one-person operation in 2004 and has grown to a team of 60. It provides engineering expertise across a range of industries.

With major projects on the horizon, Mewis will be looking to add dozens to the company's payroll in the next few years. Grads from the University of Saskatchewan College of Engineering (USask Engineering) will figure in his plans.

"(The college) is a critical feature for the talent we employ. A large portion of our people who are engineers, plus our businesspeople too, are U of S grads."

USask Engineering prides itself on producing skilled, resourceful engineers who are ready to roll up their sleeves when they

Left: Jason Mewis at the Engcomp office in Saskatoon. (Photo by Gord Waldner)

begin their careers. With the growth happening in Saskatchewan's key industries mining, oil and gas, and agriculture – and an increasing focus on sustainable power generation, the college's engineers and the wide-ranging research expertise of its faculty and graduate students are needed to keep Saskatchewan's economy moving forward.

Mewis spent eight years with a large multinational company, working as a senior project engineer in Saskatoon before he began his journey with Engcomp.

An Alberta firm was looking to expand into Saskatchewan and asked if Mewis was interested in being a key part of the new office. Two or three months later, the company folded but the overture had nudged Mewis in a new direction.

He had worked in consulting for eight years and hadn't thought about becoming an entrepreneur, but others were not surprised when he decided to take the leap. He came into the industry at a time of growth, mergers, and acquisitions in the industry and describes himself as a product of that.

"I was continuing on my journey. It seemed like the universe was talking to me."

On June 1, 2004, he set up his computer in his new office, made a call that morning, had a site visit that afternoon, and landed his first project.

"The rest is history. I just organically kept on going from there. We've grown substantially. Last year alone was about 40 per cent growth in sales and 30 per cent growth in staff."

There's a lot of opportunity and (companies)

are all going to be looking for U of S grads.

JUNE VERHELST

We find the quality and the innovation that comes out of the college is second to none.

We're quite a technical company and you'll find engineers in leadership roles, too.

TIM ECKEL



Most of Engcomp's work is in the resource sector — dominantly mining, but also agricultural projects, including food processing.

"Our two areas of specialization that have put us on the global stage are potash and uranium," said Mewis. The company, already operating overseas, is always looking for opportunities in locations as far away as Brazil, Kazakhstan, and Africa.

More locally, Engcomp handles a variety of projects for Nutrien; is Gensource Potash's detail engineering partner for a new operation; and is working with Saskatchewan Mining and Minerals Inc. (SMMI) on the \$300 million upgrade of its plant in Chaplin, Sask., to change its sodium sulphate plant to a sulfate of potash operation.

"With SMMI kicking into action, we're hoping to be in a position to hire more people - up to 15 to 20 more people in the next two to three years."

Ensuring USask Engineering students understand the range of opportunity available to them in Saskatchewan was a key message when June Verhelst, (BE'83 Civil) delivered her keynote address at the college's 2023 C.J. Mackenzie Gala of Engineering Excellence, where she was honoured for her remarkable engineering career.

As Senior Vice President Mining and Industrial for Graham Construction and Engineering Inc., Verhelst is among the



graduates who have adapted to changing times and risen to leadership roles with large local companies.

She worked for 14 years at a construction company before joining Graham and over the years thought several times that she might have to leave the province to grow her career. But every time, Saskatchewan surprised her.

"This economy would just roll. This mining industry, and oil and gas, and all these industries would just roll and then I would



go to another level — and it's happening right now," Verhelst said in an interview.

"There are so many projects coming up that are so cool. This province is going to have a good run."

She has a 30,000-foot view of the many large projects in Saskatchewan, with Graham playing a significant role in several of them.

"This is what industry has for you here. There's a tremendous amount of opportunity coming," is how Verhelst encapsulates her key message to young engineers. "You need to take a look at it, because between consulting and all the different jobs that involve engineers, like operations of these mines (for example), there's a lot of opportunity and they're all going to be looking for U of S grads."

She has given back to the college in many ways for many years, including serving on the Dean's Advisory Board. She and Graham are more than happy to engage due to the importance of the college. "There's such huge value in U of S engineering and the people that come out of there."

SaskPower's Tim Eckel (BE'94 Electrical) agrees. Graduates of the college are high-quality, home-grown and essential to the utility's future, he said in a recent interview from his office in Regina.

"People from Saskatchewan want to stay in Saskatchewan and that makes them ideal employees for SaskPower," said Eckel, vice-president, Energy Transition and Asset Management, adding that it's not as easy to recruit from elsewhere.

"We find the quality and the innovation that comes out of the college is second to

none. We're quite a technical company and you'll find engineers in leadership roles, too"

SaskPower is tasked with reducing CO₂ emissions by 50 per cent from 2005 levels. To that end, it's adding 700 megawatts (MW) in south-central Saskatchewan by 2027, including 400 MW of wind and 300 MW of solar power.

Already, SaskPower has about 650 MW of renewable energy in its system and 1,000 MW at various stages of installation and approval. Not too far in the future, SaskPower will also look at a greenfield small nuclear reactor (SMR).

"We think by 2034 we could have the first one in service. We're engaging stakeholders right now," including consultations with Indigenous communities, Eckel said.

Once the sites are selected, possibly at Estevan or Lake Diefenbaker, and a federal assessment has been done, SaskPower should be ready for a "go/no go decision by 2029," he said.

"Part of getting a licence to operate a nuclear reactor is demonstrating you have skilled labour and resources to operate this facility," he said.

"The academic side of things will be very important to nuclear development in Saskatchewan. Utilities need to get to net zero, and that will require some smart people to determine how we're going to get there."

Therefore, SaskPower will need engineers of all disciplines.

"Quite often we are focused on the supply side, but there's a huge amount of work that has to go into the transmission and distribution sides. That's another place where we're going to rely on U of S grads.

"It's an exciting time. When I was graduating, the work at a utility was predictable and consistent, but I can tell you today it's very exciting and ever-changing."

Jafar Soltan, USask Engineering's Associate Dean Research and Partnerships, knows the importance of providing future employees to utilities and industry. However, he said the college's reach goes beyond - right into Saskatchewan communities thanks to the innovative research by its faculty and students.

Our chemical engineering program was expanded into chemical and biological engineering,

and one reason is the heavy emphasis and value of agriculture and biological processes in the province.

JAFAR SOLTAN



"We have wonderful research that is going on in science departments and we transfer that knowledge into applications," he said. "Inherently by nature, our field is really about impact and making a difference in people's lives.

"We have to go into the community, talk to them, see the problem through their eyes . . . and translate that information into a solution and take it back to the community."

Today, the college has 1,630 undergraduate and 464 graduate students, and 92 faculty members. Over the years, it has grown from its core departments of chemical, mechanical, civil, and electrical engineering into other relevant areas to serve society.

For example, Soltan said, "Our chemical engineering program was expanded into chemical and biological engineering, and one reason is the heavy emphasis and value of agriculture and biological processes in the province."

