YSGS report to Senate

In this report the Yeates School of Graduate Studies Council (YSGS Council) brings to Senate its evaluation and recommendation on the following item:
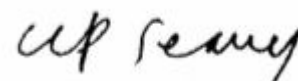
New Program Proposal

Management PhD

The PhD in Management program will be housed in and administered by the Ted Rogers School of Management. The proposal was reviewed by a Peer Review Team with a site visit on May 22 and 23, 2019 and it was highlighted that the proposed specializations align well with the University's strategic mandate agreement as well as the expertise of faculty and research areas.

On September 18, 2019 the Program and Planning Committee reviewed the proposal, PRT report and the program and YSGS responses. The documents were voted on and have been recommended for approval as sufficiently addressing the comments and recommendations of the Peer Review Team.

On September 25, 2019 the YSGS Council voted in favour of moving the proposal to Senate.

Motion: That Senate approves the new program for the PhD in Management as described in the Senate agenda.

Cory Searcy, Interim Vice-Provost & Dean, YSGS

PhD in Management
PROPOSAL

Last Updated: April12, 2019

Contents

BASIC INFORMATION

PROGRAM GENERAL INFORMATION

The broad purpose of the PhD in Management program is to train future academic researchers with strong research design and sophisticated data analysis skills. Graduates of this program should be able to carry out rigorous research design and intellectual contributions produced by students will demonstrate the Ted Rogers School of Management's commitment to impact, engagement, and relevance. Students will conduct research projects informed by current industry trends and issues and with objectives to make policy recommendations and offer meaningful and implementable solutions to complex issues that are significant for the industry and society.

1.a.i.   Name of the Program and the Proposed Degree Designation(s)

PhD in Management

1.a.ii.   Identification of the Designated Academic Unit

The proposed PhD in Management will be housed within the Ted Rogers School of Management (hereafter TRSM).

1.a.iii.   Program Governance Structure

The TRSM Graduate Program Council (GPC) and its subcommittees govern all graduate programs housed within TRSM and will bring in the proposed PhD in Management under its jurisdiction.

The by-laws define the mandate of the council: "Students and faculty are partners in ensuring the successful functioning of graduate programs at Ryerson University. The GPC is the principal mechanism for bringing together these two constituencies to identify, discuss and address matters relating to that graduate program".[1]

The TRSM GPC contains representatives of faculty, elected from the members of the Yeates School of Graduate Studies (YSGS), faculty who teach courses in the Master of Business administration (MBA), Master of Science in Management (MScM), and Master of Health Administration (Community Care) (MHA (CC)) programs, and the Graduate Program Directors. Motions that affect only graduate programs within TRSM can be ratified by the TRSM GPC, while those with an impact outside the graduate programs are recommendations subject to approval by the TRSM Faculty Council and the YSGS Graduate Council, and subsequently Ryerson Senate.

The TRSM GPC will have primary responsibility for:

- coordinating program curriculum development;

---

[1] "Graduate Program Council By-laws TRSM", June 2015, p.2
http://www.ryerson.ca/content/dam/senate/YSGSReports/2014-2015/Bylaws/TRSM%20GPC%20Bylaws%202015.pdf

- ensuring the quality, currency, and content of constituent courses;
- undertaking the ongoing review of program objectives, learning outcomes, and career competencies, and Ryerson's Institutional Quality Assurance policies and the collaborative governance model will govern this PhD in Management. These policies include, among others:

  - Policy 110: Institutional Quality Assurance Process
  - Policy 112: Development of New Graduate and Undergraduate Programs
  - Policy 126: Periodic Program Review of Graduate and Undergraduate Programs
  - Policy 127: Curriculum Modifications: Graduate and Undergraduate Programs
  - Policy 163: Graduate Admissions Policy
  - Policy 164: Graduate Status, Enrolment, and Evaluation

The policies referenced above can be found on the Ryerson University, Senate Office website.[2]

1.a.iv. Principal Faculty Members involved in Proposal Development

The principal faculty members involved in the development of the proposed PhD in Management include:

Leadership Team:

Dr. Kelly MacKay	Vice-Provost Academic, Ryerson University (previously Associate Dean Research and Graduate Programs, TRSM)
Dr. Hong Yu	Interim Associate Dean Research and Graduate Programs, TRSM
Dr. Daphne Taras	Dean, Ted Rogers School of Management

PhD in Management Brainstorming Committee:

Dr. Deborah Fels	Professor, Information Technology Management and Director of the Inclusive Media and Design Centre
Dr. Murtaza Haider	Interim Director and Associate Professor, Real Estate Management
Dr. André Laplume	Associate Professor, Entrepreneurship and Strategy
Dr. Ojelanki Ngwenyama	Professor, Global Management Studies and Director of the Institute of Innovation and Technology Management
Dr. Sergiy Rakhmayil	Associate Professor, Finance
Dr. Dogan Tirtiroglu	Associate Professor, Real Estate Management
Dr. Ozgur Turetken	Director and Professor, Information Technology Management
Dr. Morteza Zihayat	Assistant Professor, Information Technology Management
Dr. Hossein Zolfagharinia	Assistant Professor, Global Management Studies

Staff Support Personnel:

Mr. Nik Ashton	Research Support Specialist, TRSM
Mr. Ben Samms	Decision Support Analyst, TRSM
Ms. Cindy Dunne	Director, Strategic Initiatives and Accreditations, TRSM

---

[2] https://www.ryerson.ca/senate/PoliciesNmbr/

1.b. PROGRAM OVERVIEW

1.b.i. Program Rationale

The proposed PhD in Management program is designed to meet the demand by institutions for high quality researchers with a background in Management. Students will be given the opportunity to generate management oriented knowledge through exposure to and participation in academic research with a specialized discipline-specific application. Program graduates will be equipped to disseminate such knowledge to their research community, industry, government, and the public at large.

Further, building upon TRSM's existing long standing industry relationships, the proposed PhD program will provide new collaborative research opportunities that will enable faculty and PhD candidates to provide industry with relevant research outcomes such as data, analysis and models that will enable better strategic decision making.

The focus of the proposed PhD in Management program is to carry out rigorous scientific research about complex management problems in a rapidly changing and globally-oriented economy. The program is designed to develop graduates who are skilled in research that includes a theoretical and practical understanding of the challenges that organizations experience, and who are able to disseminate that research in appropriate venues.

The proposed PhD in Management is similar in structure to other research oriented PhD programs, but unique due to the specializations proposed and the interdisciplinary nature of them. Specifically, we propose four interdisciplinary specializations in the PhD in Management program:

- Digital Enterprise and Social Media
- Real Estate Studies
- Retail and Consumer Services
- Strategy, Innovation and Entrepreneurship

A review of comparator institutions reveals that most tend to have a more traditional disciplinary orientation that follows departmental structures typically seen in business schools. For example, Human Resources and Organizational Behaviour is the most popular specialization offered among Canadian institutions accounting for 15% of specializations. Finance (12%), Marketing (12%) and Accounting (10%) are also offered at many schools. See Appendix A for a Comparator School Market Scan of PhD specializations and SWOT.

Proposed Specialization Descriptions:

Digital Enterprise and Social Media

This specialization will provide students with a deep understanding of the theories, practices, techniques, tools and issues surrounding such digital transformation of organizations into "digital enterprises" ready to operate in the "digital ecosystem". Digital enterprises need members who are well versed in the functionality and integration of widely used technologies such as enterprise wide systems, database systems, local area networks, artificial intelligence, analytics, big data, cloud computing, social media and useful and usable user interfaces and experience.

As a natural extension, students will pursue discovery and knowledge in one of the most salient changes in the way digital enterprises operate, which can be broadly referred to as "Networked Workers"; a novel notion that recognizes networked workers and how they operate within multiple networks that are internal and external, formal and informal, online and offline while relying on social media and mobile technologies.

Additionally, students in the specialization will examine enterprise architecture, the analysis of the broad set of stakeholders, and management of their interactions with each other and with the digital technology underlying the whole enterprise. Another important topic in the digital enterprise is the issue of information systems security and privacy management (ISSPM), which requires a broad set of subject matter expertise ranging from established domain of IT security management to emerging topics such as Big Data security, Internet of Things, and blockchain technology.

Real Estate Studies

This specialization focuses on real estate management, finance and economics. The specialization will focus on all aspects of commercial and residential real estate assets and markets. The specialization will offer specialized coursework in real estate markets, sustainability, specialized topics in real estate and advanced financial econometrics.

Historically, residential real estate markets and assets have been the focus area of the graduate and undergraduate real estate programs all over the world. Asset valuation, marketing of property via the multiple listing services and the ensuing agency problems, and development/construction and property management have been the main topics under this domain. In addition, recent developments in option-theoretic analyses and technological advances, such as information technology and its impact on the availability of real estate information around the world, have become integral components of this domain.

Currently, academics have put far more emphasis on commercial real estate assets, both real and financial. Real Estate Investment Trusts have become a key industry in the USA and also begun to dominate a number of markets internationally. Pricing of mortgage-backed securities, which is very complex and mathematical, and development of the real estate price indexes have become cutting edge research topics and avenues for commercial interest and policymaking. Certainly, the key driver of the Global Financial Crisis has been the massive problems in the real estate sector. Both the academia and the industry are still researching the root causes of GFC problems as well as the prescriptions against such disasters in the future.

Given this background, the Real Estate Studies specialization will offer students a rich menu of diverse research topics, opportunities and collaborations. The Ted Rogers School of Management has a wealth of research competencies, accomplishments, aspirations and networking possibilities that will lead to unique and substantial research contributions in a Canadian and international context.

Retail and Consumer Services

The specialization area of Retail and Consumer Services (RCS) intersects the dynamic interplay of retail operations and consumer behavior. In this focus area, the objective is to understand the dynamics in which retail services and operations influence consumer attitudes and behaviours, and how consumer psychology and preferences influence retail strategies and decisions.

