

RYERSON UNIVERSITY
STRATEGIC RESEARCH PLAN
2014-2018
Canada Research Chairs /
Canada Foundation for Innovation

RYERSON UNIVERSITY - STRATEGIC RESEARCH PLAN 2014-2018

A. MAJOR OBJECTIVES OF THE PLAN

Ryerson University's Strategic Research Plan seeks to:

- Increase research excellence, quality and participation through support to all researchers at all stages.
- Expand Scholarly Research and Creative (SRC) partnerships and sponsored research with industry, government and community organizations, as well as other academic institutions – locally, nationally, and internationally – to drive innovation and increase socio-economic impacts.
- Create opportunities for students (HQP, applied research, internships, seed funding) and drive the culture of innovation.
- Strengthen collaboration and cross-disciplinary research themes.
- More focused and deeper internationalization.
- Support increased knowledge dissemination through traditional and non-traditional channels, and publicize the SRC achievements of Ryerson faculty and students to further build reputation and attract high quality students, faculty, and partners.
- Streamline administrative structures, processes, and resources to strengthen Ryerson's SRC culture.
- Build performance metrics and accountability frameworks.

B. STRATEGIC RESEARCH AREAS

Digital Media & Technology

Digital media has never been more important to Canada's economy and society: generating new products and services, creating jobs, enhancing productivity, and improving accessibility. As digital technologies become increasingly integrated into our everyday lives, building a strong digital media sector will be central to citizen engagement and quality of life.

Ryerson is building high-performance infrastructure, fostering the development of digitally enabled products and services, and promoting the adoption of digital technology across sectors. Our industry-oriented approach to research is exemplified by our world-renowned research and commercialization centres targeting this theme, including the DMZ, the top-ranked university incubator in Canada and fifth in the world.

Ryerson faculty are also at the leading edge of media convergence. New media research looks at the impact of interactivity on traditional approaches to content, creative processes, information delivery, learning, and ownership. Ryerson's multidisciplinary SRC activities probe such relationships as technological innovation and creativity, technological change, and the social impact of new technologies.

Areas of SRC activities in Digital Media & Technology at Ryerson include but are not limited to:

- Bridging disciplines and approaches to explore the applications of **big data and information** in areas such as financial services and social media.
- Harnessing the potential of **emerging computing and communication technologies** in areas such as tangible interfaces and cloud and context-aware computing to solve real-world problems.

- Developing new applications and assistive tools that promote **accessibility** and supporting people with disabilities.
- Crossing disciplines to explore new methods and applications in **3D printing and advanced manufacturing** in areas such as rapid prototyping and control systems.
- Combining established best practices with cutting-edge **content creation** platforms to advance storytelling innovation and diverse perspectives.

Energy & Sustainability

The health of our planet is a responsibility we all share. To meet the challenges posed by environmental degradation, Canada must develop sustainable institutions, practices, and technologies. There are rich opportunities for researchers in diverse areas as policy and management, pure sciences, engineering, and architecture to work together on creative solutions to the impacts of human development on the natural world.

Ryerson is bringing together experts from industry, academia, and the public sector to pioneer next-generation energy and sustainability solutions. Our faculty are making important strides toward realizing a sustainable future, from the creation of innovative tools that advance urban agriculture and energy storage, to building greener homes and intelligent transportation systems, to promoting the conservation of our natural resources through policy development and regulation.

Areas of SRC activities in Energy & Sustainability at Ryerson include but are not limited to:

- Creating innovative **infrastructure** that defines how cities of the future will be built and managed.
- Improving **policy and regulation** to support governance in such areas as water resources and energy costs.
- Accelerating the adoption of **sustainable technologies** in Canada and driving development and commercialization.
- Investigating new **sustainable practices** in areas such as energy consumption, carbon emissions, and repurposed building materials.

Health & Well Being

As Canada's public healthcare system copes with the country's aging population, health promotion and preventative medicine will be critical to maintaining a productive society and improving quality of life.