Similarly, electrical engineering has expanded to include a computer engineering program, while civil and geological engineering have grown to add environmental engineering.



Mechanical engineering has also developed to include interdisciplinary programs like biomedical engineering, which "relates to things that were traditionally outside engineering – everything related to living organisms including humans. This connects to medicine and other health sciences."

In addition, the college has added the Ron and Jane Graham School of Professional Development to address the need for engineers to also develop skills in communication, leadership, and negotiation.

Soltan noted that the college's educational, research and problem-solving offerings support the Province of Saskatchewan's 30 Goals for 2030, outlined in the province's official growth plan. To that end, USask Engineering is engaged in an incredible variety of projects, from safe nuclear fuels to the various uses of biomass.

"More than half of the province's goals relate very closely to what we do. We are proud of the contribution and impact we have on these," Soltan said.

"We serve different aspects of that road map, everything from agricultural research, to training of highly qualified professionals, and upscaling the workforce. This is a relatively new concept. Because of rapid changes in different industries, we need people to do lifelong learning and be able to adapt to new developments in industry."

Carey Simonson, the college's Associate Dean Graduate Studies and Strategic Projects, agrees that this is where the college has immense impact, as graduates go on to change the world over 30- or 40-year careers.

He also pointed out that many of the foreign-trained bachelor's students who come to do graduate degrees will stay and work in Canada.

"They advance our province, our nation, with these advanced degrees. They are really helping to build the future for our province and our country."

Simonson himself earned his bachelor's, master's, and PhD in mechanical engineering from USask. He is internationally recognized for his expertise in heating, ventilation, and air conditioning (HVAC) and his research and industry collaborations have certainly had the broad impact Soltan describes.

For his part, Simonson cites USask Engineering colleagues whose work provided inspiration and example. More than 40 years ago, College of Engineering professor Robert Besant developed air exchange technology that spawned a \$3-billion industry and is still used in most homes today.

Fast forward to 2015, when Besant and Simonson were co-winners of the NSERC (National Sciences and Engineering Research Council) Synergy Award for Innovation for their collaboration with Saskatoon company Venmar CES to further improve heating and cooling systems.

The technology, named LAMEE (Liquid to Air Membrane Energy Exchanger) saves money, improves efficiency, and reduces greenhouse gas emissions. Indeed, the exchanger is used in Facebook data centres around the world to keep computers cool.

Now, working in the COVID era, Simonson is completing a project on testing contaminants in the heat exchanger. "As we recover the heat from the waste air to the fresh supply air, do we also transfer contaminants?" he asked.

The project was funded at \$250,000 by the American Society of Heating, Refrigerating and Air Conditioning Engineers. Simonson and his team also have an NSERC COVIDrelated grant for examining the transfer of aerosols through exchanger membranes.

"Does it also allow gases to transfer, is the question, and small aerosols that would be transmitted by someone with COVID?" he asked. "We've developed a test facility in our lab to test those membranes."

Simonson's work is a perfect example of how USask Engineering's research impact and industry collaboration improves the lives of people locally, provincially, nationally, and internationally. His research on energy efficiency, air conditioning, and quality of indoor air has past, present, and future relevance.

"The university the world needs," USask's current motto, remains true from research, collaboration and training standpoints, Simonson said.

"Industry involvement offers us the opportunities to train students to find solutions to relevant problems that make Saskatchewan and Canada better places and more competitive and impactful all over the world." BE WHAT THE WORLD NEEDS

Reaching our full

The University of Saskatchewan's newly launched fundraising campaign is an opportunity to achieve critical renewal at the **College of Engineering.**

It is described as one of the most ambitious initiatives in the history of the University of Saskatchewan (USask). In fact, the Be What the World Needs Campaign is the largest fundraising initiative Saskatchewan has ever seen.

USask is seeking to raise \$500-million, a goal recently announced by USask President Peter Stoicheff at a gala event at Merlis Belsher Place, the twin-ice multisport facility located on the USask campus. "We hope that you will join us and help support our vision to inspire the next generation of learners and leaders, and with your help, we will contribute to

changing the world for future generations," Stoicheff said.

He also announced that nearly \$323 million has been raised during the multi-year "quiet phase" leading up to the campaign launch, with one in seven alumni already contributing.

One of the key campaign priorities is renewing the Engineering Building, Stoicheff has noted. "We ... have a lot of demand on the part of potential students to take our engineering degrees, but we need more space and we need upgraded research and classroom facilities." continued on page 23

CHAMPION

LEADERS

Mayor Charlie Clark speaks at the launch of USask's Be What the World Needs Campaign at Merlis Belsher Place in Saskatoon. (Campaign launch photos by Dave Stobbe)



THE CAMPAIGN FOR THE UNIVERSITY OF SASKATCHEWAN



continued from page 22

Suzanne Kresta, dean of the USask College of Engineering, knows that the college's resourceful, hard-working grads are the engineers the world needs to solve today's problems. Adapting the teaching and learning spaces in the Engineering Building will help students build their technical, inter-personal and inter-disciplinary skills, she said.

"We need to help our students become creative and socially innovative engineers. We know our graduates can thrive as our profession evolves, if we equip them with the right skills while they're in university. We need more spaces that inspire collaboration and creativity.

"If we do it right, our building will become a magnet for the rest of campus so that the larger community can see what engineering really is," she added.

Ensuring that USask students are ready to succeed when they graduate has been a priority for USask Engineering alumnus Ron Graham (BE'62 Civil) and his partner Jane Graham, who holds an education degree from USask.

"For us, it has been an imperative to ensure the university, and more importantly, the students have the skills and experience they need to have an opportunity to compete in the future," Ron Graham told the 500-plus people gathered at the campaign launch. The Grahams have donated more than \$30 million to USask, the highest

cumulative total of any USask donors.

Myron Stadnyk (BE'85 Mechanical), a member of the volunteer cabinet for the Be What the World Needs Campaign, also spoke at the launch and described the impact alumni can have when supporting a common goal. He is a longtime member of the Engineering Advancement Trust, an alumni-directed group that gathers donations from USask Engineering grads at all stages of their careers to fund state-of-theart equipment in the college's laboratories.

"I've seen first-hand the commitment of our alumni and how important it is to support the faculty and the students," Stadnyk said. "And I've learned that it creates a U of S family."

The USask Engineering community was well-represented at the launch, as civil engineering student Libby Epoch brought the student voice to the event. She explained how scholarships helped her reach her full potential as a student-athlete while she was a member of the Huskie women's basketball team.

"Scholarships allowed me to focus my time and energy on my studies," she said. "I am forever grateful to have received donor support."

Fueling student success is incredible motivation as the campaign gets under way, said Kresta.

"There is passion to tackle what's on the road ahead because we know how much it will mean to our students."





