



Applied Research and Innovation Plan





This plan is built in support of miyo wâhkôhtowin.

This Cree phrase expresses the positive value and richness of experience that stems from interconnectedness and relationships. This worldview represents the individual and the community, and encompasses the foundation of all we do at Saskatchewan Polytechnic.

We honour this principle in every interaction, institutional practice, procedure, policy, and service we provide to learners, faculty, staff, alumni and our communities. We work together to create an inclusive, collaborative and respectful environment in which everyone can grow, thrive and lift each other up.

We would like to acknowledge that Saskatchewan Polytechnic is situated on Treaty 4 and Treaty 6 territories and the ancestral lands of the Cree, Saulteaux, Dene, Dakota, Lakota and Nakoda peoples and the traditional homeland of the Métis.



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Message from the Provost and Vice-President, Academic

In 2020, Saskatchewan Polytechnic launched its strategic plan, *Leading the Rise: Bringing Polytechnic Education to New Heights*. As part of our academic portfolio, the Office of Applied Research and Innovation (OARI) is key to leading the rise. Our most recent academic plan, *Innovation in Action*, speaks to enriching the learning experience through increased opportunities for applied research and industry connections. Applied research opportunities allow students to deepen their learning within a real-world context that spurs new and exciting discoveries. Applied research projects engage industry and society by connecting our wealth of experts to the innovators of Saskatchewan and beyond. Our institutional and academic plans promote creating an inclusive future, and applied research provides a crucial avenue to grow our capacity to address equity and diversity in the relationships we forge and the research we help advance.

OARI is charting a new and exciting course along with industry partners in a wide variety of sectors. From healthcare to agriculture, sustainable energy solutions to data integration, applied research projects and partnerships are crucial to connecting our teaching and learning mandate and the in-house expertise it fosters to real world problems. Together we are creating new solutions in a rapidly changing world.

We look forward to the next five years of continued growth, and taking on an increased leadership role in the applied research and innovation sphere.

Dr. Has Malik
Provost and Vice-President, Academic

“Applied research opportunities allow students to deepen their learning within a real-world context that spurs new and exciting discoveries.”



Welcome

The Office of Applied Research and Innovation (OARI) is proud of the growth we have achieved over the past five years and the reputation we are gaining as a top applied research institution in Canada. We have had exponential growth in research revenue, completed projects, partnerships and students involved in research, and there is still so much opportunity to expand further for the benefit of Saskatchewan's people and companies.

Saskatchewan Polytechnic is here to service and work with industry and community partners. Through our six applied research centres and the state-of-art facilities they house, we engage and collaborate with industry and community partners to move ideas and innovations forward. Our clients and partners are start-ups and established companies, organizations and change makers. Together we deliver practical solutions to everyday problems.

This plan focuses on the next five years and identifies four themes to help us shape our future, including leadership, excellence, accountability and supporting EDII—equity, diversity, inclusion and Indigeneity—in applied research and innovation.

As we chart the course for the years ahead, OARI strives to lead a path beyond the significant growth we have already achieved. This strategic plan outlines our intent to maintain the momentum and further grow our capacity to become one of the top ten applied research leaders in the country.

Dr. Susan Blum
Associate Vice-President
Applied Research and Innovation

**We engage
and collaborate
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Saskatchewan Polytechnic Context

Serving approximately 16,000 students each year, Saskatchewan Polytechnic (Sask Polytech) is the province of Saskatchewan's only polytechnic and the province's primary institution for post-secondary applied education and research. The institution fuels provincial growth by providing qualified, work-ready graduates to meet labour market demand. It is committed to offering a broad range of educational experiences that are student-centred and employer-responsive. As one of the largest post-secondary institutions in the province, Saskatchewan Polytechnic has a major impact on Saskatchewan's economy. The institution contributes \$2.2 billion CAD to the economy, according to a recent economic impact analysis.

Sask Polytech is spread across four campuses that serve each region of Saskatchewan, a geographic area of 651,900 km². Diverse geographies, demographics, and population densities mean that each campus can tailor its offerings to local needs, alongside province-wide ones. The Prince Albert campus houses natural resources programs and a simulation centre used for nursing and other healthcare training. The Moose Jaw campus is home to state-of-the-art facilities for seven engineering technology programs, as well as several business programs. Saskatoon, the largest campus, has lab facilities, healthcare simulation centres, and numerous applied research centres. The Regina campus runs industry-driven programs in technology, human services, and healthcare, alongside multiple shops for industrial trades training.

