Revised October 2008

RYERSON UNIVERSITY
Canada Research Chairs/Canada Foundation for Innovation
STRATEGIC RESEARCH PLAN SUMMARY

A. MAJOR OBJECTIVES OF THE PLAN

Ryerson University's strategic research plan seeks to:

- Build on Ryerson's expertise as a centre for applied education and research.
- Contribute to the economic growth and social advancement of Ontario and Canada through innovative, high-quality research that responds to societal need in a knowledge based global economy.
- Promote inter and multi-disciplinary research of the highest quality through the development of research clusters, networks, and/or centres.
- Acquire and/or ensure access to information sources that support graduate level research through the University Library.
- Strengthen existing areas of research expertise as well as foster excellence in selected, emerging areas of research and scholarship.
- Enhance our ability to recruit and retain highly qualified faculty.
- Provide research training opportunities for graduate students.

B. MAJOR RESEARCH THEMES

B. 1 Communications

Areas of research, scholarly and creative activity related to this theme focus on traditional and new media forms of communication, in the social-cultural aspects of communication, and in communication policy. New media research explores the impact that interactivity and other capabilities have on traditional features of content, creative processes, information delivery, learning, and ownership. Through technological, societal, pedagogical, and creative undertakings, Ryerson faculty are at the leading edge of media convergence. In fields such as journalism and broadcasting, research on cross-cultural communication includes culture and information presentation, technology and infrastructure, internationalization and Internet communication. Interdisciplinary studies include media and society, the analysis of media content and social structure, and the study of the media as agents of socialization. In the context of globalization, technological change, deregulation and privatization, research in communications policy has gained increasing importance. Research questions include: aspects of economic and trade policy, cultural policy, and changing definitions of basic service and universal access.

B. 2 Technological and Industrial Innovation

Technological innovation and industrial development are essential to Ryerson's research mandate. Recent investments will support the development of a new Engineering and Computing Centre, and has led to the creation of the Ryerson University Analytical Centre. State-of-the-art infrastructure supported by the Canada Foundation for Innovation and Ontario Innovation Trust is allowing Ryerson to assume leadership roles in the industrial applications of microgravity, power electronics, medical physics and advanced microscopic analysis in applied surface science for environmental and industrial applications.

Research in industrial engineering, including applied operations, production and inventory control, human factors, decision-support systems, optimization and flexible manufacturing systems will serve Canada's manufacturing sector. Optimization modeling and solution techniques, including knowledge-based systems and artificial intelligence, will be extended to problems in industrial systems, energy, environmental and telecommunications systems.

Economic factors are driving faculty interest in power systems research. Rapid developments in telecommunications require new communications and digital and analog systems technologies. Underlying these developments is the need for software engineering. Ideas related to sustainable development and a post-petroleum economy will lead to innovations in fuel cell technology, systems for wind-generated power and green technologies for public transport.

New industries based on information management, medical and environmental technologies, novel chemical processes and materials and microtechnology will form the basis of the economy in the 21 st century. Ryerson's focus will be on innovations in applied science, particularly related to microfabrication, computer systems and applications, database management and informatics, medical physics, surface science and applied chemistry, and environmental science and biotechnology. Finally, one of the more outstanding challenges lies in the scientific, technological and social shift to a non-petroleum based economy.

B. 3 Organizational Effectiveness and Productivity

The Centre for the Study of Commercial Activity (CSCA) focuses on the retail sector, and investigates such trends such as e-commerce, big box stores and power centres. An NSERC/SSHRC Chair in Retail Management provides support to leadership in the management of technological change. Sixty prime retailers are partners in CSCA and draw on its research to make strategic decisions.

Ryerson has a long-standing commitment to internationalization, recognizing that there is a positive correlation between the economic performance of a country and its commitment to international education and research. Existing and planned areas of research include the international aspects of marketing, finance, accounting, strategic management, human resources, the regulatory environment, entrepreneurship, e-commerce, and retailing. Effective analysis and solutions to many of the complex challenges presented by the global economy provide invaluable support to organizations seeking to launch or expand their international business activities.

Hospitality and tourism research focuses on the interface between organizations and their clients, including investigations of consumer loyalty and customer satisfaction.

Ryerson's Centre for Voluntary Sector Studies conducts research on the organizational and structural aspects of this sector, with emphasis on collaborations and partnerships with government and the private sector.