THE CAMPAIGN FOR THE UNIVERSITY OF SASKATCHEWAN

Donor opportunities in the College of Engineering

With our alumni, donors and community partners we will impact our students and our provincial economy through the University of Saskatchewan's Be What the World Needs campaign priority areas. All donations will make a powerful difference in the lives of our students, researchers, and community members.



Innovation, Design, **Engineering and Applied Sciences (IDEAS) Building**

STRATEGIC RENOVATIONS

Engineering Design Hub (Hardy Lab) - \$12 million

• A bold transformation of the Hardv Lab will create the Engineering Design Hub, a campus destination for design and experiential learning.

Public Lecture Theatre — \$2 million

· We can breathe new life into our college's heart with an updated public lecture theatre.

Building a Welcoming Environment for New Engineers — \$500,000

• We will bring a vision for the future face of engineering into our building, so all future engineers can see themselves as part of our profession.

Active Learning Spaces — \$2 million

 Strategic renovations will transform our classrooms and labs into new environments for active learning and collaborative teamwork.

TARGETED ADDITION

Galleria Community Space — \$12.5 million ENG Lecture Halls — \$12 million Collaboration Centre — \$3.5 million

"We want to build that spirit of collaboration into all of our teaching spaces. And it's not only the students that are inspired. Academics walk in and they see possibility, 'I wonder what would happen if we did problems on the white boards all around the periphery of the room, because they're sitting right there. Maybe we should just try it.' These spaces are transforming our teaching as well as our students."

Suzanne Kresta, Dean, College of Engineering

continued next page

THE CAMPAIGN FOR THE UNIVERSITY OF SASKATCHEWAN



continued from page 24

"It's important that we have physical space where we can work. We have two projects on the go and there's not enough room for everyone in our current room. When we spread out, we're in three different classrooms and it's difficult to communicate."

Arliss Sidloski, President, University of Saskatchewan Space Team

"If the library is the sound of engineering thinking, the Hardy Lab is the soul of engineering doing."

Suzanne Kresta, Dean, College of Engineering

"The Hardy Lab is a unique space. I've had colleagues and students from elsewhere wish they had something like it. It is big, open and flexible; we can bring in large equipment, and it enables teaching, research or extracurricular activities that require space for staging or construction.

That said, it could be utilized much more effectively given changes in what we teach, and the increasing importance we put on student design teams and collaborative work. It would be great to find a better balance between the benefits this kind of space affords with our current needs and priorities."

Scott Noble, Associate Professor, Department of Mechanical Engineering



Inspire students to succeed

We encourage and support current and future students on their journeys to become engineers the world needs.

Student Awards: The Engineers of Tomorrow are Here Today: \$1 million

 Award support ensures students both arrive and thrive. Our new student award priorities consider students' background and life experiences to inform how we build access into Engineering, recognize student potential and accelerate student impact.

"It puts stress on students to work a parttime job when they're going to school. If we are able to help students be dedicated to their studies, then they're much more likely to succeed."

Professor Lisa Feldman, Department of Civil, Geological and Environmental Engineering

"Engineers are always learning. We learn in the classroom, on the job, and through design teams and student groups. Even though awards are meant to cover the costs of tuition or textbooks, that is not all they do. They enable us to further our learning and take advantage of the varied opportunities we have as students at the College of Engineering."

Max Kazuska, Mechanical Engineering Student





Support Indigenous achievement

We are committed to mutual learning, Indigenization and reconciliation.

Inclusion and belonging awards: \$750,000

• With awards that see Indigenous students for who they are, we acknowledge their difference as strength and welcome their perspectives.

Indigenous Student Initiatives: \$200,000

 USask Engineering Indigenous Student Initiatives aims to assist our Indigenous engineering students with a holistic network of academic, personal and professional supports.

"Many Aboriginal students moving from rural communities to urban communities often face systemic barriers on their path to academic success, which requires them to be more resilient than most other students. Some of these barriers can be financial. Indigenous student awards will encourage and inspire them as they work to complete their program."

Akindele Odeshi, Associate Dean Academic, USask Engineering

"We want to celebrate and acknowledge the experiences and the stories of Indigenous students as they join this community. Amplifying the gifts they bring helps all of us become more insightful and more effective."

Suzanne Kresta, Dean, USask Engineering

Lead critical research

Our ground-breaking research addresses humanity's greatest challenges.

Engineering Graduate Excellence and Opportunity Fund: \$1.250 million

· Gifts to the Graduate Excellence and Opportunity Fund will enhance our research groups, uplift graduate students to new heights of discovery, reward excellence and innovation, and amplify new opportunities.

"Graduate students develop skills that facilitate research and development in industry, government, or academia and that help build a workforce that can com-

THE CAMPAIGN FOR THE UNIVERSITY OF SASKATCHEWAN





pete on the world stage. We talk about USask having a 'sense of place' - a lot of our research reflects challenges that are somewhat unique to Saskatchewan, such as our climate, particular types of mining, and agriculture. If we are not addressing these things, who will?"

Scott Noble, Associate Professor, Department of Mechanical Engineering

"The most rewarding aspect of my research is being able to help hemodialysis patients and potentially save their lives. It



is an honour to be able to contribute to solutions to a critical health problem."

Amira Abdelrasoul, Associate Professor,

Department of Chemical and Biological Engineering

Watch Amira Abdelrasoul's TEDx Talk

Softening the edges of engineering design

Northern Plains Cree Community

Conceptual Design

00

The principle of co-creation helps engineers discover solutions that will work at a technical and human - level.

Environmental engineering students Akash Mundi, Annisa Ilias (foreground) and Brooke Carriere discuss their community design at USask Engineering's 2022 Undergraduate Design Showcase. (Photo by Dave Stobbe)

BY KATHY FITZPATRICK

It was not Justin Burns' typical experience working with an engineering design team. This time, he felt like an equal participant.

At the Dakota Dunes Casino south of Saskatoon, four environmental engineering students from the University of Saskatchewan College of Engineering (USask Engineering) and the chief and several councillors from James Smith Cree Nation took part in a feast and discussed potential designs for a new subdivision.

"It was very impressive to see a lot of the designs that came from that meeting," said Burns, one of the councillors from the First Nation, located 175 kilometres northeast of Saskatoon.

The gathering was one stage in the students' capstone design project, a graduation requirement that sees them work to solve a client's real-world engineering problem. The environmental engineering team working with the James Smith community employed an approach called co-creation. The concept has been enthusiastically embraced and promoted at USask Engineering by Dean Suzanne Kresta.

"What I'm looking for is a change in culture," she explained.

In co-creation, engineers take the time in the first phases of a design project to thoroughly understand the values, wishes and



priorities of the community, rather than just consider economic and environmental factors. The initial time spent helps to better define the problem engineers are asked to solve. And feedback as the project continues helps ensure the end result meets the community's needs.

Too often in the past Burns felt like an outsider when he met with consulting engineers and their professional colleagues. While the professionals were wrapped up in their own ideas, Burns and other community members struggled to put forward theirs. The end result was sometimes much grander and more expensive than what the community was looking for, Burns recounted.