The health and well being of individuals and their communities is the central mandate of several professional schools at Ryerson. Our multi-disciplinary and multi-sectoral research in this theme applies a comprehensive model that extends from the health and wellness of the individual to the idea of collective health and well being. This includes the study of the physical, social, and economic determinants of the healthy city, which encompasses structures and processes for citizen participation.

This strategic area can be characterized by the interplay of a diverse range of disciplines that encompass the physical, psychological, and social well being of individuals and communities, and Ryerson is ideally suited for a more prominent role in new models of health education and research, including the emerging concept of the academic health sciences network. Ryerson's students and faculty also focus on improving access to healthcare for underserved groups, on improving efficiency and effectiveness, and on promoting inclusion to enhance well being.

Areas of SRC activities in Health & Well Being at Ryerson include but are not limited to:

- Exploring the social determinants of health and proactive approaches to the **prevention** of disease and injury.
- Pioneering new methods and technologies for the **detection and diagnosis** of diseases as well as treatment monitoring.
- Developing new **therapies and treatments** for diseases and disorders as diverse as cancer, arthritis, and post-traumatic stress disorder (PTSD).
- Promoting **accessible, patient-centered systems and services** to meet the needs of diverse groups.

Technological & Industrial Innovation

New technological developments are rapidly being adopted in sectors that include manufacturing, robotics, construction, and more. These developments will be transformative, offering a new level of efficiency, flexibility, and responsiveness. Ryerson's focus on innovation in applied science positions us to make important contributions to these and other emerging industries, including those based on information management, medical and environmental technologies, novel chemical processes and materials, and micro-technologies, which will form the basis of the 21st century economy.

Our faculty and students look beyond the technical side of innovation to consider the human-oriented aspects of industry and technology. Through collaborative research with both established organizations and start-up companies, Ryerson is helping to streamline design, engineering, production, and maintenance to create a strong technological and industrial ecosystem in Canada.

Areas of SRC activities in Technological & Industrial Innovation at Ryerson include but are not limited to:

- Exploring new **design** methods and applications in areas such as 3D printing, satellite control, and biomedical devices.
- Working in areas such as green building and intelligent transportation systems to develop innovative **infrastructure** that is defining how cities of the future will be built and managed.
- Creating systems and technologies that take **human factors** into account to provide organizations with a competitive edge without causing undue stress or risk of injury.
- Progress in areas of **advanced manufacturing** such control systems, process innovation, new materials, and supply chain management is changing the way physical components are produced.

City Building & Social Justice

Human rights, equity, fairness, and a sustainable future are the foundation of Canadian values. Toronto, as one of the world's most diverse cities, is an ideal place to pioneer new approaches to making these values a reality.

To build smart cities and just societies, Ryerson's faculty and students are engaging with local and global communities to develop effective collaborations that advance intelligent infrastructure development and shape thought, policy, politics, and practice across a range of social issues. In doing so, they are addressing a variety of globally relevant themes consistent with the United Nations' Sustainable Development Goals.

Ryerson University is Canada's first Changemaker Campus, designated by Ashoka, a global community of action that works to increase the impact of social ventures, from student enterprise projects to research partnerships and community engagement.

Areas of SRC activities in City Building & Social Justice at Ryerson include but are not limited to:

- Addressing the needs of diverse communities and individuals in Canada and abroad through innovative **services** in areas such as immigration and mental health.
- Helping governments to create fair and effective **social policy** that addresses tough social problems like child abuse and lack of political engagement.
- Advancing innovative **systems and planning** to define how cities and societies of the future will be built and managed.
- Promoting **diversity and inclusion** through effective services for minority groups, representation in art and culture, inclusive workplace practices, and indigenous governance systems.
- Engaging with local and international partners in **community building** activities to support social justice and equality.

Design, Culture & Creative Industries

Art and culture expand the ways that we think about the world and our places in it, enriching our lives and helping us arrive at creative solutions to real world problems.