In this specialization, core areas will include omni-channel operations, service quality and leadership, retail branding, technology development and utilization, human resource management, and firm infrastructure. As retailers fight for growth in the new world of physical, digital and mobile shopping, their ability to provide a

consistent service level across all channels has become the essence of omni-channel retailing, a field that has not been thoroughly researched. Research on service leadership and human resource management will investigate relationships between profitability, customers and employees. As the Canadian retail sector facing intensified competitions, research into how to integrate product innovation, retail environment and service designs into competitive retail branding strategies will contribute to new knowledge discoveries and also provide practical implications. By seeking to understand the factors that influence the level of adoption and use of retail technologies (i.e., mobile wallet and wearable technologies), interventions can be designed to help users progress to a more advanced level of use, the financial community and retailers will be better informed with regards to the areas and needed of future investments. A critical element of firm infrastructure research is on innovation as a driver of performance in retailer-vendor strategic partnerships, which are a centre for value creation in the supply chain and result in profitability for partners and value for customers.

Strategy, Innovation and Entrepreneurship

Strategy, Innovation and Entrepreneurship is a fast growing and broad-reaching and multi-disciplinary academic area. *The Academy of Management* provides separate descriptions, which provide a good starting point to address the focus on combining disciplines.[3]

This specialization examines three domains that are highly interconnected:

Strategy relates to the processes and mechanisms that influence/drive a firm's success in comparison with others. Firms seek to gain sustainable competitive advantage and innovation is often a central driver. Innovation helps firms enter new markets and increase profit margins. Firms must not only be innovative but to have sustainable competitive advantage must do so better than their current competitors and create barriers to entry for potential new competitors in order to maintain a competitive advantage. The track will discuss technology strategy and firm performance (the 'content' of technology strategy), how technology strategies develop in firms (the 'process' of technology strategy), and how technology strategy is related to organizational and environmental factors (the 'context' of technology strategy).

Innovation Management encourages interdisciplinary scholarship and dialogue on the management of innovation and technological change from a variety of perspectives, including strategic, managerial, behavioral, and operational issues. The problem domain includes the management of innovation processes, research and development, information technologies, e-commerce, and process technologies.

Entrepreneurship is the actors, actions, resources, environmental influences and outcomes associated with the emergence of entrepreneurial opportunities and/or new economic activities in multiple organizational contexts. The focus is on the characteristics, actions, and challenges of owner-managers and their businesses.

1.b.ii. Societal Need

Located in downtown Toronto, TRSM is uniquely positioned in Canada's corporate epicenter. Toronto serves as the headquarters to Canada's financial institutions and the headquarters of many multinational

---

[3] http://aom.org/Divisions-and-Interest-Groups/Academy-of-Management-Division---Interest-Group-Domain-Statements.aspx

corporations. Recently, the *Global Financial Centres Index* ranked Toronto as the 8th most influential financial centre and second-highest ranking North American city.[4]

Toronto's economy is highly diversified with emerging leadership in communications technology, design, higher education, arts, fashion, business and retail services, environmental innovation, food services, and tourism. TRSM's location allows for more timely and effective partnerships with local organizations in informing and supporting research that will both make a theoretical contribution and deliver practical implications that can benefit those organizations.

Having a PhD in Management is an integral part of being a top business school, particularly in top research universities. A recent landmark report titled, "Sustaining Scholarship in Business Schools," co-authored by members of the *Association to Advance Collegiate Schools of Business* (AACSB) *International Management Education Task Force*, identifies an emerging doctoral faculty shortage in business fields as the most pressing issue facing management education.[5] Introducing a doctoral program will boost the (inter)national reputation of TRSM when its doctoral graduates are placed in universities and major profit and non-profit organizations around the world. The research activities of doctoral students will significantly improve the research culture of the management school. The opportunity to work with doctoral students will make it easier to recruit top-quality research faculty, increase faculty job satisfaction and, therefore, improve faculty retention.

The Strategic Mandate Agreement (SMA), set forth by Ryerson University recognizes a number of areas of program strength that are intended to inform program approvals and the proposed PhD in Management and specializations are closely aligned with the University's aspirations to expand such program strengths. In particular, the program areas closely aligned with this proposal include: Digital Economy; Innovation and Entrepreneurship; and Management and Competitiveness. The program is an integral part of the vision and strategic plan to make TRSM a world class business school with high quality programs at multiple levels, as well as a school known for thought leadership and diversity, with multiple vibrant communities clustered around different programs. A PhD in Management program will solidify TRSM's place as one of the top ten business schools in Canada.

With the growing complexity of the global economy, there is not only a societal need for highly trained talent to advance knowledge and its applications, but also a market need for expertise in key sectors of the evolving business world to drive growth and competitiveness. A well-documented shortage of academically qualified (PhD) business faculty has developed over the last two decades, and is expected to worsen in the future. Specifically, Association to Advance Collegiate Schools of Business (AACSB) estimated the excess of demand over supply in the United States at 1,000 in 2008 and projected that the shortage could more than double by the next decade. Among the most commonly cited reasons for the shortfall in business faculty are stunted investment in doctoral programs (in terms of availability and student financial support), growth in undergraduate and MBA programs around the world, and anticipated faculty retirements. But, growth in PhD production is not uniform across the world. Countries with already high levels of doctorate production – for example Germany, Canada, the United States and the United Kingdom – are growing at around 5% or less, while fast-developing countries are growing doctoral output at more than 7%, such as Mexico (17%) and China (40%).[6] Nevertheless, the AACSB data suggest that, in terms of absolute numbers and percentage of total faculty size, anticipated short-term faculty needs, current

---

[4] https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/media-coverage/
[5] https://www.aacsb.edu/-/media/aacsb/publications/research-reports/the-promise-of-business-doctoral-education.ashx?la=en
[6] Chestnut Consulting Report "Market Scan for PhD in Management" June, 2017

unfilled positions, and anticipated retirements in the next five years are all consistently higher for Management.[7]

We note, however, the stark headlines, regarding the lack of demand for the PhD degree and subsequent employment in Canada over the years -- (for example, *"When PhDs realize they won't be professors, in Canada," "In Canada you can get a PhD but maybe not a job," "Earning a PhD in Canada likely to provide modest returns"*).[8] Yet, less than one per cent of Canada's population holds a PhD degree. That is low in comparison to other developed countries.

Although 60 per cent of PhD students in all disciplines begin their studies aiming to become university professors, the number of PhDs held and granted in Canada far exceeds available academic positions. In general, only a minority of PhD earners will obtain a faculty position. Less than 40 per cent of Canada's PhD earners are employed in the post-secondary education sector in some capacity – as full or part-time university professors, research and teaching assistants, full or part-time college instructors or postdoctoral scholars. But many of these positions are temporary or transitional. In fact, only 18.6 per cent of PhD earners are employed as full-time university professors in Canada, and fewer still hold tenured or tenure-track positions.[9]

Indeed, according to the 2011 *Conference Board of Canada Report Card*, the number of Canadian PhD degrees granted lags behind all but one country in a 15-nation peer group. While there has been significant growth in the numbers of PhDs granted by Canadian universities, increasing by 68 per cent between 2002 and 2011, countries such as the U.S., U.K., Finland and Sweden produce more than twice as many PhD degree holders per capita as Canada.

The statistics may be significantly more advantageous for those holding a PhD in Management. A recent survey by the University of British Columbia showed that its business post doctorates are by far the most likely to be employed in higher education (88 %). Furthermore, current listings of higher education employment opportunities show a multitude of Canadian and international faculty vacancies across all specializations proposed by Ryerson's PhD in Management program. However, with more than three-fifths of PhDs employed in diverse careers outside the academy—in industry, government, and non-government organizations, there is still a great need to continue to promote the value of a PhD degree as an essential component of the knowledge-based economy.[10]

It is estimated that Canada may need as many as 17,000 PhD holding job-seekers annually to fill key positions across the economy.[11]Additionally, 2016 Canadian census data show that more than one-half (58%) of earned doctorates are in Science, Technology, Engineering and Math (STEM) fields whereas doctoral degrees in management fields are considerably fewer, making up less than 3% of earned doctorates. Additionally, men with a doctorate in management earn an average of $142,100, more than men with a doctorate in any other field. Women with a doctorate in management and related studies earn an average of $127,700, comparable to women with a doctorate in law and more than women with a doctorate in any other field of study.[12] Approximately two-thirds (64%) of people with a doctorate in

---

[7] https://www.aacsb.edu/-/media/aacsb/publications/research-reports/the-promise-of-business-doctoral-education.ashx?la=en

[8] https://www.macleans.ca/work/jobs/phds-realize-they-wont-be-professors-now-what/

[9] http://www.conferenceboard.ca/e-library/abstract.aspx?did=7632

[10] http://outcomes.grad.ubc.ca/docs/UBC_PhD_Career_Outcomes_April2017.pdf

[11] https://www.conferenceboard.ca/press/newsrelease/15-11-24/Where_Are_Canada_s_PhDs_employed.aspx

[12] https://www150.statcan.gc.ca/n1/pub/75-006-x/2018001/article/54978-eng.htm

management work as university professors and an additional 13% in "other" positions in academia such as lecturers, researchers, college instructors and administrators.[13]

With education, along with innovation, emerging as a key theme for the current federal government, Ryerson's proposed PhD in Management program is well positioned to address the unmet need in producing highly-educated researchers with subject matter expertise as well as advanced analytical and problem-solving skills. The need for skills and knowledge in Canada has never been stronger. In the fiscal year 2017, the federal government earmarked $425 million to enable institutions and their best researchers to:

- Conduct world-class research in areas of strategic institutional priority;
- Enhance research capacity by forging productive partnerships within and among institutions; sectors and disciplines for the effective and sustainable use of the research infrastructure and facilities; and
- Generate social, health, environmental and/or economic benefits for Canadians, including better training and improved skills for highly qualified personnel, through appropriate pathways

The federal innovation plan includes an innovation-based economic development strategy that will enable Canada to stay competitive in a global economy. The focus on innovation nationally, speaks to a demand for people with advanced training in Management and Entrepreneurship and is part of the motivation for proposing a new PhD degree in Management at TRSM.