Sask Polytech is home to research centres in the fields of sustainability, manufacturing, digital integration, bioscience, natural resources, and health. The polytechnic is focused on applied research and work-integrated, hands-on learning. This focus, coupled with strong ties to business and industry, prepares students for the workforce. Sask Polytech's applied research partners have access to exceptional facilities, faculty and researcher expertise, funding for research and development and a wide network of connections. By partnering on innovation and testing, Sask Polytech enables companies to capture new opportunities, solve everyday challenges and contribute to economic growth and job creation.

**Saskatchewan Polytechnic
contributes \$2.2 billion CAD
to the economy.**

Background

With campuses spread across the province of Saskatchewan, Sask Polytech is uniquely placed to respond to applied research needs and opportunities across a wide range of geographies, industries, and specific local needs. Sask Polytech's expertise is also in demand nationally. From optimizing fuel cells with Mercedes Benz on the west coast, to enhancing virtual reality gaming through AI with a growing media company in central Canada, to building a digital wellness app with the national office of the Canadian Mental Health Association, Sask Polytech demonstrates a research record that meets industry and community needs across the country.

Given Saskatchewan's comparatively small population of just over 1.1 million people, and a large geographical area spanning multiple ecosystems, economies, and industries, an institution seeking to meet the needs of the entire province must develop diverse applied research expertise and adaptability. Sask Polytech has responded to this imperative. In 2006, the Office of Applied Research and Innovation (OARI) was created and began to offer seed funding for applied research projects. Most significantly, a restructuring of research supports in 2016 was a catalyst for major applied research growth across the institution. The creation of a new Associate Vice President Research position allowed for a greater focus on developing applied research. This emphasis allowed for the development of more Applied Research Centres (ARCs), which today include:

- Centre for Health Research, Innovation and Scholarship
- Digital Integration Centre of Excellence (DICE) Technology Access Centre
- Sustainability-Led Integrated Centres of Excellence
 - o BioScience Applied Research Centre (BARC)
 - o Hannin Creek Education and Applied Research Centre (environmental field research)
 - o Innovative Manufacturing Centre (IMC)
 - Biomaterials Testing and Prototyping facility (B-TAP)
 - Research, Additive Manufacturing and Prototyping facility (RAMP)

These centres represent major strengths in both research and teaching, and the individual expertise of each centre also facilitates cross-institutional and multidisciplinary collaboration. Measures of success of Sask Polytech's applied research expansion include return on research investment, funding dollars awarded, number of researchers, and number of students involved in research. In each of these areas, since 2016 alone, Sask Polytech has grown many times over: in every area, growth has at least doubled, and in research revenue and number of students involved in applied research, the growth has been over 700%.

Sask Polytech has demonstrated exceptional growth in applied research in a short period of time. This led to tangible benefits across the province, including for Indigenous and underserved populations. Through the creation of research centres and a dedicated Office of Applied Research and Innovation, Sask Polytech has demonstrated long-term commitment to applied research growth. By mobilizing the diversity of its home province, Sask Polytech applied research offers models into best practices for meaningful and productive research partnerships. With collaborations and projects across Canada and beyond, Sask Polytech research succeeds at meeting local, national, and global needs.

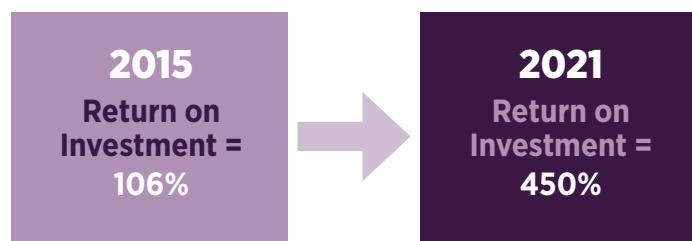
“Since 2016, research revenue and number of students involved in applied research has seen growth of over 700%.”



Office of Applied Research and Innovation

The Office of Applied Research and Innovation (OARI) has the capability to turn inputs into outputs.

The office currently consists of eight full-time employees, including management and administrative positions. Each position plays a key role in the operations of the office and the administration of applied research. In F2015, investment in the office was less than one million dollars per year, which is a solid investment; however, the return on investment was small at 106%. At the time there were only three administrative positions, led by one director position. In 2016, the office underwent a change in structure, adding additional management and administrative positions to the team. This additional investment increased the return on investment in the following fiscal year to 192%. Now, five years since the management restructuring, return on investment is around 450%. OARI creates a strong competitive advantage with a dedicated team where there is very little turnover, demonstrating a proven commitment by each member. This dedication leads to a high quality of service, including grant facilitation and project administration activities and strong engagement with industry and community partners.