The Centre for Learning Technologies develops new technologies and assesses their effectiveness in enhancing the accessibility of Canadians with disabilities to social and economic opportunities and in enhancing the capacity of organizations to provide effective services.

In a knowledge economy, information is a critical resource and its effective use is essential. Research is being conducted on performance indicators and optimization modeling to determine the impact of information technology on production and inventory control, decision-making systems, manufacturing systems and overall profitability and efficiency. Broader societal issues such as transaction costs, privacy, security and intellectual property are associated with the study

of the collection, organization and application of information and its effects. Research also considers the productivity impacts and potential negative consequences of ubiquitous information environments that connect employees to their jobs on an anytime, anywhere basis. Databases incorporate sectoral approaches such as Health Information systems and functional approaches such as Enterprise Resource Planning (ERP), require knowledge management and data mining expertise. This rapidly evolving area includes the examination and development of approaches and tools for collecting, analyzing and managing information. Ryerson is investigating the viability of digital broadcasting in Ontario, as well as the development of economically sound models to position Canadian-based industry in a global leadership role.

A body of financial sector research is now focusing on profit improvement and the impact of various investment strategies. Researchers are also exploring managerial decision-making and broader business issues in a cross-cultural context. Research in entrepreneurship and enterprise development is investigating key elements in successful start-ups and sustained growth.

Finally, the future of organizational effectiveness will depend on the capacity of the public and private sectors to nurture lifelong learning and knowledge acquisition, and to foster technological literacy. The scholarship of teaching is currently applied to better understand the learning experience that can be achieved through experiential learning, technology-mediated activities and alternative curriculum design.

B.4 THE ENVIRONMENT

B.4.1 The Built Environment

Research on the built environment includes research in urban and in interior space. Social and policy dimensions include research about access to housing and its suitability for different socio-economic and ethno-racial groups; how property charges and taxes affect urban form; public space and access; the use of information technology to facilitate urban design decision-making; planning and ethno-racial diversity; and how to achieve ecologically sensitive urban design.

Within Canada failing infrastructure has threatened the safety of water supplies, posed considerable risk on our highways and deleteriously affected the environment. The University's focus on physical infrastructure, structures and repair and rehabilitation will be important in addressing these difficult problemsThe growing field of geomatics is driving the application of microprocessors and geographic information systems in every aspect of practice and research.

Many of the materials and structures to be employed in building construction will incorporate smart technology for the purposes of sensing and controlling the interior and exterior environment. Ryerson's research activities will focus on the need to increase energy efficiency, integrate computer technology, incorporate innovations in lighting design, and develop new materials for use in buildings.

B.4.2 The Natural Environment

Ryerson has a strong focus on environmental sustainability and management. New graduate programs focus on such research areas as ecotoxicology, trace metal biogeochemistry, environmental biotechnology, microbial ecology, and environmental chemistry. Ryerson faculty are exploring new ways to manage the environment through a better understanding of conventional water and wastewater treatment technologies. Research exploring contaminant fate, surface water management and groundwater flow and landfill systems are important to understanding the interface between engineered systems and the natural environment. Policy and management systems reflect environmental decision-making concerning choice of technology

and how society relates to natural and physical environments. Research across disciplines is critical to the management of the environment and utilization of our natural resources.

B.5. The Civil Society

Some of the preconditions of a "civil society" include: high levels of social cohesion, trust, democratic participation and citizenship, as well as interest in arts, culture, and values. Ryerson faculty are contributing to an emerging body of scholarship and research related to questions such as: What are the main factors that aid or impede the creation of a civil society? How do multilateral agreements and international commitments impact our ability to create and maintain such a society?

Ryerson, along with York University and the University of Toronto, is part of The Joint Centre of Excellence for Research on Immigration and Settlement (CERIS) within the Metropolis Project. Research examines the impact of immigration on society and economy - how various groups have experienced the process of immigration to, and settlement in, Toronto and other areas, what the needs and contribution of such groups are, and the nature and impact of federal policies concerning immigration and settlement.

Social cohesion is a measure of the degree to which members of society come to feel that they are part of a community. Some of the correlates of social cohesion currently being investigated include: economic inequality, employment policies, food security, public health care policy, family studies, and research on aging and the elderly. Voluntary sector studies examine crucial services aimed at fostering a flourishing civil society. Diversity and accessibility constitute an important focus of research at Ryerson. Central areas of study include ethnoracial diversity and the development of policies, programs and technological solutions to support people with disabilities.