The proposed doctoral program recognizes the highly competitive landscape for a career as an academic. This program is designed to produce academic researchers with strong research design and sophisticated data analysis skills. Students will study issues that are significant for industry and society, and this program will indeed prepare graduates for a wide range of career paths within academia, industry, or both. Subsequently, in terms of purpose, the most significant point of differentiation with the proposed PhD in Management is ensuring the program is intended for individuals aspiring to a professor, researcher, and/or administrator role in an academic setting, or for practitioners interested in advancing their careers by developing their research capabilities. For example, graduates of the Real Estate Studies specialization will likely encounter equally good career prospects in industry as within the academy. Regardless, the problem-framing, research, and data analysis skills fostered through a doctoral program are valued in roles beyond the boundaries of the higher education domain. A vast majority (84.2 %) of Canadian PhD earners are interested in learning more about non-academic career opportunities. [14]

TRSM is well suited to produce the country's next generation of global innovators and leaders. Drawing on its faculty's skills as researchers and critical thinkers and enabled by their studies in the relevant and exciting proposed PhD in Management specializations, TRSM PhD graduates will be uniquely positioned to contribute to knowledge discoveries, improve policy, organizational performance, innovation and economic and social issues facing management. Graduates of the TRSM PhD in Management will graduate into a complex, global labour market with new opportunities for work beyond Canada's borders. We envision that the graduates of the proposed program will pursue academic and industry-based career opportunities domestically and abroad. Opportunities may include teaching positions at colleges and polytechnics, where advanced degrees are increasingly the norm. Outside of academia, new industries continue to emerge, in emerging fields like business analytics, social media, and digital enterprise.

The potential for TRSM Management PhDs to contribute through their research framing, data collection, analysis, and interpretation and generalization skills is highly desirable – whether they find careers within

---

[13] http://www.heqco.ca/SiteCollectionDocuments/Ontario's-PhD-Graduates-from-2009-ENG.pdf
[14] http://www.cihr.gc.ca/e/48761.html

the incubator and accelerator companies that support start-ups and new ventures; or at banks and hospitals recruiting talent with technology-business hybrid skill sets; or with businesses looking to implement enterprise- wide systems in order to operate in the digital ecosystem.

Specializations and Societal Need

Digital Enterprise and Social Media

There is enough evidence (e.g. big banks and hospitals recruiting postdocs with technology-business hybrid skill sets) to suggest that there will be reasonable demand for this specialization both among traditional graduate students and working professionals who are in need of transforming their careers to be part of the digital transformation.

Digital enterprises are enabled through enterprise architecture, driven by big data and analytics, and secured by information security policies and techniques. Our specialization will emphasize all three of these pillars that are of utmost relevance to organizations and society in general. In addition, we will emphasize topics at the interactions between these pillars such as robotic process automation (big data and enterprise architecture), fraud analytics (information security and analytics), and privacy by design (enterprise architecture and information security).

Another salient aspect of the digital enterprise is the ubiquitous and social computing. By 2018, 70% of the workforce will be using tablets (Gartner, 2015). Mobile devices have become more sophisticated with high computing capabilities allowing users to have instant interaction with applications of their choice. Social networking is a phenomenon that is proliferating at an incredible pace. Social networks have become widely used, and affected the way people get and share information about politics, news, health, and finances among others. There are a variety of well-known social networking tools such as blogs, social networking sites (e.g. Facebook), virtual social worlds (e.g. Second Life), collaborative projects (e.g. Wikipedia), content communities (e.g. YouTube), and virtual game worlds (e.g. World of Warcraft). Yet, despite the increase in interest and adoption of social media by organizations, the implications of these new technologies on the bottom line are not yet well established in scholarly literature, which is what this specialization aims to address.

Real Estate Studies

Since real estate, especially housing markets, has emerged as one of the primary societal concerns, and by virtue of the trillion plus dollar debt in residential mortgages alone, the financial risk in capital markets has appeared as a heightened concern for governments and lenders of all sizes.

A PhD specialization in Real Estate studies will produce the much desired human capital required to serve the market need for scholars/educators, senior analysts, investment and portfolio managers, and senior public servants to support evidence-based decision-making to lower market risks and to facilitate growth in real estate assets.

Downtown Toronto serves as the informal hub for real estate markets in Canada. Most large investors in all classes of real estate, market research firms focusing on real estate, institutional and boutique lenders in real estate markets, and the central offices of large brokerages and the representatives of real estate boards are concentrated in and around downtown Toronto. Given the large workforce of mid-to-senior level managers active in the real estate markets within walking distance of TRSM, the PhD specialization in Real Estate Studies is well positioned to attract mature students with experience in real estate markets and access to proprietary data/knowledge. At the same time, as the MScM program at TRSM grows, the alumni of the research

Master's will also contribute to the demand for doctoral studies, specializing in real estate. The Real Estate Management Department has been in a partnership with REALPAC - the national leadership real estate association dedicated to advancing the long-term vitality of Canada's real property sector – in holding annually the REALPAC / Ryerson Commercial Real Estate Research Symposium. This symposium brings together academics and practitioners and offers a platform to produce knowledge and share it among the real estate society and the society at large. The Real Estate Management Department is unique as it is the only stand-alone department of its kind in Canada and endowed with diverse, internationally well-respected and highly productive human capital across several real estate sub-fields.

Retail and Consumer Services

In a 2017 study conducted by *Retail Insider,* it was predicted that 2017 would be a "slow year for retail expansion" in Canada, however, this prediction proved incorrect, and more than 50 international brands entered Canada by opening stores or concessions. While this is excellent news for the sector, it also represents competition that could see more local/Canadian retailers struggle. For retailers operating in Canada, things are changing quickly — consumer tastes are changing, the cost of living is skyrocketing in some markets, technology and e-commerce continue to take hold, and those who do not adapt risk dying. There will no doubt be more store closures in Canada in 2018, after some unfortunate bankruptcies that took place last year.[15]

Another trend in the industry, will undoubtedly be the continued growth in e-commerce as a percentage of overall retail sales, though it still remains well below 10% of all Canadian retail purchases. Consumers continue to demand online shopping options and leading retailers are addressing this by improving their online experience. New technologies continue to shape customer demands and retailers are hard-pressed to keep up with this evolving culture. Canadian shoppers are already thinking and shopping in omni-channel dimensions, and so retailers are looking to change their model into a personalized approach to better meet ongoing expectations and, ultimately, enhance the customer experience. Omni-channel retailing has become the gold standard for success in the retail environment - the goal that everyone is supposed to be aiming for but few know how to achieve. It provides a seamless, continuous customer experience across any device or location a customer wishes to shop, with a personalized brand experience. Developing an omni-channel strategy is a process that businesses embark upon, and that process can be made easier through connectivity. Some formerly pure-play e-commerce brands have gone on to open physical retail stores with considerable success, supporting the notion that a hybrid or 'omni-channel' model is desirable.[16]

The retail market in Canada is changing rapidly. The battle for customer loyalty is intensifying, as digital transformation, changing consumer behaviour, and new entrants to the market disrupt the industry across all subsectors. Unique within our country, the Ted Rogers School of Management is best positioned to develop future scholars and leaders for innovation in retailing.

Strategy, Innovation and Entrepreneurship

TRSM offers one of Canada's leading Entrepreneurship programs with a large dedicated faculty. TRSM teaches more undergraduate entrepreneurship courses than any other English language university in Canada.

---

[15] https://www.retail-insider.com/retail-insider/2018/1/2018-canadian-retail-forecast-analysis

[16] https://www.pwc.com/ca/en/industries/retail-consumer/publications/consumer-markets-deals-insights-2017-recap-and-2018-outlook.html

Innovation and entrepreneurship is a critical element of government policy at both Federal and Provincial level, providing good opportunities for research support and funding.

For example, the Government of Canada's Innovation Agenda identifies six areas of action:
- Promoting an entrepreneurial and creative society
- Supporting global science excellence
- Building world-leading clusters and partnerships
- Growing companies and accelerating clean growth
- Competing in a digital world
- Improving ease of doing business

The Ontario Government's Innovation Agenda has these goals:
- Extract more value from all provincial investments in research and innovation
  Attract the best and brightest innovators and entrepreneurs from around the world and keep homegrown talent here
- Invest in, generate and attract a workforce with first-rate skills in science, engineering, creative arts, business and entrepreneurship
- Stimulate increased private-sector investment in knowledge-based companies and capital that boosts productivity
- Be globally recognized as a commerce-friendly jurisdiction that supports the growth of innovative companies and activities

The proposed concentration in Strategy, Innovation and Entrepreneurship addresses and supports the majority of these action areas and goals both federally and provincially.

A strong demand exists for PhDs with this specialization. Most academic jobsites list a number of entrepreneurship vacancies (for example, HigherEd Jobs lists 64 current openings, and at least six Canadian universities have current vacancies).[17] In addition, there are many opportunities in a variety of other areas (research groups, incubators/accelerators, etc.).

Evidence of a societal need can be seen almost daily in the business press and the popular press. By bringing the strategic concept into the specialization, we hope to generate research with organizations that span the corporate, capital market and government sectors. The recent announcement of federal level funding for artificial intelligence and the need to develop centres of excellence in Canada suggest that the threats to business models are real, and recognized at the top levels of government in Canada. With so much attention being paid to the start-up sector, and yet so much capital invested in the "old" economy, the issue of disruption is an area that needs to be addressed. Ryerson, with its strengths in innovation and start-ups, should be a contributor in this area.

17

https://www.higheredjobs.com/search/advanced_action.cfm?Remote=&Keyword=entrepreneurship&PosType=&InstType=&JobCat=&Region=0&SubRegions=&Metros=&OnlyTitle=0&StartRow=-1&SortBy=1&NumJobs=25&filtercat=255&CatType=3

1.b.iii.   Anticipated Student Demand

Recognizing the theoretical and applied nature of management research and education, and the realities of academic career opportunities for PhD holders, this PhD in Management would include two modes of study:

1. *Full-time track* intended for those planning to pursue a career in the academic, government, and corporate sectors. Advanced studies in management and management research is informed by the reality of business, and candidates for this PhD program will see theories learned enacted in the practice of business. In addition to collaborating with faculty colleagues on original research, potential students of the proposed PhD in Management may also be attracted to opportunities in teaching undergraduate students, and advising leaders of industry and public policy.
2. *Part-time track* intended for those who are already working in a company/professional career - for persons with professional experience looking to a change in career path and/or apply relevant knowledge and research skills to contemporary business problems in their industry or workplace.