With committed faculty, staff, and researchers, Sask Polytech has positioned itself as a leader in applied research growth. As of today, Sask Polytech has secured over \$22.8 million in research funding and has worked with 663 industry and community partners. In the past five years (since 2016), Sask Polytech has achieved major growth in applied research, including:

- A 855% increase in research revenue;
- A 178% increase in active and completed applied research projects;
- A 248% increase in the number of partner clients and companies;
- A 197% increase in the number of faculty and staff members involved in research;
- A 785% increase in the number of students involved in research;
- A steadily increasing return on investment in applied research each year; and
- External research funding successes across the institution, in the fields of business; construction; mining, energy, and manufacturing; information and communications technology; natural resources and built environment; and nursing/healthcare.

With committed faculty, staff and researchers, Sask Polytech has positioned itself as a leader in applied research growth.

Sask Polytech's exponential growth in applied research led to its high ranking among Canada's Top 50 Research Colleges by Research Infosource FY2020:

- **1st by Research Income Growth in 2020** (\$7M or +304.6%), up from 40th in 2019 (\$1.7M);
- **2nd in Completed Research Projects** (245, with active and completed research projects = 378);
- **6th by Industry Research Income** (total 2.8M) **and as a % of Total Research Income** (40%);
- **9th by Number of Paid Student Researchers** (59) **and Number of Research Partnerships** (73)

Sask Polytech is involved with research at a higher rate than the average rate across colleges in Canada. According to data from Colleges and Institutes Canada (CICAN), the average college was involved in 46 applied research projects in the 2019-2020 academic year. By comparison, Sask Polytech undertook 281 that same year, and 378 the following year.

The polytechnic's reputation is also solid and growing among current and potential community and industry partners. According to Polytechnics Canada, the average Canadian polytechnic worked with 183 partners in 2019-2020. In that same time frame, Sask Polytech served 73, and that figure continues to increase to 208 in 2020-21. In a survey of industry representatives who worked with Sask Polytech on applied research projects, 93% of partners indicated they would recommend working with Sask Polytech to others, while 97% stated that the project they undertook had an impact on their organization, the industrial sector, the public good, or government programs and policies. Meanwhile, Sask Polytech researchers report that they rarely need to seek out community or industry partners: Sask Polytech's reputation is such that potential partners routinely approach the polytechnic with their ideas. By actively creating research connections both locally and across Canada, Sask Polytech has positioned itself swiftly and comprehensively as a leader in applied research.

CANADA'S TOP
50
RESEARCH
COLLEGES
2021 RESEARCH
Infosource Inc.



Mandate

“Leading the RISE” is Sask Polytech’s 2020-2025 strategic plan. By taking direction from the strategic plan and in alignment with the academic plan, the applied research and innovation 2022-2027 plan provides a roadmap for Sask Polytech “to lead” a path beyond the significant growth that has been achieved over the past five years. The intent of this plan is to position Sask Polytech as one of the top ten applied research leaders in the country by maintaining momentum, further growing capacity, expertise, and facilities within the organization.



To successfully achieve this goal, applied research at Sask Polytech must embrace the principle of LEAD:

- **Leadership** – Saskatchewan Polytechnic will provide leadership in applied research and innovation locally, regionally, and nationally.
- **Excellence** – Saskatchewan Polytechnic will have a reputation for delivering applied research excellence with quality and impact that makes a difference locally, regionally, and nationally.
- **Accountability** - Saskatchewan Polytechnic will be accountable to partners to deliver their innovative solutions and will be seen as collaborators and team players.
- **Diversity** - Saskatchewan Polytechnic will support diversity, equity, inclusion, and Indigeneity (DEII) across the breadth of applied research and innovation.

“The intent is to position Saskatchewan Polytechnic as one of the top ten applied research leaders in the country.”

Vision:

To **LEAD** innovative, applied research initiatives at Saskatchewan Polytechnic that foster benefit to our diverse partners and community members locally, regionally, and nationally.

Mission:

To create a focal point for engaging in applied research and innovation that **LEADs** to social capital and economic activity creation/generation for our communities and partners.

Values:

Saskatchewan Polytechnic's applied research initiatives are driven to **LEAD**.

Leadership

Excellence

Accountability

Diversity

THEME 1

Leadership in Applied Research and Innovation

Saskatchewan Polytechnic will provide leadership in delivering applied research and innovative solutions to partners locally, regionally, and nationally.