The tendency of engineers to slide into saying things like 'we have to make the public understand,' rather than undertake meaningful consultation with the community, is part of what needs to change, Kresta observed.

"We can't do that. It can leave people with the feeling that they are not respected or heard. The wisdom of Elders and members of the public with lived experience can add to our understanding of what the solution might look like."

She guickly adds that co-creation is not always easy or comfortable, and can be slow and complex and aggravating, but is the "path to sanity" because it acknowledges the importance to human beings of having autonomy and being heard.

28

It's a pleasure collaborating with teams like this

who help make our vision a reality.

CHIEF WALLY BURNS

I can design a culvert, a landfill, but if somebody thinks a building or a neighbourhood is ugly, how am I supposed to fix that?

So that was quite the learning curve.

AKASH MUNDI





Kresta first became aware of the need for co-creation through her daughter's involvement with the non-governmental organization Engineers Without Borders.

togetherness."

ing the pumps."

"When you do development work, if you don't meet people where they are and go through this initial process, you will do the wrong things," Kresta noted. "And so we have thousands of wells that are dug in Africa without the gaskets to keep the pumps working, because we forgot to see if there were technicians and to identify people who could be responsible for maintain-

Assistant Professor Lori Bradford is building on Kresta's initiative through her work as Canada Research Chair in Social and Cultural Decision Making in Engineering. She became interested in the subject from her experience working with Indigenous partners through USask's Safe Water for First Nations Working Group. Bradford discovered how narrow funding formulas and the engineering practices they encourage can lead to choices destined to fail.

She said James Smith Cree Nation is one of several First Nations communities "where culturally inappropriate infrastructure is put in because engineers say it's the optimal solution, not because it's the solution the community wants." Engineers will have to study social and cultural values and include them in their decision-making and design, Bradford said, "or we're going to commit ongoing colonization. We're going to put Western solutions on reserves when they're not invited."

She noted the shift in mindset is happening faster in civil and environmental engineering than in some other disciplines. That is due to Canada's Impact Assessment Act, brought into force in 2019, which mandates the inclusion of health, cultural, and social impacts in assessing major projects and projects on federal land or outside of Canada.

It was through the working relationship between Bradford and James Smith councillor Justin Burns that the opportunity for the capstone project came up. Burns was brainstorming about the development of 80 to 125 new lots, and Bradford and colleague Terry Fonstad offered to have some of their students work on it. The students were asked to look at the current state of community design in Indigenous communities, and through real engagement with James Smith Cree Nation over several months, see how those designs could be



altered to fit specific needs.

"It's a pleasure collaborating with teams like this who help make our vision a reality." Chief Burns said.

The community is also building a police station and a wellness centre. "Band leadership, along with support from various levels of government, are looking forward to improving housing, infrastructure, and services to meet the needs of our growing population with safety, health and culture at the forefront of all expansions," he added.

Bradford aims to have students continue to do more such projects, building what's learned from them into the USask Engineering curriculum. Sharing successes will also help shift the culture, she added.

Student Akash Mundi has embraced wholeheartedly the opportunity for growth that co-creation presents. He notes even though environmental engineering is already more of a social-sided discipline "still it was a stretch."

As one of four capstone project team members - along with Brooke Carriere, Joshua Golem and Annisa Ilias - Mundi invested time listening to Indigenous people and reading about Indigenous history and communities, including their art and music.

"We wanted to almost replicate more of an artistic mindset, because that is where

the emotional and spiritual impact of things becomes a lot more apparent," he explained.

The team also drew on social sciences for insight into community interaction. "We engineers do not have a clue about this, you know. I can design a culvert, a landfill, but if somebody thinks a building or a neighbourhood is ugly how am I supposed to fix that? So that was quite the learning curve," Mundi said.

Team members also talked to urban planning students about such things as 'what happens if the roads are made narrower or wider?' and, if those roads are made of different material 'does it affect anything?'

"We would try to place ourselves within such a community," Mundi explained.

One aspect the students sought to address was the dislike by many community members for the current townsite and their desire not to replicate it. Chief Burns explained the heart of the community is tightly built along one corridor, a layout developed a few decades ago without much consultation with the community.

Engineering consultants are trained in optimization, Bradford noted. The result is often a neighbourhood built in a tight grid pattern to keep the cost of service connections as low as possible. But that urban-like design does not fit with the way the James

Smith community lives. Many prefer to live more spread apart in the traditional way, Chief Burns noted.

The capstone team spent the first four months of their project just listening to what the community wanted. Together, they came up with a list of four priorities. In their second semester, the team came back with a variety of designs to present to the community and gather further feedback.

One of the most popular, Mundi recalled, is a semi-circle of houses facing each other. a design that gives each household more space while still inviting community interaction.

Along with learning not to let his biases creep into a design, Mundi said the experience has also taught him to practise "organic social skills" such as picking up on body language and other cues. He learned much from the informal style of James Smith members, who would often joke as they sat at a round table "but they were getting the points across."

"In a way they use empathy as a communication tool and that is so alien to an engineer," Mundi continued. "You think 'Oh I'm solving a problem' but the core problem is the human happiness that you're trying to create in the end."

It's this shaping of engineering students into "three-dimensional human beings" that Dean Kresta is aiming for. "Starting them from that place of respect and inquiry and understanding actually humanizes their educational experience," she said.

Meanwhile, she is building greater acceptance for co-creation among those in the profession responsible for regulation and accreditation, through her work in a national project called Futures of Engineering Accreditation.

Within the college itself, she hopes to see this approach extend into the ethics and professionalism course, design courses, and into the Ron and Jane Graham School of Professional Development where they already explore negotiation and conflict resolution.

"There's a tremendous scope in this college to continue to develop those ideas, and that leaves me hopeful for the future." Kresta said.



first-year program earning top marks

BY COLLEEN MACPHERSON

It was a mammoth task for the University of Saskatchewan College of Engineering (USask Engineering) to totally revamp its first-year engineering program, particularly during a global pandemic, but more than a year after the introduction of its new curriculum, the college is getting very good grades for RE-ENGINEERED.

Left: USask Engineering students (from left) Evan Dymond, Harsh Sawant, Peyton Fredlund and Andrea Stickwood found challenges and highlights in the RE-ENGINEERED first-year program. (Photo by Colleen MacPherson)



Watch Sean Maw discuss the rollout of the RE-ENGINEERED program.

"We were under no illusions it would be perfect out of the gate," said Dr. Joel Frey, an assistant professor jointly appointed to the Graham School of Professional Development (SOPD) in the college and the Department of Electrical and Computer Engineering and a lead member of the RE-ENGINEERED design team. "There's no literature that will tell you how to do this."

Starting in 2016 with a blank piece of paper, the designers created a unique, innovative first-year program focused on ensuring students acquire a diverse skill set that will carry them to graduation. For team lead Dr. Sean Maw, the first full year of the program "went better than expected. There were some challenges but perhaps fewer than we'd imagined."