Students will be recruited for the PhD in Management program from within TRSM, nationally, and internationally. We anticipate that TRSM PhD students will come from a variety of backgrounds, with many returning to school for further education after spending time as professionals.

An enrolment of approximately six students (full-time equivalent or FTE) per year is anticipated. Faculty and Graduate Program Administrators have already fielded a number of inquiries requesting information regarding the proposed program. These solicitations have occurred via email, in response to the posted Letter of Intent (LOI), and in-person from current MScM students and alumni.

Application data provided by the Graduate Management Admissions Council shows that 60% of Management doctoral graduates were working prior to enrolling in their doctoral program, indicating that the majority of those interested in pursuing a PhD in Management were working professionals.[18]

Additionally, we anticipate strong international demand for the program. Almost 30% of doctoral students in Canada are non-Canadians and Toronto is a major centre for attracting international students. In a recent survey of 19 Canadian universities, there is indication that applications for PhD programs are on the rise.[19]

With only one other Canadian institution, Carleton University, offering a part-time program for a PhD in Management, there is opportunity for TRSM to attract prospective students looking for a flexible program.

1.b.iv.   Comparator Programs

TRSM is the only top 10 rated business school in Canada not to offer a PhD in Management or Business Administration. At the cutting edge of entrepreneurial, socially-conscious and innovative approaches to business, TRSM is well positioned to differentiate its PhD in Management program from other more traditional programs and institutions that focus mainly on basic research and placing their graduates in academia. Twenty-two universities in Canada currently offer a PhD in Management (or Business Administration or Management Science) program. On average, Canadian institutions with a PhD in Management program offer six specializations. While the Ivey Business School at the Western University and HEC Montreal offer the most specializations with 12 and 11 areas of study respectively, the Asper

---

[18] Chestnut Consulting Report "Market Scan for PhD in Management" June, 2017
[19] Ibid

School of Business at the University of Manitoba, the University of Guelph and the University of Waterloo offer the fewest options with three specializations each.

The proposed specialization areas align with TRSM's mission of offering relevant curricula that are cutting edge, yet practical. While each of the proposed specializations falls into a traditional area of business/management study (for example, Strategy or Information Systems), each proposed specialization is uniquely tailored to explore the current, emerging and evolving conditions, challenges and trends of today's business world.

Key local competitors to TRSM in Toronto (including the University of Toronto's Rotman School of Management and the Schulich School of Business at York University in Toronto and the De Groote School of Business at McMaster University and Wilfred Laurier University just outside the city) all offer a PhD in Management program. However, the focus and end goal of all four programs is research and a career in academia. TRSM differentiates its proposed PhD in Management program by its novel and somewhat unique areas of study and its approach to PhD training in exposing students to not only traditional research methods but also novel techniques such as big data analytics that some contemporary management problems call for.

A market scan of PhD programs in Canada reveals the following about program specializations proposed for TRSM's PhD and program specializations offered at other institutions:

Digital Enterprise and Social Media - Twelve business schools in Canada offer specializations in the area of Information Systems. However, PhD programs in Ontario are more heavily focused on traditional business domains and mostly with social science oriented paradigms. While there are a number of computer science PhD programs and specializations (notably at the University of Toronto and University of Waterloo) trying to tackle problems and areas similar to those proposed by TRSM's Digital Enterprise specialization, their angle is purely technical, whereas TRSM's approach is from an IT management perspective.[20]

Currently 16 business schools across Canada offer specializations in the area of Human Resources and Organizational Behaviour within a PhD in Management Program. TRSM's proposed specialization is unique as its offering focuses on the growing role of social media and related technologies in leading and shaping the change in the way organizations operate and facilitate networked work.[21]

Real Estate Studies - Only one graduate program with a focus on real estate markets currently exists in Canada – the Sauder School of Business at the University of British Columbia offers Urban Land Economics as a specialization in its PhD in Business Administration program.[22]

Retail & Consumer Services - Sixteen of 22 PhD in Management programs in Canada offer a specialization in Marketing. However, none of these programs are specific to the retail sector[23], a focused retail and customer service approach beyond the scope of marketing management.

Strategy, Innovation and Entrepreneurship - Ten Canadian schools offer a PhD specialization in Strategy (including local competitors, the Rotman School of Management and the Schulich School of Business), focusing primarily on strategic management, strategic policy or strategic organizations.[24] Two of the 10

---

[20] Ibid

[21] Ibid

[22] Ibid

[23] Ibid

[24] Chestnut Consulting Report "Market Scan for PhD in Management" June, 2017

schools (Sobey and Asper Schools of Management) offer the specialization within a broader specialization of Business Administration.

A review of program specialization summaries suggests that most schools are focusing on how business leaders analyze company operations, with the goal of business integration across departments and functions.

Unique to the TRSM proposed specialization, is the understanding of how organizational leaders deal with disruptive trends, evaluate opportunities and threats and define new operating models. The focus will be on understanding how organizations, particularly start-ups, respond to disruptive market entrants and innovations.

The Haskayne School of Business at the University of Calgary is the only school that couples a specialization in Entrepreneurship with Innovation (Business Environment, Entrepreneurship and Innovation). Although the Telfer School of Management at the University of Ottawa and the Ivey Business School at Western University both offer a specialization in Entrepreneurship, their focus is general with little mention of innovation. Local competitors, the Rotman School of Management, the Schulich School of Business at York University and the De Groote School of Business at McMaster University, do not have an offering in this area.[25]

Global Comparison

Similar schools in Canadian, American and international institutions with a PhD in Management program offer an average of six specializations. However, European schools offer fewer specializations with an average of three per school. Of the 22 international schools surveyed, the Fox School of Business at Temple University offered the most specializations (11), while the Cranfield School of Management at Cranfield University promoted no specializations.

The top five specializations offered are Human Resources and Organizational Behaviour (15%), Other (15%), Accounting (12%), Marketing (11%) and Finance (10%). These top specializations are similar to Canada with the exception of the "Other" category. Schools outside of Canada offer a number of unique specializations including Decision Neuroscience, Hospitality and Tourism Management, Sports Management, Design and Innovation, Ethics, Statistics, Risk Management and Insurance, Work, Industrial and Employment Relations, Science, Technology and Innovation Policy and Maritime Studies.[26]

Unlike Canadian universities, for half of the European schools surveyed, the various study areas are offered as stand-alone PhD programs as opposed to specializations. For example, the Henley School of Business at the University of Reading in the United Kingdom offers a PhD in Marketing Reputation, a PhD in Finance and Capital Markets and a PhD in Real Estate Planning among other business/management-oriented PhD programs.

1.b.v. Program alignment with Academic Plan(s)

Ryerson's mission: "The special mission of Ryerson University is the advancement of applied knowledge and research to address societal need, and the provision of programs of study that provide a balance between theory and application and that prepare students for careers in professional and quasi professional fields".[27]

---

[25] Ibid

[26] Chestnut Consulting Report "Market Scan for PhD in Management" June, 2017

[27] https://www.ryerson.ca/about/accountability/mission/

Ryerson has earned a reputation for high quality, professional and career related research and education and its programs are in high demand. The proposed PhD in Management will stay true to our history with an emphasis on research with relevance to tackle complex issues in industry and society. In order to differentiate ourselves from other doctoral programs in the Greater Toronto Area (GTA), Ontario, and Canada, we are proposing specialization areas that draw on our expertise and deep connections to industry, government, and professional practices to drive innovation in the management field.

The proposed program's specializations include:

- Digital Enterprise and Social Media
- Real Estate Studies
- Retail and Consumer Services
- Strategy, Innovation and Entrepreneurship

The proposed PhD in Management is highly consistent with Ryerson's mission and Academic Plan, *Our Time to Lead"*[28] and its priorities as noted below. As a comprehensive university, doctoral education is imperative to Ryerson's mission and addressing its four priority areas.

Enable greater student engagement and success through exceptional experiences:

The proposed PhD in Management program will provide students with access to a terminal degree in management, expose undergraduate and Master's students to doctoral studies, and augments the number of graduate programs in TRSM. Specifically, the proposed program will inspire the students in the Master of Science in Management, MBA in Management of Technology and Innovation, MBA Global, and Master of Health administration (Community Care) toward higher educational levels.

Increase Scholarly Research and Creative excellence, intensity and impact:

The addition of a doctoral program will enable an increase in excellence, intensity, and impact of scholarly research and intellectual contributions by providing increased resources for scholarly works, improving the ability to attract and retain high quality faculty, and the subsequently associated productivity and reputational boost. The proposed doctoral program represents a commitment to and an investment in research excellence, thereby generating positive reputational capital.

Offering a doctoral program in TRSM will enhance our ability to attract and retain highly research active faculty. While TRSM faculty are already highly productive in terms of scholarship, the investment in new faculty, research resources, and graduate assistants associated with the PhD program will help to increase the quality and quantity of research output from TRSM, further enhancing our standing in the academic community.

---

[28] https://www.ryerson.ca/provost/academic-plan/

Foster an innovation ecosystem:

Ryerson University and TRSM play a major role in the large network of established companies, start-ups and public and private organizations that work together to stimulate innovation, develop new technologies and expand employment opportunities globally.

As noted in *Our Time to Lead,* innovation depends on diversity of experience and thought. TRSM is, arguably, Canada's most diverse business school in terms of student body, faculty composition and collaboration. Faculty members routinely engage in international research collaborations, with 62% of our faculty conducting research across a total of 51 countries; 63% of our faculty attained their academic credentials outside of Canada and 48% were born outside of Canada.[29]

TRSM faculty members have research competence and disciplinary backgrounds in areas not traditionally seen in business schools (e.g., law, philosophy, engineering, computer science, geography, and more) which has led us to succeed in securing funding from all three Tri-Council agencies – SSHRC, NSERC, and CIHR. Innovation and entrepreneurship happen at the intersections among fields. The academic diversity of TRSM creates these intersections and therefore opportunities.

The proposed doctoral program will capitalize on the above-mentioned strengths, particularly focusing on a range of topics that offer unique insights into digital enterprises, strategic management, entrepreneurship, real estate and retail and consumer services that will contribute to the thriving innovation ecosystem at Ryerson.