To realize our position as a leader in applied research we will:

- **Enhance our reputation by**
 - Positioning Sask Polytech as the provincial and federal thought leader in applied research and innovation by actively participating nationally and internationally on boards, committees, and advisory panels.
 - Directing national applied research initiatives and collaborative funding opportunities and presentations.
- **Showcase expertise by**
 - Presenting and attending industry forums, national/international conferences, and trade shows.
 - Supporting faculty, researchers, and students locally, regionally, and nationally for knowledge mobilization and outreach activities.
 - Raising Sask Polytech's external profile for applied research and innovation.
 - Profiling faculty, researchers, and students demonstrating expertise in applied research areas.
- **Foster partnerships by**
 - Increasing the number of connections to industry, Indigenous communities and organizations, communities, professional associations, and high-level partnerships.
 - Nurturing and maintaining unique municipal, provincial, national, and international partnerships.
 - Developing capacity and leading business development activities.
 - Building an applied research presence at each campus to serve as a community resource to engage with local industry, community, and city on joint projects to address key economic, environmental and development challenges.



THEME 2

Excellence in Applied Research and Innovation

Saskatchewan Polytechnic will have a reputation for delivering applied research excellence with quality and impact that makes a difference regionally, provincially, and nationally.

Our initiatives:

- **Promote applied research centres by**
 - Supporting interdisciplinary applied research projects through creation of areas of excellence, clusters of expertise, and the development of a vibrant and accessible research infrastructure and living labs.
 - Communicating and marketing clusters and applied research centres to further develop relationships with industry and community partners.
 - Building full time human resource capacity in applied research centres and clusters of expertise.
 - Providing maker and incubator space for faculty-led student and industry-focused applied research that shows potential for commercialization.
 - Marketing expertise, facilities, and services that are offered.
- **Invest in faculty and students by**
 - Providing time for applied research to increase and develop the number of faculty, students, and programs engaged in applied research and innovation activities across the institution.
 - Developing a peer-to-peer and mentorship network of researchers, faculty, and students internally and externally to the institution.
 - Developing and implementing an applied research training program for students.
 - Expanding the student showcase to include all applied research activity on an annual basis.
 - Increasing internal funding mechanisms to support applied research within schools and across the institute as a core business practice, by
 - doubling the internal funding for applied research projects and release time for faculty to develop applied research programs; and
 - supporting student applied research projects.



THEME 3

Accountability to Partners and Future Generations

Saskatchewan Polytechnic will be accountable to partners and to future generations to deliver innovative solutions and be seen as collaborators and partners. Collaboration, partnership, and external engagement are essential to extend our applied research and innovation reach, quality, and impact.

Our initiatives:

- **Implement client engagement practices by**
 - Conducting project and change management activities to make sure deliverables are met in a timely fashion.
 - Ensuring a service-oriented partner satisfaction process for all projects which will be followed up.
 - Jointly communicating partnerships and success of projects.
 - Providing release time for faculty to ensure they have the time and resources to complete applied research projects in a timely manner.
 - Placing permanent research staff in key areas to ensure timely completion of deliverables
 - Augmenting relationship with partners through business development and liaison support.
 - Stimulating discourse by hosting annual industry-focused workshops on selected topics of relevance.
 - Presenting industry-focused seminars annually on selected topics of relevance to disseminate results to the public.
- **Conduct applied research in areas that contribute to the United Nations Sustainable Development Goals (SDGs) by**
 - Facilitating applied research projects related to sustainability and the SDGs
 - Participating on the provincial SDG committee and associated initiatives.
 - Linking applied research projects to the SDGs for reporting and communications.
 - Showcasing how the SDGs are relevant to applied research conducted.
 - Doubling the funding available for applied research projects that receive funding from the Sustainability Initiatives Fund.



THEME 4

Diversity, Equity, Inclusion, and Indigeneity in Applied Research

Saskatchewan Polytechnic is committed to supporting diversity, equity, inclusion, and Indigeneity (DEII) across the breadth of applied research and innovation across campuses. Equitable outcomes and benefits support an applied research culture by shared experiences with people from diverse backgrounds who bring new and varied perspectives.

Our initiatives:

- **Facilitate inclusive opportunities by**
 - Developing programs to encourage all representative groups to participate in applied research.
 - Recognizing Indigenous engagement and partnership in the applied research enterprise (from research teams, to partners, to student opportunities).
 - Emphasizing hiring principles that foster equitable opportunities for applied research positions.
 - Identifying DEII gaps and provide student applied research internships and research assistant positions.
 - Supporting equitable access to funding opportunities for all members of the research community.
 - Increasing equitable and inclusive participation in the research system, including on research teams.
 - Promoting the integration of equity, diversity, inclusion and decolonization-related considerations in research design and practices.
- **Provide education and training by**
 - Providing training on DEII in research.
 - Capitalizing on funding programs that support DEII development.
 - Engaging partners with all Sask Polytech applied research and innovation outreach activities to address DEII gaps.
 - Collecting the data and conduct the analyses needed to include equity, diversity, inclusion, and Indigeneity considerations in decision-making.
 - Recognizing First Nations and Metis peoples at applied research events.





saskpolytech.ca/appliedresearch