Ryerson attracts talented faculty and students who often blur the line between conventional research and creative practice, working as industry professionals who not only study art and culture but also produce it. Drawing from our diverse urban, academic and multicultural surroundings, our community is combining traditional practices with new technologies to drive innovation in design and the culture industries. Notably, our students and faculty are applying arts and culture to the emerging model of social entrepreneurship, exploring how SRC activity under this theme can be leveraged to generate societal change.

Areas of SRC activities in Design, Culture, & Creative Industries at Ryerson include but are not limited to:

- Leading in **cultural creation**, from traditional media like photography and theater to digital media content deploying innovative new platforms such as virtual and augmented reality.
- Preserving Canada's **cultural heritage** through explorative research, archival activity, traditional and digital curation, and exhibitions that engage both the academic community and the general public.
- Pioneering new practices and maintaining strong standards in **communications** fields such as journalism and marketing, to bring new ideas to diverse audiences.
- Opening fresh new avenues to explore established disciplines through the **digital humanities**, an emerging discipline of research that is changing how we think of art and culture.
- Creating art and culture with **social impact** is a challenge that many of our faculty and students have taken up, tackling pressing social problems in imaginative new ways.

Management, Entrepreneurship & Competitiveness

To ensure the future of economic prosperity in Canada, SRC activities at Ryerson focus on promoting the entrepreneurial mindset as well as new models of leadership and management, and the study of organizational effectiveness and productivity.

As an Ashoka Changemaker Campus, Ryerson also emphasizes the integration of business and entrepreneurship into the pursuit of socially relevant goals, in alignment with our City Building & Social Justice theme, increasing the impact of social ventures such as student enterprise projects.

Areas of SRC activities in Management, Entrepreneurship, & Competitiveness at Ryerson include but are not limited to:

- Mainstreaming **entrepreneurship** across the University by promoting innovation, collaboration, risk-taking, commercialization, and spin-off companies.
- Increasing our understanding of **business and immigration** to build trade, increase productivity and sustainability, and improve employment.
- Helping organizations effectively use their internal resources through **management** research that is improving labour conditions while allowing organizations to stay agile and competitive.
- Bridging disciplines and approaches to explore the applications of **big data and information** to identify patterns, improve processes, and develop new products and services.
- Cultivating a culture of **social innovation** across a wide range of disciplines to address societal challenges in areas aligned with the UN's Sustainable Development Goals.

Teaching & Learning for the New Economy

A stronger connection between teaching and research are central to the long-term success of students and universities. We are advancing the development of a meaningful and practical body of knowledge about student learning and teaching effectiveness in higher education, particularly in such areas as life-long learning and strategic retraining.

Ryerson's hands-on learning incorporates research and collaboration with external partners into the educational experience. Our internationally renowned Zone Model is leading the development and implementation of best practices for incubating start-ups, enterprises led by students and faculty, and social innovation initiatives. We also encourage experiential learning abroad through a range of funding programs, internships, and placements.

Areas of SRC activities in Teaching & Learning for the New Economy at Ryerson include but are not limited to:

- Promoting **diversity and inclusion** both locally and internationally through educational innovation and interdisciplinary knowledge and practice across sectors.
- Increasing teachers' capacity to provide flexible education to students by developing new **learning technologies** that better connect students to both teachers and peers.
- Mainstreaming innovation across the University through the innovative **zone learning** model of education, providing students with access to mentors, resources, space, and technology in order to create new start-up companies in high-growth industry sectors.
- Designing new programs that incorporate **experiential learning**, enabling students to apply theory learned in the classroom to entrepreneurial pursuits or industry placements.

C. ALLOCATION OF CRCS BY STRATEGIC RESEARCH AREA

As of the June 2018 allocation process, Ryerson has been awarded a total of eight Tier 1 CRCS and eight Tier 2 CRCS. Over the years, Ryerson has used its “corridor of flexibility” to convert a SSHRC Tier 1 allocation to a CIHR Tier 1 in order to highlight the work of an internationally renowned researcher, and has split three NSERC Tier 1s into six NSERC Tier 2s, making a strategic decision to build capacity by attracting new research talent, supporting the work of promising researchers within the context of a growing research institution.