Expand community engagement and city building:

A PhD program in TRSM will allow us to better fulfill our responsibility toward expanding community engagement and city building by contributing to the pool of business faculty available to provide management education, and a highly educated professional workforce and industry leaders that are critical for economic growth and city building. As a doctoral program with a research focus informed by management practice, the engagement of industry, government, and not-for-profit organizations will be important.

In its Academic Plan, Ryerson University explicitly states that it will continue to "strengthen graduate education and implement strategies specifically designed to support the continued development, administration and delivery of graduate education, and enable the strategic expansion of master's and PhD programs." The Academic Plan communicates a desire to increase the number of graduate students entering and completing advanced degrees at Ryerson.

With respect to this goal, the plan states that "Graduate students are enriched by their programs. They develop essential research and professional skills, play an integral and vital role in faculty SRC activities and, in turn, receive mentoring, supervision, training and support. As such, stronger linkages between graduate education and research are central to the long-term success and sustainability of a robust SRC culture at Ryerson."[30]

---

[29] TRSM Accreditation Database, Sedona Systems
[30] https://www.ryerson.ca/provost/academic-plan/

The plan also states that the expansion of master's and PhD programs is needed to "meet the demand for highly qualified personnel in the private, public and not-for-profit sectors." Although doctoral programs will naturally account for only a small portion of the total graduate student body, a PhD program at TRSM is consistent with Ryerson's goals for graduate education.[31]

The TRSM academic plan, translates these university wide goals to the context of the business school. This plan includes a number of goals and tactics relevant to the offering of the PhD program.

TRSM Academic Plan

Strategic Objective 1: Redefining Experiential Learning for the 21st century

The proposed PhD in Management will engage students in experiential learning. TRSM faculty supervisors have a history of collaborative research with graduate students and industry through Mitacs and Ontario Centre for Excellence, for example. Experiential learning would revolve around research opportunities that stay close to our roots and cultural history for developing highly qualified professionals prepared to tackle the complexities of industry and society. Potential partnerships may include the Mitacs Accelerate and/or Elevate programs offering internships to graduate students and postdoctoral fellows from all disciplines to collaborate with industry on research projects. Such programs provide experiential training in research and development through their industry-academic research collaboration. Leadership and business skills training are included in the programs' curriculum.[32] We fully anticipate that the proposed PhD in Management will add value to the learning experiences for TRSM students in current undergraduate and graduate (B. Comm., MBA, MScM, and MHA (CC)) programs, through interaction with high-achieving PhD students as Graduate Assistants in the classroom and Research Assistants in research settings.

Strategic Objective 2: Enhancing Graduate Programs and Research

The groundwork for launching a doctoral program included the revitalization of TRSM's thesis-based Master of Science in Management (MScM) program, and research culture. The revised MScM program admitted its first cohort of 17 students in September 2015, another 25 in 2016, 30 in 2017, and 34 in 2018. With substantive changes to the degree program and amended degree name; impact on enrolment is noteworthy, as this program has seen the largest increase in applicants across all graduate programs at Ryerson.

Since being expanded to all of TRSM in 2015, student intake in the MScM has grown 100%.

Table 1.0: TRSM MScM Student Intake

Entry Year	September 2015	September 2016	September 2017	September 2018
Enrolment	17	25	30	34
Year over year % Increase in Enrolment		47%	20%	13%

Changes made to the MScM enabled a broader range of research areas reflecting all the departments and schools within TRSM to appeal to a larger population of prospective students and involve far more faculty in

---

[31] Ibid

[32] https://www.mitacs.ca/en/programs/accelerate

the graduate programs and supervision roles. The intent of enhancing our graduate programs, including the proposed PhD in Management is to be responsive to market needs, grow our reach in industry and build greater graduate level brand awareness.[33]

Strategic Objective 3: Cultivating our Community Building Reputation

A PhD program in TRSM will allow us to better fulfill our responsibility toward cultivating relationships with community stakeholders. By contributing to the pool of advanced degree holders, the expertise and business skill set acquired will allow TRSM to apply entrepreneurial principles and social innovation to address the social and economic issues facing of our local communities.

Strategic Objective 4: Improving Our Internal Governance, Communications and Structures to Enable Lasting Innovation

With the formation of the TRSM Faculty Council and Graduate Programs Council (GPC) in 2014, academic governance for graduate programs has been strengthened.

Most importantly, the introduction of the PhD will support the TRSM Academic Plan in several ways:

- Develop a research oriented graduate program appropriate for close collaboration with local and regional industry partners.
- Support a rich TRSM history of contributing to the economic and social development of the local community through partnerships with business organizations.
- Create a cadre of graduates with expertise in generating scholarly research and new knowledge in management and equipped with the means to communicate and disseminate this new knowledge through a potential teaching contract. Course instruction may include, but not limited to, spring/summer courses in TRSM Professional Master's Diploma (PMDip) options and TRSM MBA Foundation courses.
- Contribute to the growing number of PhD programs at Ryerson University.

A management school with vibrant graduate programs and revitalized SRC will serve the mission of Ryerson far better than a primarily undergraduate focused Faculty.

1.b.vi.   Program Learning Outcomes and Graduate Degree Level Expectations (GDLEs)

The Council of Ontario Universities has established a framework of Graduate Degree Level Expectations (GDLE)that specify what students should know, and be able to do, after successfully completing graduate degree programs. The GDLEs for doctoral level degrees are represented by the following six categories:

1. Depth and breadth of knowledge
2. Research and scholarship
3. Level of application of knowledge
4. Awareness of limits of knowledge

---

[33] www.ryerson.ca/content/dam/tedrogersschool/trsm-documents/actionplan-2019.pdf

     5. Level of communications skills
     6. Professional capacity/autonomy

The proposed PhD in Management will prepare its graduates for careers in research, teaching and industry and is designed to provide all students (regardless of specialization) with strong training in discipline-specific research, methods, and teaching to set them up for success in the market and throughout their careers. The program is also designed with a flexible structure to facilitate the expansion of other business disciplines in the future. The program will offer four specialization options.

Table 1.1 shows the relationship between the Graduate Degree Level Expectations (GDLEs) and Program Learning Outcomes, with a focus on what is expected of students upon completion of the program. The outcomes are focused on the integration of subject matter and development of solid communication skills.

Table 1.1: Program Learning Outcomes and Graduate Degree Level Expectations (GDLEs)

GRADUATE DEGREE LEVEL EXPECTATIONS (GDLEs)	This degree extends the skills associated with the Doctoral degree and is awarded to students who have demonstrated	Program Learning Outcomes
1. Depth and Breadth of Knowledge	A thorough understanding of a substantial body of knowledge that is at the forefront of their academic discipline or area of professional practice	LO1.a Integrate and critique a broad range of literature in management relevant to chosen area of research LO1.b Identify and appraise controversies in the field of research LO1.c Articulate the broader implications of research within and beyond particular contexts of management
2. Research and Scholarship	a. The ability to conceptualize, design, and implement research for the generation of new knowledge, applications, or understanding at the forefront of the discipline, and to adjust the research design or methodology in the light of unforeseen problems; b. The ability to make informed judgments on complex issues in specialist fields, sometimes requiring new methods; and c. The ability to produce original research, or other advanced scholarship, of a quality to satisfy peer review, and to merit publication.	LO2.a Comprehensively and critically review the literature associated with research topic LO2.b Design and conduct original research according to standards and quality required to satisfy peer review LO2.c Evaluate and articulate the strengths and limitations of relevant potential research approaches in relation to chosen area of study
3. Level of Application of Knowledge	a. The capacity to undertake pure and/or applied research at an advanced level; and b. Contribute to the development of academic or professional skills, techniques, tools, practices, ideas, theories, approaches, and/or	LO3.a Contribute to new ideas, theories, skills, techniques, tools, and/or practices LO3.b Synthesize and integrate existing literature, own findings or both into scholarly activities

	materials.	LO3.c Demonstrate teaching and learning strategies applied to specific instances
4. Professional Capacity/Autonomy	a. The qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex situations; b. The intellectual independence to be academically and professionally engaged and current; c. The ethical behaviour consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and d. The ability to evaluate the broader implications of applying knowledge to particular contexts.	LO4.a Engage with academic and professional organizations to situate and evaluate the implications of existing and created knowledge to specific contexts LO4.b Model/facilitate the development of scholarship in novice and developing practitioners and engage as independent professionals demonstrating autonomous initiative and accountability in complex situations. LO4.c Demonstrate ethical behaviour consistent with academic integrity and the responsible conduct of research
5. Level of Communication Skills	The ability to communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively	LO5.a Communicate complex ideas, issues, arguments and research findings clearly and effectively in both oral and written formats in a manner that is accessible and appropriate to a variety of audiences LO5.b Debate various types of knowledge and application of methods LO5.c Disseminate findings to advance scholarship and knowledge transfer/mobilization
6. Awareness of Limits of Knowledge	An appreciation of the limitations of one's own work and discipline, of the complexity of knowledge, and of the potential contributions of other interpretations, methods, and disciplines.	LO6.a Articulate and propose steps to address limitations of one's own work and discipline, of the complexity of knowledge, and of the potential

| | | contributions of other interpretations, methods, and disciplines.

LO6.b Seek opportunities to collaborate with others, and integrate feedback and new information, to enhance knowledge. |
|---|---|---|

1.c.   Curriculum Overview

The PhD in Management would require the successful completion of nine-one-term graduate courses, passing the candidacy examination and a proposal defense, and completing a dissertation based on independent, original scholarship. See Tables 1.2 and 1.3 for structure and timelines.

The nine one-term courses will be comprised of three core courses, three elective courses, and three required research seminar courses. The three PhD level core courses include new Qualitative and Quantitative Research Methods courses and a new Management and Organization Theory course. Of the three elective courses, one must be taken at the PhD level in the students' proposed area of specialization and two elective courses may be taken from the available master's level electives at TRSM or from graduate level electives offered by other Ryerson University departments. PhD in Management candidates at TRSM can take up to two full-course equivalents outside Ryerson University with the approval of their supervisor, PhD Program Director, Associate Dean, YSGS and host University authorities as appropriate.