Creation and performance of cultural artifacts are an integral part of the Ryerson tradition. Scholarship in this area includes historical studies of culture and cultural institutions; communication studies; the study of popular culture; and the normative evaluation of cultural and political institutions.

B.6 Health and Well-Being

The health and well-being of individuals and their communities is the central mandate of several professional schools at Ryerson. The focus is on the prevention of injury, disease, and death; the development of novel medical devices; living with and adjusting to an illness process, both acute and chronic; and the identification of social, economic, and psychological determinants of health and well-being. The determinants of health of individuals include individual circumstances and lifestyle, personal beliefs and culture, control over one's life and environment. Researchers in health-related fields examine quality of life issues of diverse populations throughout the lifespan and through life transitions such as changes in health status, immigration, transitions experienced by youth in care, entry into the world of work, and acculturation.

The importance of early child development research is receiving increased attention at the federal, provincial and municipal levels of government, resulting in Centres of Excellence and large-scale evaluative pilot projects. Ryerson is a valued partner in responding to these research initiatives. Much research effort is directed to improving health and well-being through the promotion of life conditions that provide equal participation, opportunity, choice and self-determination, regardless of income, age, gender, race, ethnicity, sexual-orientation or ability.

The "healthy cities" concept arose in the 1980s from a World Health Organization initiative. At

Ryerson, this concept has been applied to a comprehensive model that extends from the health and wellness of the individual to the collective level and includes the multidisciplinary study of the physical, social and economic determinants of the healthy city, including structures and processes for citizen participation. Contributions to research and scholarship in health and social well-being, economic well-being, immigration, healthy public policy and studies in the voluntary sector are both multidisciplinary and multi-sectoral.

C. PLANNING PROCESS

Building on the priorities that have been identified in Faculties, Schools and departments, this Strategic Research Plan reflects and synthesizes these various areas, organizing them into six themes. These research themes were approved by Ryerson's Academic Council on February 6, 2001.

The President of Ryerson, in consultation with others across the university, is responsible for allocating Chairs to the various theme areas. Factors that influence decisions regarding allocation include: existing research activity in each of the defined areas, the relationship of the theme to **existing and planned** graduate programming, and the strategic goals of the university as these relate to specific programs and Faculties.

D. INSTITUTIONAL SUPPORT

The university has invested heavily in supporting research and research training in the areas noted above and will continue to do so. This is reflected in the investment in matching funds for CFI, funded projects, support for Early Researcher Award award winners in these (and other) areas, and the commitment of university funds to the development of graduate programs in related areas. Research support is provided to new and existing faculty through start-up grants, teaching release time, seed grants, student research assistantships, funding for research centres, and grants for conference travel. Ryerson is currently undergoing a process of faculty renewal, through the replacement of retiring faculty. Strategic hires have increased the number of researchers in the research theme areas identified. Our Development Campaign is designed to support the development of research capacity through funding for research laboratories and endowed professorships and chairs.

E. PARTNERSHIPS AND OPPORTUNITIES

Ryerson has developed effective research partnerships with academic, industry, community and government organizations. The CERIS project noted previously is a prime example of strategic multi-institutional and multi-sectoral research linkages. Other successes include Ryerson's Centre for the Study of Commercial Activity (CSCA) and current involvement in Networks of Centres of Excellence

F. 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 Vice President, Research and Innovation. Specific indicators of success include:

- Increased participation in major research projects funded through the granting councils.
- Increased dissemination of research results through publication in peer reviewed journals, as

well as in other venues, appropriate to the nature of the research undertaken.

- Ryerson researchers recognized for their expertise in their professional/academic fields.
- Evidence of impacts of research on social and economic policy and on professional practice.
- Increased generation of intellectual property and technology transfer.
- An overall increase in the number of graduate students enrolled in Ryerson's graduate programs.
- Emergence of new graduate programs.
- More graduate students engaged in faculty based programs of research.

G. ACHIEVING GENDER BALANCE

The number of CRCs allocated to Ryerson and the fact that the recruitment process for many of them has now been completed means that there is insufficient room in which make a significant impact on the gender distribution of CRCs at Ryerson. Nevertheless the university has, and will continue 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.