The team recently learned it had been awarded a 2023 D2L Innovation Award in Teaching and Learning presented by the Society for Teaching and Learning in Higher Education (STLHE) in recognition of innovative approaches that promote student-centred teaching and learning.

Maw, the Jerry G. Huff Chair in Innovative Teaching and a faculty member at the SOPD, believes most major hiccups have been resolved "so now we're looking at fine-tuning and investing in continual improvement."

To that end, Frey said the first-year instructional team is looking at adjusting student workload.

The new program moves away from traditional semester-long classes; courses vary in length and intensity, with particular attention paid to sequencing so a skill acquired in one course can immediately be applied in the next.

Feedback from students and instructors indicates the timing of classes can be improved, he said. "We want to make sure we save energy where we can, so we'll look at moving courses and modules around to improve the timing of delivery."

Using a competency-based assessment (CBA) approach to evaluate students' grasp of skills and knowledge is among the more significant changes in RE-ENGINEERED. "All things being equal, it should be a better way of assessing students," said Maw, "but in what ways and how long the effects last are still to be investigated."

But CBA too has revealed a pressure point.

With CBA, students are tested on learning outcomes embedded in course content to ensure mastery before moving on. A key feature is that students receive feedback on their assignments and then get the chance to rewrite, or "top up," to improve their mark.

"What we've found, though, is that CBA is really hard to do in compressed or accelerated courses," Frey said. "We're going to add a bit more duration to give students and instructors more time for assessment."

Maw added that "CBA, by definition, is more work for instructors. More evaluations means just that - multiple evaluations and more grading. There's also a scheduling challenge for instructors because of a lack of predictability of assessments; we have top ups for people who didn't succeed the first time, but you don't know how many (students) that will be.

"In CBA, success depends on co-ordination of content, delivery methods, workload and evaluations," he said. "I believe CBA has given us the benefits we were hoping







With adjustments being made and feedback being collected, RE-ENGINEERED will continue to improve.

The challenge is to not lose track of the key philosophy and principles that got us here. This is an opportunity to make things better for students.

DR. SEAN MAW

for, but we'll continue gathering feedback on whether the tweaks and changes we're making are improving things or not."

Other key features of RE-ENGINEERED are online summer courses students take at their own pace before the start of the first term to fill gaps from their high school learning in subjects like math, chemistry and physics, and the grouping of students into blocks of about 50 students when they register for classes. This is done so there will be several groups with a consistent schedule and a common lunch break, creating opportunities for academic as well as social interactions.

Placing each student in a study squad of about a dozen people has also proved popular, providing students with built-in peer support for homework and giving them an opportunity to make friends.

The program design team was also aware of the need to pace student workload, something that didn't always occur during the traditional first-year program. With ongoing communication amongst the team, instructors try to co-ordinate assessments so students do not end up with 10 assignments due one week and none the next. All above: First-year engineering students at their GE:112 Engineering Discipline experience, which focused on robotics. (Photos by Gord Waldner)

Additional hallmarks of the new program include daily scheduled study sessions to get help from teaching assistants and an Indigenous cultural contextualization course taught in the first month of the program.

There is also a week set aside at the end of each term for GE112: Engineering Discipline Experience, a course allowing students to explore the range of engineering disciplines through information sessions and hands-on learning opportunities. For Frey, "this is the one thing I'm most proud of (because) we want students to make the best-informed decision they can."

With adjustments being made and feedback being collected, RE-ENGINEERED will continue to improve, said Maw. "The challenge is to not lose track of the key philosophy and principles that got us here. This is an opportunity to make things better for students."

What students say about RE-ENGINEERED

Discipline Experience

"I changed my mind from chemical to environmental engineering. I didn't even know environmental was a thing but it will allow me to combine biology, chemistry and geology." – Nicole Thompson, first-year student

"I was open to changing my mind but the presentations cemented my original choice." – David Livingston, first-year student

"Did a total 180 from computer engineering and now I'm interested in chemical. The presentation really showed me what being a chemical engineer was all about." – Travis Frick, first-year student

Study Squads

"It's nice to be able to talk through problems. It's what it will be like when we're professional engineers." – Anson Kappel, first-year student "Having a group of people is so helpful, a network to toss ideas to, to minimize the time you're all stuck at roadblocks." – David Livingston, first-year student

"They can be very social but we got a lot done, and you can make a friend." – Ashton Wiens, first-year student

Competency-based assessment (CBA)

"It think it actually increases the workload with more assignments and different types of assignments but the feedback was really helpful." – Travis Frick, first-year student

"If you do poorly, you can always make up for that by trying again. That means there's not as much stress." – Birair Khalid, first-year student

"I appreciated the top-ups, the feedback and the chance to redo assignments. The feedback helps you learn and truly understand." – Emily Riemer, first-year student

Challenges

"I took a lot of university classes in high school and thought they should be similar,

but I didn't realize it would be so intense. You can learn, and you have to learn, how to manage your time." – Peyton Fredlund, second-year student

"The pace of classes was hard to adjust to." – Evan Dymond, second-year student

"Don't be afraid to ask for help. Go to the help sessions and take full advantage of them, even if you're just doing assignments." – Andrea Stickwood, second-year student

Highlights

"A highlight was being narrowed down into small groups of students who all have shared interests and support each other." – Peyton Fredlund, second-year student

"Definitely our study squad. I found a best friend." – Harsh Sawant, second-year student

"The first-year program did a good job of introducing us to engineering design processes and strategies, helping us master those professional skills." – Andrea Stickwood, second-year student



Layla Bekkaoui and Andrew Hardy say being on the Huskie Formula Racing team got them on the road to careers in the racing industry.

When Andrew Hardy and Layla Bekkaoui were students at the University of Saskatchewan College of Engineering (USask Engineering) and working long hours on the Huskie Formula Racing team, they never dreamed they'd one day be working in the thick of the racing industry.

But today the couple is living in North Carolina and each is building their career in the motorsports world.

Hardy is a race engineer with Hendrick Motorsports, one of NASCAR's top teams. Bekkaoui is an engineer with Fibreworks Composites, which manufactures carbon fibre motorsports parts.

"It's an opportunity that is pretty darn phenomenal," said Hardy of his role with Hendrick, where he works with legendary crew chief Alan Gustafson and driver Chase Elliott. "Hendrick is the top dog in the sport and has one of the greatest crew chiefs and one of the greatest drivers."

Bekkaoui and Hardy graduated from USask Engineering in 2018 with degrees in mechanical engineering. At the college, they both decided to join the Huskie Formula Racing (HFR) team – a choice that turned out to be life-changing.





While teammates on HFR they got to know each other better and eventually became a couple. And both say being part of HFR was the catalyst that put their careers into overdrive.

"It kick-started my career," Hardy said recently from Mooresville, NC, where he and Bekkaoui now live. "It bolstered my resume and gave me the confidence to go professional in racing."