The curriculum will also include participation in, and presentations by, PhD candidates in doctoral level research seminars. In these seminars, faculty members and students discuss theoretical and applied research within the area, explicitly focusing on the methodologies that are useful to conduct and disseminate research.

The successful completion of a PhD in Management degree is typically a multi-stage process that includes a series of required and elective courses, a candidacy exam, and the research, writing and defense of a dissertation. Variations exist among programs with regards to the number and types of courses required, however, typically the first two years of a PhD in Management program are devoted to course work and candidacy exam, with the remaining years devoted to research and thesis preparation. Having consulted websites of universities offering doctoral programs across Canada, Table 2.4 offers information about the course requirements in PhD in Management programs in Canada.

The proposed PhD in Management is centred on research on complex management problems in an interdisciplinary context. The courses proposed teach the skills to address complex management issues by taking a system-level approach and by drawing upon resources and ideas from multiple functional areas within TRSM that provide a holistic perspective to defining and solving problems. The proposed specializations offer integrative courses not commonly found in other PhD in Management programs.

Via their program of coursework, students are expected to acquire a solid grounding in the core theoretical paradigms relevant to the field of management and their chosen area of specialization necessary for productive scholarship. The minimum time for the completion of the required coursework (presented in Tables 1.2 and 1.3) is one year (for full-time students), however, following admission to the PhD in Management, the Supervisor/Supervisory Committee will determine (based upon students' academic background and interests) if additional coursework is required. Each student will be expected to develop conceptual and analytical skills appropriate for the evaluation of theories and the analysis of quantitative and/or qualitative data pertaining to their area of research. This may require students to complete additional courses in a major area directed towards the dissertation research.

Given initial enrolment projections, it is unlikely that all specializations will run in the first year of the program. The proposed PhD in Management is comprised of a number of academic requirements that include graduate course work and other academic activities. The proposed PhD specialization courses are a discrete, time-delimited unit of instructional/learning activity identified by a course code, in which students enroll.

These courses may take many forms, and their timing may not always coincide with the normal beginning and end of classes in each semester.

Students of the PhD in Management are required to take one PhD level elective in their specialization but when the elective course has fewer than five candidates enrolled, candidates may substitute the PhD level elective in their specialization with a directed reading course. A Directed Reading course may be taken as a substitute when an on-site classroom course is not offered due to low enrolment.

A Directed Readings course is an opportunity for students to work individually with a faculty member and to earn credit for individually designed content. The instructor of a Directed Reading course and the student will have a written agreement in place that specifies the student's responsibilities for the course but does not require a syllabus. When a Directed Reading course is used in lieu of a program requirement, early interaction with the assigned faculty member will be essential in the development of a mutually acceptable course description. At a minimum, such a description will contain an outline of the study topic, specification of the work to be done and the materials to be read, the credit to be given, the type and frequency of faculty-student contact, and a statement of the evaluative criteria to be used by the faculty member.

Only faculty holding a graduate appointment may direct such a course, and they must hold a faculty appointment in TRSM. In general, both the student and instructor should be on campus and the frequency of their meeting will be consistent with other courses.

The proposed specializations provide an opportunity to differentiate our PhD from others. Over the past decade or so, the government has pursued a differentiation strategy in the post-secondary market with the goal of facilitating quality outcomes that are aligned with the unique strengths of institutions across Ontario.

Students will be required to pass a Candidacy Examination that includes written and oral components. The purpose of the Candidacy Examination is to determine whether candidates have the appropriate knowledge and expertise to undertake a dissertation in their selected field or area of study. It will be in the take-home exam format and include a small number of questions that require the student to demonstrate how his/her dissertation study is situated within the body of integrated knowledge and how it contributes to new discoveries.

Upon successful completion of the Candidacy Exam, candidates may proceed to develop their proposals for dissertation research. Candidates must orally defend the dissertation proposal with members of the Supervisory Committee. Once students have passed the proposal defense, they will be required to undertake an original study. This research will culminate in students writing a dissertation and defending it through a final PhD Oral Examination. Students' dissertations contribute new knowledge, theories and practices to the field of management.

The curricular objectives of the program are to provide students with:

- A foundation in management and organization theory and research methods
- Comprehensive knowledge in a specialized area within management
- The ability to use management theory and research methods to understand and address problems faced by businesses, non-profits, and governments
- The skills necessary to undertake original research and make a significant contribution to the body of management knowledge
- The ability to read and critique professional and academic literature

- Professional writing and presentation skills

These objectives are accomplished through coursework, significant faculty-student interaction, and the in-depth analyses of problems in the candidacy exam, and the completion of a dissertation.

Students will have the option of presenting their dissertation as either a single piece of coherent, original work (monograph) or as a compilation thesis, which typically is comprised of a collection of integrated, peer-reviewed papers that are book-ended by chapters drawing the papers together.

Course Descriptions of Proposed New Courses

Advanced Research Methods Course: Qualitative

This course will examine qualitative research methods as they apply to business and management studies. Topics will include: historical roots, philosophical assumptions, theoretical framework, and implications of different qualitative approaches; research design; data collection, analysis, and interpretation strategies; critical evaluation of qualitative studies, and research grant writing for a qualitative study. Students will develop their capacity to conduct qualitative research through hands-on projects. This course covers the key concepts and methods of qualitative research. This includes the collection and analysis of qualitative data, writing and discussing results, and preparing a qualitative grant application. Hands-on activities will be provided to demonstrate the concepts, practice and evaluate the various methodologies, and learn to use the common tools and techniques for analyzing qualitative data.

Advanced Research Methods Course: Quantitative

This course explores various quantitative analytical techniques, which will allow students to design research projects appropriately and conduct the necessary quantitative analysis. During empirical studies, this is paramount importance to understand the benefits and drawbacks of various techniques so that a student can choose appropriate techniques to address the research questions being tested. In this course, the focus will be on gaining an understanding of what the various statistical techniques can do during a research study, what is the most effective technique to be able to test the research questions, how to apply them and interpret the results.

Management and Organization Theory

This course focuses on developing a critical understanding of management and organization theories. The course will encompass a survey 24 selected theories from the list of 40 (See course outline in Appendix B). Each week the professor will select two theories from the list for systematic analysis of their ontological assumptions, knowledge interests and epistemological implications. For each of the two theories, two empirical research papers will be reviewed and critically analyzed to enable the students to understand the special challenges of operationalizing the theories in organizational research. Students will be expected to write critical summaries of the readings and selected research to enable the development of a foundational understanding of the subject matter that can be operationalized in empirical research. For the final project, each student will conduct a systematic literature review of a selected area.

Research Seminars

Research Seminars are Pass/Fail courses that require continued registration throughout a student's PhD program. The purpose is to expose students to current research in the Ted Rogers School of Management

including the paradigmatic approaches and methodologies employed to address management research questions. The exposure will aid in the development of the students' own research ideas and implementation. To pass the course, each student is required to attend seven research presentations in year 1 (years 1 and 2 for part-time students), give one presentation in years 2 and 3 (years 3 and 4 for part-time students), and give one presentation in years 3 and 4 (years 5 and 6 for part-time students).

Research presentations will be facilitated via the TRSM Dean's Research Seminar Series and a TRSM research centre/institute closely aligned with the students' area of specialization.

Specialization Electives – New

Digital Enterprise and Social Media Elective

This course aims to introduce students to the overarching concepts, ranging from technical to managerial, that are critical for the functioning of the digital enterprise, the modern networked organization driven by digital technologies and data. After a high level coverage of these concepts, we will focus on seminal theories that attempt to explain how individuals, organizations, and society interact with information and communication technologies and the dynamics caused by technological progress.

Real Estate Studies Elective

This course presents various research topics in the growing areas of real estate. The primary objective of the course is to provide a solid foundation and to expose students to the research topics in this field. It should prepare students to develop their own research agenda or pursue their own research interests that can be published in top economics and finance journals. As a result of the rapidly-growing field, the reading list is evolving and may be supplemented. Papers selected include both published and working papers and cover long-standing and current research questions.

Retail and Consumer Services Elective

This course explores theories and topics related to retail and consumer behavior research. The course comprises of intensive readings, critical analyses of published research papers, and developmental writing. The course provides a survey of classic papers as well as recent theoretical developments in this topic domain. Topics addressed in this course are designed to complement other PhD seminars, while introducing everyone to the topic domain. Opportunities will be created throughout the course to help students develop a deeper understanding of the field and to apply these ideas to develop their own personal research.

Strategy, Innovation, and Entrepreneurship Elective

This course explores theories and topics related to entrepreneurship and strategy research. The course comprises of intensive readings, critical analyses of published research papers, and developmental writing. The course provides a survey of classic papers as well as recent theoretical developments in this topic domain. Topics addressed in this course are designed to complement other PhD seminars, while introducing everyone to the topic domain. Opportunities will be created throughout the course to help students develop a deeper understanding of the field and to apply these ideas to develop their own personal research. Students will have the opportunity to interact with Ryerson's innovation and entrepreneurship ecosystem.

Directed Reading Course

This course gives students space to study literature that explores the full theoretical and contemporary scope of readings pertaining to a proposed field of specialization. Under the guidance of the professor, the student

will select a topic and investigate the area of specialization. The course will involve an in-depth review of the literature in a particular area guided by a member of the faculty with whom the student will meet regularly to discuss the readings. Students must seek out the approval of a faculty Supervisor prior to enrolling in this course.

TRSM Graduate Level Electives

In addition to one elective course in the specialization area at the PhD level, students will complete two additional elective courses (depending on specialization). Electives may be selected from graduate level courses offered by TRSM and/or from courses offered by other departments at Ryerson University. Students will select electives in consultation with their Supervisor/ Supervisory Committee.