Deployment of open Chairs for extended timeframe

| Research Theme | 2017 | 2018 | 2019 |
|--|--------------|-------------|---|
| Digital Media and Technology | | | NSERC Tier 2 (2 positions) (university priority positions in Cyber Security) |
| Technological and Industrial Innovation | NSERC Tier 2 | | NSERC Tier 2 |
| Management, Entrepreneurship and Competiveness | | | |
| Energy and Sustainability | | | NSERC Tier 2 |
| Design, Culture and Creative Industries | SSHRC Tier 1 | | |
| Teaching and Learning for the New Economy | | | |
| Health and Well Being | CIHR Tier 1 | CIHR Tier 2 | |
| City Building and Social Justice | NSERC Tier 2 | | SSHRC Tier 1 SSHRC Tier 2 |

D. ACHIEVING GENDER BALANCE

Ryerson University has and continues to make every effort to recruit qualified women for CRCS (as well as for other faculty positions). Specific steps include:

- Broad advertising of all CRC positions.
- Utilization of existing networks to identify qualified women candidates.
- University policies that emphasize the need for achieving gender equity.
- Development of training and orientation to hiring committees regarding the importance of gender equity and strategies for ensuring a fair hiring process.
- Ensuring that the most qualified women candidates are included in the “short list”.
- Ensuring that some CRC positions have been allocated to theme areas where there are likely to be more qualified women candidates.

E. ESTIMATE THE NUMBER OF CHAIRS THE UNIVERSITY WILL OFFER TO ITS CURRENT FACULTY IN ORDER TO ENHANCE THEIR OPPORTUNITIES AND KEEP THEM AT THE INSTITUTION

AND

F. ESTIMATE THE NUMBER OF CHAIRS THE UNIVERSITY WILL OFFER TO RESEARCHERS IN CANADA AND, AS APPLICABLE, TO RESEARCHERS OUTSIDE CANADA

Ryerson takes a balanced approach to attracting and retaining, with roughly 50% of CRCs being allocated to retain existing faculty members who show promise as leaders in their fields and 50% to attract new researchers who represent new research talent. Ryerson does not prioritize either Canadian or international recruits, but rather looks first for the strongest candidate.

G. MEASURING SUCCESS IN ATTAINING MAJOR OBJECTIVES

The impact of the CRC and CFI program will be assessed on an ongoing basis. There will be an annual review by Deans, the Provost, and the Vice President, Research and Innovation. Specific indicators of success include:

- Level and intensity of research funding.
- Number and quality of peer reviewed publications, and exhibits as appropriate to discipline.
- Number of collaborations and partnerships with industry, government and non-governmental organizations.
- Ability to attract and retain leading researchers as candidates for faculty positions.
- Quality of our graduate and post-doctoral applicants.
- Research performance appropriate to different types of SRC activity and disciplines.
- Undergraduate student exposure to and participation in research projects.
- Number of national and international awards and prizes received by faculty, including members and scholars in the Royal Society of Canada.
- Quality of international partnerships as well as number of faculty and student exchanges and collaborations.
- Impact of research in driving innovation, including new technologies, patent applications, licenses products and services, and other forms of knowledge transfer and their adoption.
- Visibility and reputation measured by traditional and social media coverage, reputational surveys etc.

H. PLANNING PROCESS

The allocation and management of Ryerson's Canada Research Chairs is overseen by the Executive Committee for CRC Planning. Chaired by the Vice-President, Research and Innovation, additional members include the Provost and Vice-President, Academic; the Vice-President, Equity and Community Inclusion; the Assistant Vice-President, International; the Vice-Provost and Dean, Graduate Studies; and a Ryerson University faculty member with an established research track record. The Vice-Provost, Faculty Affairs, is an ex officio member of the committee.

This Committee reports to the President of the university and reviews all policies and processes relating to the management of Ryerson's allocation, including strategic decisions, renewal reviews, and allocation requests, as well as Ryerson's Equity, Diversity and Inclusion Action Plan and equity targets.