HFR is a student team, based in USask Engineering, that designs and builds an open-wheeled, single-seater race car and then competes at international collegiate design competitions.

It really opened up my world into learning vehicle dynamics and that is essentially what I do now.

You are introduced into this world and if you're inquisitive enough, you're able to get into a niche world that is difficult to get into.

ANDREW HARDY



When she was interviewed for a 2017 Saskatoon StarPhoenix story, Bekkaoui said she joined the team because she wanted to learn how cars work; after spending time on the team, she began thinking it would be cool to work in the racing industry. In fact, her involvement with HFR came up when she interviewed for her job.

"My first interview question at Fibreworks was, 'Are you the guys that go ice racing?' "

The team makes an annual trek to Blackstrap Lake where they throw studded tires on the car and race on the lake.

The videos are popular with other students in the collegiate motorsport's world and people at Fibreworks had seen them.

"I think without that icebreaker question,





things might have gone differently for me," Bekkaoui said. "It was one of the best decisions of my life to join that team."

Hardy, on the other hand, has been into race cars his whole life.

"Since I was a kid, I've had a massive passion for motorsports. But I very quickly realized I wouldn't be a professional race car driver myself."

He grew up in Saskatoon and went go-karting at the track in Martensville. From there he moved up to racing stock cars at Sutherland Automotive Speedway.

Around the same time, he started his engineering courses at USask and joined the HFR team.

"It was all three things at the same time where the whole motorsport world started to click for me," he said. "Everything came together and started to make sense."

Hardy went down to North Carolina for a seminar on wind tunnels and developed contacts with past engineering students working in NASCAR.

That opened the door for him to get an engineering job on a team in NASCAR's ARCA Series, where drivers develop their talents before moving into NASCAR's higher levels.

From ARCA Hardy moved up to the Xfinity Series to be head engineer with Kaulig Racing, working with driver Ross Chastain.

"That was my first real engineering job, where I was using simulation tools, doing aerodynamics studies, parts design, and doing the car set-up every week."



In 2021 he moved up to the NASCAR Cup Series, the highest level of competition, when he became a race engineer with Hendrick Motorsports. There he works with crew chief Gustafson and driver Chase Elliott, the Cup series champion in 2020 and a five-time winner of the most popular driver award.

When Hardy first moved to North Carolina in 2019, Bekkaoui spent a year back in Saskatoon before heading down to join him.

"That first year was difficult," Hardy said. "I'd never moved away from home and had moved away from Layla."

In 2019, Bekkaoui decided to join Hardy in the US. She landed the engineering design job with Fibreworks later that year.

Then the pandemic hit.

Being in the US, Hardy and Bekkaoui were isolated from family and friends. They both ended up working from home, based in their one-bedroom apartment, until they bought their first home later in 2020.

During that time, the race car teams could only send a select few people to the track.

That meant Hardy, who helped set up the car for each race, had to do all his work though simulators, analyzing data from the car without actually seeing how it performed in practice.

"We kept engineers back at the shop and set up a war room."

During races, he would communicate with the crew chief at the track via wireless

radio, explaining what changes needed to be made to the car.

In 2021, there was still no travel, but the team won a lot of races. "That was when I gained a lot of confidence," Hardy said.

By 2022, he finally got to travel with the team, sitting in the pit box beside the crew chief, feeding him information about the car's performance during the race.

Last June, after the team won the Ally 400 race in Nashville, Hardy made his first trip to victory lane.

"We showered each other with beer and all the confetti, it was pretty fun. I still have to pinch myself sometimes."

It was in 2022 that NASCAR mandated a new car, called the Next Gen, which all teams must drive. NASCAR sources all the components so each team works with the same parts.

One of the suppliers is Fibreworks Composites, where Bekkaoui is part of the company's design and manufacturing team. It's been doing a lot of work with the floor and hood of the Next Gen cars, she said.

Besides NASCAR work, Bekkaoui has also been designing parts for the Haas F1 Team on the Formula 1 circuit.

Her work with HFR has given her a better understanding of what teams are looking for when they come to Fibreworks, she said.

And she's also experienced what it's like to be part of a team working toward a common goal, something that is integral to her job now.

"We all want to produce the best parts that we can. And at the end of the day, we all want to see that car drive."

It's heady stuff for two kids from Saskatchewan, who were married in November 2022 in Saskatoon.

Being part of HFR was the foundation for his and Bekkaoui's careers in motorsports, said Hardy.

"It really opened up my world into learning vehicle dynamics and that is essentially what I do now.

"You are introduced into this world and if you're inquisitive enough, you're able to get into a niche world that is difficult to get into." 🛡

Learning beyond the classroom

We asked our undergraduate and graduate student societies and our most active student design groups to reflect on their goals, accomplishments and challenges from this academic year.



The U of S Bridge Team attended the 2023 C.J. Mackenzie Gala of Engineering Excellence in January 2023. (Photo: USBT)

University of Saskatchewan Bridge Team (USBT)

During the 2022-2023 school year we set out with the goal to continuously improve as a team. This year we have been able to provide more access for students to get experience fabricating and welding. We worked with Saskatchewan Polytechnic to coordinate welding lessons for our team to attend at their Idylwyld campus.

The challenges we have faced as a team are common for student design groups. Given we are all full-time students and have personal lives, we do struggle at times to find the time to commit to our passion for building bridges. We were excited to attend our competition in May in London, Ontario where our steel bridge competed against other bridges brought by teams from all over the world. We had a great experience, competing in the aesthetics, elevator pitch, presentation and overall competition. Unfortunately, during the vertical load test our bridge deflected greater than the specified serviceability limit, thus not allowing us to compete for the overall title. In the end we finished seventh in the presentation and 10th overall in the aesthetics competition. We look forward to returning next year to improve our showing. We would like to thank our sponsors Graham, APEGS, Clifton, Russel Metals, AECOM, aodbt and Stantec for making our team and competition dreams financially possible.

Huskie Formula Racing (HFR)

Our main goal this year was to improve and build upon our already outstanding team, which finished in the top third of a 120team field at the annual Formula SAE competition. Our current competition car, S16, was completed this April. Upgrades included a partially redesigned chassis, rebuilt engine, redesigned aero kit, and a reclined driver's position. We used the manufacturing equipment donated by the Engineering Advancement Trust to cut down on our cost and advance our knowledge of designing machinable parts.

We travelled to the 2023 FSAE competition in Brooklyn, Michigan in late May where the week started well, with our car flying through tech inspection. Unfortunately, we experienced two rear-end failures during competition that we could not overcome despite exceptional effort and teamwork.





We will use what we learned at this competition to improve our preparation and our execution going forward.