The following is a list of graduate level electives available from the TRSM course bank:

MB8205	Global issues
MT8808	Consulting Skills
MT8327	Data Management and visualization
MT8328	Supply Chain Analytics
MT8312	Business Analytics for Managers
MT8313	Social Media Analytics
MT8220	Advanced Project Management
MT8809	Venture Financing and Planning
MT8810	Product Development, Commercialization
MT8416	Special Topics Media Management
MT8426	Sports Media & Marketing Business Analytics
MB8304	Organizational Change
MB8711	Negotiation and Conflict
MB8502	Retail and Commercial Development
MB8506	Real Estate Finance
MB8507	Special Topics Retail and Commercial Development
MB8402	Brand Management
MT8425	Digital Media in Practice
MT8925	Executive Leadership for CIOs
MT8911	Technical Foundation for Managers
MT8913	Security and Privacy Management Fundamentals
MT8914	Law, Compliance, Audit and Certification, Computer Crime
MT8931	Corporate and Non-Profit Governance
MT8932	Alternative Perspectives on Finance
MT8933	Investing for Impact
MT8934	Financing and Assessing Social Impact
MH 8001	Strategy in the Home and Community Care
MH 8002	Comparative Health-Care Policy
MH 8003	Management in Home and Community Care
MH 8004	Performance in Home and Community Care
MH 8005	Information Technology for Home and Community Care

Candidacy Exam

Candidacy exam usually takes place in years 2 and 3 (years 3 and 4 for part-time students) after students complete all their coursework. It includes two parts: a written exam and an oral exam. The written exam includes essay type questions that examine the candidate's integrated knowledge learned through the required and elective courses and the candidate's preparedness for conducting research in the chosen field of specialization. It will be in the take-home exam format and assesses the student's ability to situate his/her dissertation research and how the dissertation research will contribute to the management field. The oral exam is held after the written exam and the objective is to further evaluate the candidate's ability to carry out his/her dissertation research in the chosen academic field of specialization.

Proposal Defense

The proposal defense is held after the candidacy exam. Its objective is to ensure that the candidate's research plan for investigating a proposed research question is complete and academically meritorious. Students work closely with their supervisory committee in determining the composition of the dissertation proposal.

Dissertation

The Dissertation portion of the program primarily consists of individual research, under the supervision of a qualified faculty member and committee who bring a broad range of expertise to the student's research topic. Dissertations should exhibit substantial evidence of original scholarship of high standard. The dissertation may be in the format of a monograph or three publishable academic journal papers.

Candidates defend their dissertation to an examining committee as per Ryerson University guidelines for examination and assessment.

Program length is four years (full-time); six years (part-time).

1.d. Curriculum Structure

As can be seen in Tables 1.2 and 1.3 both full and part time options have a coursework stage and a research stage followed by the dissertation.

Table 1.2: Program Curriculum Structure and Timeline – Full-time

Coursework Stage	Research Stage	Dissertation Stage
Year 1	**Years 2 & 3**	**Years 3 & 4**
Required courses (3): Advanced Research Methods Course: Qualitative (new) AND Advanced Research Methods Course: Quantitative (new) AND Required Management and Organization Theory (new)	Candidacy Exam Proposal Defense	Dissertation Research: Original Scholarship that contributes to knowledge and practice Single piece of work or a compilation thesis (series of integrated manuscripts)
Research Seminars (P/F) with required attendance	Research Seminars (P/F) with required presentation	Research Seminars (P/F) with required presentation
Required Elective Courses (3) At least one elective course must be taken from the PhD electives course list and in the area of specialization (new) Note: Students may register for a directed reading course under the supervision of a faculty member. Generally students pursue directed readings on a special topic of interest for which there is no timetabled	Dissertation Research	Dissertation Defense/ Final Examination

course in the curriculum.		

Table 1.3: Program Curriculum Structure and Timeline – Part-time

Coursework Stage	Research Stage	Dissertation Stage
Years 1 & 2	Years 3 & 4	Years 5 & 6
Required courses (3): Advanced Research Methods Course: Qualitative (new) AND Advanced Research Methods Course: Quantitative (new) AND Required Management and Organization Theory (new)	Candidacy Exam Proposal Defense	Dissertation Research: Original Scholarship that contributes to knowledge and practice Single piece of work or a compilation thesis (series of integrated manuscripts)
Research Seminars (P/F) with required attendance	Research Seminars (P/F) with required presentation	Research Seminars (P/F) with required presentation
Required Elective Courses (3) At least one elective course must be taken from the PhD electives course list and in the area of specialization (new) Note: Students may register for a directed reading course under the supervision of a faculty member. Generally students pursue directed readings on a special topic of interest for which there is no timetabled course in the curriculum.	Dissertation Research	Dissertation Defense/ Final Examination

1.e.   Program's Relationship with Other Ryerson Programs

1.e.i.   Overlap and Integration with Other Programs

Synergy with Other Programs

The proposed PhD in Management will add value to the research opportunities for TRSM students in our current undergraduate and graduate (e.g., B. Comm., MScM, MBA, and MHA(CC)) programs. A number of TRSM faculty look to other graduate programs to recruit doctoral students, such as Environmental Applied Science and Management (EnSciMan), Communication and Culture (ComCult), Engineering, and Computer Science, based on their disciplinary backgrounds. The proposed PhD in Management program introduces opportunity to further develop the capacity of management to contribute to those programs and other relevant ones at Ryerson.

Students completing the MScM represent a potential pipeline of candidates for the proposed PhD in Management, and would benefit from interaction with doctoral students on research teams led by mutual supervisors. Research Seminars would be a point of integration between the master's and doctoral programs.

Integration/Similarity with other Programs

There is no similar doctoral level degree program at Ryerson University. TRSM offers a Master of Science in Management (MScM) where students develop their program of study and thesis research working with a faculty supervisor from TRSM.

One program with Management connections to the proposed PhD in Management is the interdisciplinary EnSciMan PhD program offered by Ryerson. The EnSciMan program explores the full range of environmental disciplines including science, engineering, business, architecture, planning, public health and the social sciences. Students of the EnSciMan program do not take any courses from TRSM, however students are required to conduct advanced research on a topic related to one (or more) of the following specialty areas: environmental applied science, policy and management. Over the years, students of the EnSciMan program have been supervised by several faculty members from TRSM.

The areas of specialization in the proposed program and EnSciMan differ in that the curriculum in the EnSciMan program requires individuals to study in two fields:

1. Environmental Science and Policy, and
2. Environmental Management and Decision Making

With very different specializations and target students, the proposed PhD in Management does not require environmental science knowledge competence. The focal point is management not environmental science leading to different academic and professional career paths.

The EnSciMan program was developed to clearly link the environmental sciences and the management and decision-making disciplines in order to provide students the opportunity to integrate the two areas of study in the classroom and their research. The emphasis is on applied research for resolving problem in environmental protection, conservation and sustainable development.[34]

---

[34] https://www.ryerson.ca/graduate/programs/ensciman/

There are no planned or current programs at Ryerson University that would overlap with the proposed TRSM PhD in Management program.

1.f.   Provost's Authorization to Proceed

The Provost provided a letter authorizing TRSM to proceed in the developing of a proposal for the proposed PhD in Management on June 19, 2018.

In this letter, the Provost shared a number of key issues needing to be addressed by way of this proposal and include:

- reminder of the program's obligation to develop clearly defined learning objectives
- provide further justification for the proposed specializations and consider whether these specializations are the most appropriate way to structure the program
- clarifying courses associated with the proposed specializations, considering the addition of more quantitative courses (particularly statistics), ensuring that students receive sufficient grounding in philosophical foundations, and considering the extent to which management theory must be addressed
- clarify why the degree is best positioned as a PhD, rather than a DBA
- further explain the potential career pathways for the program's graduates
- clarify and better justify the admission requirements
- provide further detail on the potential funding sources and levels of anticipated funding for students
- consider the potential contributions to the program of Ryerson faculty members from outside of TRSM
- ensure the proposal clarifies the other issues raised during the public posting of the LOI

TRSM is delighted that many Ryerson University colleagues have demonstrated their support for the proposed PhD in Management program. Several respondents to the initial Letter of Intent indicated very strong backing for moving forward with the program.

Additionally, several colleagues shared a number of opportunities to advance the proposal for the PhD in Management. All comments were carefully considered and we truly appreciate all the constructive comments. We have adopted many of the suggestions in this revised proposal. With a large number of comments received our point-to-point responses can be found in Appendix C.

The full authorization letter and a summary of responses to the issues raised can be found in Appendix C.

2.   PROGRAM DETAILS

2.a.   Alignment with Institution's Plans

2.a.i.   Consistency with Academic Plans

The PhD in Management program was proposed in TRSM's Academic Plan 2014 – 2019, and fits with Ryerson's goals to develop new programs and initiatives that build on academic strengths, respond to societal needs and bolster the University's research intensity.

In a world characterized by increasingly disruptive and rapidly changing forces, organizations need the capacity to analyze, strategize, and act on the opportunities and challenges encountered. At the heart of this capacity are people with both the intellectual and practical knowledge to understand the environment in which organizations operate and to develop and deliver solutions that address the pressures faced. It is well recognized that there is a shortage of highly skilled employees capable of doing deep analysis of complex business problems. The program proposed is designed to develop such people.

Ryerson's mission statement shows a deep commitment to teaching, research, community outreach and engagement, and promotes the economic, social, cultural progress for the nation and the world. This mission is achieved by producing graduates competitive in the global economy, supporting a continuous search for new knowledge and solutions, and maintaining a rigorous focus on academic excellence, particularly in the areas outlined in the Strategic Mandate Agreement.[35]

TRSM and the proposed PhD in Management program support a number of the signature areas of distinction outlined in the SMA including Digital Economy; Innovation and Entrepreneurship; and Management and Competitiveness. A PhD in Management will help Ryerson and TRSM accomplish it goals by offering a unique suite of program specializations that support the programs of identified strength and expansion in the SMA.

Since the launch of graduate degrees in 2007, TRSM has had a renewed focus on research to complement its success in imparting undergraduate business education. The renewed focus on research got a boost when TRSM was accredited by AACSB. To maintain accreditation, TRSM associated faculty members are required to generate scholarship in a variety of formats, including top-tier journal publications. Unlike other disciplines, business schools are subject to various rankings, which influence their reputation and the ability to attract faculty, students, and philanthropic interest.

Research excellence and productivity are key to the success of TRSM. The faculty's SRC plan identifies improving research productivity and excellence as a desired goal. Within the framework of the TRSM SRC and Academic Plan, the specializations will support the primary initiatives of TRSM as a recognized leader in societally relevant, rigorous research with local, national, and global impact. There is no doubt for example that the fields of retail and real estate are prevalent in the local, the national, and the global realm; the specializations in the PhD program are properly positioned to drive TRSM's research priorities.