We are excited for the future as we have been able to gain new members from the College of Engineering and beyond with the creation of our new team of first- and second-year students who have begun development of our next car, S17. This allows for development of the race car and our team, as it actively engages new members and creates opportunities that haven't been possible in our traditional one-year design cycle. We have kept more students on the roster than ever before and are extremely excited to see the team's continued progress. All these accomplishments have been made possible through a

Above: Huskie Formula Racing competed at the 2023 Formula SAE competition in Michigan. (Photo: HFR)

Left: The executive team of the Saskatoon Engineering Students' Society. (Photo: SESS)

generous donation from our honorary team members Ron and Jane Graham.

We appreciate all of our hard-working team members who, on top of their intense course work, have been creating amazing designs, building racing simulators, fabricating/welding an entire vehicle chassis, redesigning vehicle components, implementing innovative technology, and designing business cases, all to help create this amazing race car.

Saskatoon Engineering Student Society (SESS)

The biggest goal for the Saskatoon Engineering Students' Society (SESS) this year was to continue fostering a welcoming and inclusive place for engineering students at USask. We strive for the SESS to be a place that everyone feels embraced for who they are, whether you are buying something from the E-Store or attending our events. We know we aren't perfect so we encouraged feedback throughout the year to ensure we could learn from our

mistakes and improve. This goal guided the society in all aspects of our work.

It is so hard to choose our greatest accomplishment as the executive all undertook great projects and events within the society that were a success, such as our first in-person Orientation since 2019, Eng Week, and many more. At our Winter Formal we got to see how excited both students and industry professionals were to interact and talk to each other again. We have a great alumni community in Saskatoon that attends industry mixers, and it is a great source of pride to not only be a part of the USask community but also host events to foster the important connections between alumni and students.

Finances are always the biggest challenge and they continued to be our biggest hurdle this year. There were times when sponsorship was low, therefore we turned our attention to advocacy work and focused on compiling what we wanted to focus on advocating for at the WESST (Western Engineering Student Societies' Team) and CFES (Canadian Federation of Engineering Students) conferences or at the USask level.

A special thank you to Engcomp, Soli Solutions, K+S, Paddock Wood Brewing, SAL Engineering, and Sci-fi Summer Camps for supporting our initiatives this year.



Above: The Sled Dogs 1/4 Scale Tractor Team. (Photo: Sled Dogs)

Right, this page: Zachary Lang, here with EGCC president Amin Babaeighazvini, won first prize in the EGCC's 2023 3 Minute Thesis competition. (*Photo: EGCC*)

Next page: The University of Saskatchewan Space Team. (*Photo: USST*)

University of Saskatchewan Sled Dogs 1/4 Scale Tractor Team

We set three major goals for the 2022-2023 year. The first was to build off of last year's strong showing at competition where we placed eighth overall in the annual International 1/4-Scale Tractor Student Design competition in Peoria, Illinois. With a tough finish in the durability event, where we were disqualified by a rear tire crossing the out-of-bounds line, we know a better placement can be easily achieved. Our other goals involved building our 2020year tractor, which was not completed due to Covid-19. Working on the 2020 tractor allows new recruits to get hands-on experience before working on the competition tractor. We also decided to build a load cart, to further our test abilities and increase our knowledge of our tractors.

We are proud we had one of the largest and also youngest teams in Sled Dogs' history. Our most significant challenge arose from having such a large team. In previous years, it has been standard to have a team of 10-15 people whereas this year we sat closer to 30. With such a large group, it was



often difficult to keep everyone involved. Thankfully we had an excellent leadership group that ensured members always had tasks to work on.

In early June seven members of our team again headed to Illinois to compete. We were very excited to have a young group travelling down for competition this year as it is a great learning experience. (Results were not available by press time.)

Without the help of our donors and sponsors, we would not be able to achieve what we do. Our supporters include: Applied Industrial Technologies, Association of Professional Engineers and Geoscientists of Saskatchewan, Automated Metal Processing Ltd., Bolt Supply House Ltd., Bourgault Industries, Brandt Industries Ltd., Claude Lague and Lilianne Chénard, Construction Fasteners, Engineering Shops, Guy Chretian, Igus, Motion Industries, MacDon Industries Ltd., Prairie Machine and Parts, Ratzlaff & Associates CPAs, Redekop Manufacturing Company, Russel Metals, Seed Master, Silverdale Farms Ltd., Terry Fonstad, Solidworks, Viterra, Zacharie C Martin.

Engineering Graduate Community Council

The Engineering Graduate Community Council builds community among graduate students in the College of Engineering and provides opportunities for graduate students to network with industry members. It also organizes two main events. The first is the Engineering Graduate Research Conference, where students share their research and exchange academic knowledge. The EGCC also organizes the Engineering 3 Minute Thesis Competition, where the challenge is to present complex research in an accessible and compelling way.

University of Saskatchewan Space Team (USST)

The University of Saskatchewan Space Team (USST) currently has two projects on the go: the USST Rocketry Project and the RADSAT-SK CubeSat Project, which is a partnered project with the Canadian Space Agency, College of Engineering, USST, and Saskatchewan Polytechnic. The team's biggest accomplishment this year was with the RADSAT-SK Project, when it handed the satellite off at the Canadian Space Agency's headquarters in Montreal to be sent for launch. The team faced numerous challenges but tackled them with resilience and determination. A major component was sent back on a rush order for modification, the team designed and soldered one of its own flight boards, and it also spent many long days testing, integrating, and assembling the satellite. A number of current team members and alumni travelled to Florida in early June to see the SpaceX CRS-28 rocket launch on its successful mission to take the satellite to the International Space Station (ISS). The cubesat is set to

be deployed from the ISS sometime in the weeks following the launch, which will then begin the operations phase of the project. The RADSAT-SK team is grateful for the principal investigators of the project, Dr. Sean Maw and Dr. Brian Berscheid, as well as our industry partners, Galaxia Mission Systems, Calian Advanced Technologies, and MDA, a Canadian space technology company, for making this project possible. We would also like to acknowledge Dr. Ekaterina Dadachova and Dr. Li Chen whose research materials provided the payload for our mission.

The USST Rocketry Project is also "getting off the ground." Our team is working towards competing in the Launch Canada Challenge in August 2024. We recently launched a mini-rocket just outside Saskatoon to test different mechanisms and concepts that are being investigated for use on the larger competition rocket. Our team is grateful for the support we have received from the College of Engineering, MDA, and APEGS as we continue to work towards our competition goal. ■

Student awards and achievements

USask Engineering students have made us proud in the classroom and beyond. They will be the engineers the world needs.

Shahabodin Afrasiabi (Electrical

Engineering) was honoured with the Research Excellence in STEM Award at the 2023 USask Graduate Students' Association Awards. Afrasiabi, a PhD student, was recognized for his academic excellence, innovative research and exceptional leadership skills. He is conducting research in the areas of power electrical engineering, power systems, and machine learning.

Amin Babaeighazvini (Chemical Engineering) received the 2023 Madan and Suman Gupta PhD Award in Engineering as the most outstanding graduating student in the College of Engineering PhD program. His research focuses on using biomaterials as a sustainable substitute for petroleum-based substances. Babaeighazvini was recognized for his high research productivity, the outstanding quality of his thesis and for completing his studies in less than four years.

Minh Au (Engineering Physics) is one of 20 Canadian recipients of a 2023 McCall MacBain Scholarship. Recipients were chosen based on their character, community engagement, leadership potential, entrepreneurial spirit, academic strength, and intellectual curiosity. Au will pursue a fully funded master's degree worth \$100,000 at McGill University.

Dylan Bauman (Civil Engineering) received a 2023 USask Indigenous Achievement Award for leadership. Bauman, a member of the Muskowekwan First Nation, is involved in several student initiatives in the College of Engineering, serving as co-president of the University of Saskatchewan Bridge Team and sitting on the board of the USask Engineering Students' Fund Council. He is also a Huskie Athletics track and field athlete.

Laura Bodie (Environmental

Engineering) was the 2022 winner of the Powering the Saskatchewan Spirit: SaskPower Engineering Co-op Award. Bodie was selected based on her performance during her eight-month term as an environmental engineering intern at PINTER & Associates Ltd. She was selected from 29 other students nominated by their employers. The award recognizes a co-op student for "their demonstration of the College of Engineering's core cultural



Afrasiah







values while on a co-op work placement, resulting in exemplary contributions."

Pezhman Zolfaghari Didani (Chemical Engineering) was awarded a 2022 Vanier Canada Graduate Scholarship valued at \$150,000 over three years. Didani, a PhD student, is developing a high-performing air purification system that can remove tiny airborne pathogens – including SARS-CoV-2 – from the air more efficiently than current air filters.

Sarah Ens received a \$100,000 Schulich Leader Scholarship and began studying at USask Engineering in 2022. A graduate of the Saskatoon Christian School, she was selected for her spirit of determination and perseverance, her academic achievement and the dedication she brings to her many professional, academic, family and community-based endeavours.

Libby Epoch (Civil Engineering) won the Canada West Women's Basketball Student-Athlete Community Service Award in 2022. She averaged 11.6 points a game while earning Academic All-Canadian honours three times in her career. Epoch was also president of the Huskie Athletics Council, where she was instrumental in running charity drives and outreach programs to help families in need, children and those struggling with mental illness. In 2021, she won USask's Valerie Girsberger Trophy, awarded to an upper-year female student-athlete who during her entire career best combines the qualities of leadership, sportsmanship, academic ability and athletic prowess.

Kendra Farmer (BE'22 Chemical) was named the Canada West 2022-2023 Women's Track Athlete of the Year. She won four gold medals at the Canada West championships, winning the 300-metre and 600metre races and picking up two more golds in relays. Farmer also won the Canada West Track & Field Student-Athlete Community Service Award. She is a four-time member of the Huskie All-Academic Team and has been named a U Sports Academic All-Canadian three times. Farmer has served as co-chair of the SaskATF (Saskatchewan Aboriginal Track and Field) youth advisory committee and is a volunteer coach with the Running Wild Athletics Club (RWAC). In 2022 and 2023, she won USask's Valerie Girsberger Trophy, awarded to an upperyear female student-athlete who during her entire career best combines the gualities of leadership, sportsmanship, academic ability and athletic prowess.





Deserae Goodhand (BE'22 Chemical), a member of the Métis community, received a 2022 USask Indigenous Achievement Award for her academic excellence. Goodhand, who graduated with great distinction, developed an interest in mining after having a work placement in the college's rock mechanics lab, which solidified her desire to work in the mining industry after graduation.

Easwaran Krishnan (Mechanical Engineering) was the 2022 winner of the Madan and Suman Gupta PhD Award in Engineering as the most outstanding graduating student in the PhD program. Krishnan's research focused on energyefficient ways to provide fresh outdoor air (i.e. ventilation) for Canadian buildings. He completed his PhD thesis in just under four years, and during that time he received five prestigious awards valued at \$110,000.

Shanleigh McKeown (Environmental Engineering) is one of 10 winners of a 3M National Student Fellowship, awarded by the Society for Teaching and Learning in Higher Education. It recognizes visionary student leaders who demonstrate outstanding leadership and innovation. McKeown served as president of the Saskatoon Engineering Students' Society and later as president of the Canadian Federation of Engineering Students (CFES), representing 85,000 engineering students across Canada.

Nevan Parsley (Electrical Engineering) received a 2022 USask Indigenous Student Achievement Award for his academic achievement. He is a Métis descendant of the Red River settlements. Parsley said he was honoured to receive a distinction that not only celebrated his academics but his heritage.

Morgan Speiser (Electrical Engineering) was awarded a 2023 USask Indigenous Student Achievement Award. Speiser, who is Métis and has ancestry in the Muskeg Lake Cree Nation, was recognized for her academic achievement. She says her work ethic is a key reason for her academic success. Her goal is to work in power and distribution.









Class of 2022 Top Graduates

Victoria Guenter: APEGS Gold Medal Winner for highest overall average; Computer Engineering Achievement Award

Garret Churchill: Society of Chemical Industry, Canadian Section Merit Award

Anna Gorovikova: Civil Engineering Alumni Medal

Bryce Parnetta: Electrical **Engineering Achievement** Award

Michael Luciuk: Engineering Physics Distinguished Graduate Award

Nathan Riis: Environmental Engineering Achievement Award

Michael Tremblay: Zig Szczepanik Engineering Award (Geological Engineering)

Logan Heck: Harold J. Bosche Most Distinguished Prize in Mechanical Engineering

Class of 2023 Top Graduates

Alexander Mayhew: APEGS Gold Medal Winner for highest overall average; Harold J. Bosche Most Distinguished Prize in Mechanical Engineering

Kasia McChesney: Society of Chemical Industry, Canadian Section Merit Award

Brianna Vaagen: Civil Engineering Alumni Medal

Jacob Waskowic: Computer Engineering Achievement Award

Reez Karki: Electrical Engineering Achievement Award

Minh Au: Engineering Physics Distinguished Graduate Award

Laura Bodie: Environmental Engineering Achievement Award

Graham Kelly: Zig Szczepanik Engineering Award (Geological Engineering)





UNIVERSITY OF SASKATCHEWAN College of Engineering ENGINEERING.USASK.CA



THOROUGH SPRING 2023 45

BE WHAT THE WORLD NEEDS

ing.usask.ca		
ngineering		
engineering		
gineering		
engr		
engi		
gineering		

Donate at give.usask.ca

BE WHAT THE WORLD NEEDS

UNIVERSITY OF SASKATCHEWAN

THE CAMPAIGN FOR THE UNIVERSITY OF SASKATCHEWAN

al anti



university of saskatchewan College of Engineering engineering.usask.ca

university of saskatchewan College of Engineering engineering.usask.ca

Return Undeliverable Addresses to: External Relations Office College of Engineering, University of Saskatchewan 57 Campus Drive, Saskatoon SK S7N 5A9 Canadian Publications Mail Agreement #40683196