The specializations will bring talented scholars to TRSM who, in collaboration with their faculty supervisors, will generate new scholarship to find solutions to the increasingly complex challenges facing markets in local and global contexts.

A focus on Innovation and Entrepreneurship is one of Ryerson's core claims to differentiation with significant mention in both the University's and TRSM's Academic Plans and in our SMA submissions.

The Academic Plan states:

- Ryerson recognizes that creativity and innovation should not be contained. Its diverse learning community collaborates across disciplines and with external partners, taking smart, calculated risks to turn promising ideas into tangible solutions, products, processes or services that make a positive and meaningful impact upon society.
- For Ryerson, innovation means encouraging its academic community to challenge the status quo with new solutions and to apply new ways of thinking that transform the world. As one of the world's most

---

[35] https://www.ryerson.ca/provost/academic-plan/

diverse and urban universities, it also recognizes that innovation depends on diversity of experience and thought.
- Through its programs and zone learning -- a pioneering approach to experiential learning that is transforming entrepreneurial education in Canada -- Ryerson is shaping the next generation of change makers and advocacy leaders, innovators and entrepreneurs

The TRSM Mission as stated in its Academic Plan includes the phrase "We shape socially conscious leaders with an entrepreneurial orientation and we promote impactful research that has local, national and global relevance". In its current Strategic Mandate Agreement with the Province, Ryerson states that "The Digital Economy, Innovation, and Entrepreneurship" is an area of strength and that "Innovation and Entrepreneurship" is a targeted area for program growth.[36]

A PhD with its proposed specializations will support these high-level objectives and goals both at the University and at the Faculty level.

As a maturing research institution, doctoral education is at the heart of Ryerson's mission and its ambition to be a leader among comprehensive universities across Canada. The proposed program represents a commitment to, and an investment in, research excellence thereby generating positive reputational capital. Such a commitment and a strong standing in the academic community are crucial in the effort to attract and retain high-achieving faculty, which is another stated initiative toward accomplishing the goals in TRSM's Academic Plan. It is often the case that upon entering the job market, graduates of high-ranking business doctoral programs and experienced business faculty at high-ranking institutions will dismiss business schools that do not offer a PhD program as potential employers, labeling them "teaching schools" that do not value research. Offering a doctoral program in the TRSM will broaden the pool of high-achieving faculty available to TRSM and enhance our ability to attract and retain such faculty. While TRSM faculty are already highly productive in terms of scholarship, the investment in new faculty (i.e., collaborators), research resources (e.g., databases), and graduate assistants associated with the PhD program will help to increase the quality and quantity of research output from the Faculty further enhancing our standing in the academic community.

The PhD in Management program will increase the research intensity of TRSM, and, in turn, that of Ryerson University. Having doctoral level students doing dissertation research will give faculty a cadre of talented students who would work collaboratively with faculty to develop research proposals and conduct more intensive scholarly research beyond the level normally expected in MScM.

Many faculty members in the School, even if they have funding, cannot find suitable research students who can dedicate time to pursuing a funded research program. Students in the MScM program do not have sufficient research training and capacity to carry out and support faculty research, nor do they stay in the program long enough to participate in faculty research projects. PhD students will give faculty the opportunity to draw on the creativity, research expertise, and enthusiasm of these students to infuse new ideas and energy into the research enterprise.

PhD students will be able to work closely with faculty supervisors and take advantage of funding opportunities internally and externally to develop their own research programs. The research seminars will help to build knowledge of complex managerial issues and provide insight into how to frame and tackle these issues from a research perspective. Seminars in research methodology will provide the knowledge needed to craft the appropriate research design and carry out the data gathering and analysis. Students will make presentations

---

[36] https://www.ryerson.ca/tedrogersschool/about/academic-plan/

in class and other venues. This will help to develop their ability to communicate research ideas and findings in clear and understandable ways.

At a broader level, we believe that great universities have great business schools. Virtually every discipline in a university has some business application. In addition to contributing to knowledge generation through scholarship activities, business schools provide value to a university in multiple ways through their connections with the business community (e.g., fundraising, co-op/placement of graduates, etc.). Accordingly, Ryerson benefits significantly in terms of the advancement of knowledge, collaboration with other Faculties on campus, and external connections from having a highly-respected business school.

As a final point, we believe that establishing a PhD program will contribute to the TRSM mission, particularly the provision of "recognized research-based education" to our students. First, we believe that good researchers make good teachers. Therefore, we expect that the program will add value to the classroom experience for students in our current undergraduate and graduate programs, partially due to current faculty bringing their research into the classroom and partially from the addition of high-achieving new faculty who will do the same. Second, the positive reputational capital generated by the PhD program will enhance the international recognition part of the mission by raising the standing of TRSM in the academic community. See Section 1.b.v: Program Alignment with Academic Plan(s).

2.a.ii.   Graduate Degree Level Expectations and Learning Outcomes

As shown in Table 1.1, in section 1.b.vi, the program requirements have been designed to be consistent with GDLEs. Each of the dimensions is addressed.

Program requirements for the proposed PhD in Management emphasize student engagement in research throughout their time in the degree program, faculty mentoring, faculty-student collaboration in research, and a strong multidisciplinary perspective that provides students with the theoretical and methodological depth needed to pursue dissertation research.

Students will acquire the critical thinking and research skills to become independent scholars, at a level comparable to those who obtain faculty positions at universities. Students will study advanced required coursework in the theoretical literatures that underpin management practices, including advanced coursework in research methods in quantitative methods to qualitative methods.

The PhD coursework is designed to produce graduates with rigorous research and analytical skills, who are exceptionally well-equipped to go onto careers in the academy, or employment in industry and the public service. The PhD program provides a period of sustained in-depth study of a specific topic, an environment that encourages the student's originality and creativity in their research and skills to enable the student to critically examine the background literature relevant to their specific research area. The program will offer a series of research seminars that will create an environment in which students can develop skills in written work, oral presentation and publishing the results of their research in high-profile scientific journals, through constructive feedback of written work and oral presentations

Students will master the knowledge of one specialization at the breadth and depth that is characteristic of being able to make scholarly contributions to the discipline. The specialization will be chosen by the student under the guidance of and in consultation with their supervisor. Students will master a specific set of methods appropriate to their dissertation, with the depth needed to produce methodologically rigorous research.

Some candidates may be expected to exceed the minimum two courses of advanced methods. Specific courses appropriate for the methods requirement will be selected in consultation with the Supervisor.

The ability of candidates to communicate their ideas and data concisely and cohesively via oral presentations is a valuable and important skill. In order to facilitate the development of this skill, students in the program are required to attend three seminars and present at two of the seminars as part of their degree requirements. All students must attend relevant seminars, present in at least two seminars, and comply with any other prescribed conditions. The purpose of the research seminars is to stimulate critical, constructive and generous discussion of PhD students' research and writing in progress, to continue cultivating a lively and supportive intellectual community. Students will share aspects of their research as it develops, which will encourage them to synthesize the evidence they have gathered thus far, thereby helping them to marshal their materials into a manageable form as their research proceeds. Further, students will receive feedback from others interested in their area of study, assisting them in considering aspects they might not otherwise have addressed.

The objective of the Candidacy Exam is to determine that the student is able to undertake the work of the dissertation, by integrating the theoretical concepts and the methodological approaches in their field. It provides evidence that the student is able to critically evaluate current literature in the discipline, synthesize ideas within the field, and demonstrate a comprehensive understanding of techniques critical to conducting research in the field. Student must be able to communicate clearly and effectively to audiences.

The dissertation presents a major piece of guided independent research involving a literature review and an appropriate form of critical analysis of sources of primary and/or secondary data. The dissertation must show evidence of critical analysis and synthesis of existing body of literature and appropriate use of advanced research techniques to create new knowledge and contribute to discoveries. On satisfying the requirements of the dissertation, students will have the knowledge and skills to independently plan, execute, and disseminate a research project relevant to management disciplines.

Assurance of Learning
TRSM places a significant emphasis on learning outcomes in our graduate programs. Both the Assurances of Learning (AoL) as part of the AACSB (Association to Advance Collegiate Schools of Business) accreditation review, and the GDLEs are a baseline to assess whether graduate programs remain current with respect to expectations and societal need, and provide students with the required skills for success after graduation. Both the specific metrics associated with the GDLEs and AoL were influenced by TRSM's academic plan. Existing quality assurance practices are well developed within TRSM and the appropriate assessment of learning outcomes will be applied to this new degree.

Program Learning Outcomes
LO1.a Integrate and critique a broad range of literature in management relevant to chosen area of research
LO1.b Identify and appraise controversies in the field of research
LO1.c Articulate the broader implications of research within and beyond particular contexts of management

LO2.a Comprehensively and critically review the literature associated with research topic
LO2.b Design and conduct original research according to standards and quality required to satisfy peer review
LO2.c Evaluate and articulate the strengths and limitations of relevant potential research approaches in relation to chosen area of study

LO3.a Contribute to new ideas, theories, skills, techniques, tools, and/or practices
LO3.b Synthesize and integrate existing literature, own findings or both into scholarly activities

LO3.c Demonstrate teaching and learning strategies applied to specific instances

LO4.a Engage with academic and professional organizations to situate and evaluate the implications of existing and created knowledge to specific contexts
LO4.b Model/facilitate the development of scholarship in novice and developing practitioners and engage as independent professionals demonstrating autonomous initiative and accountability in complex situations.
LO4.c Demonstrate ethical behaviour consistent with academic integrity and the responsible conduct of research

LO5.a Communicate complex ideas, issues, arguments and research findings clearly and effectively in both oral and written formats in a manner that is accessible and appropriate to a variety of audiences
LO5.b Debate various types of knowledge and application of methods
LO5.c Disseminate findings to advance scholarship and knowledge transfer/mobilization

LO6.a Articulate and propose steps to address limitations of one's own work and discipline, of the complexity of knowledge, and of the potential contributions of other interpretations, methods, and disciplines.
LO6.b Seek opportunities to collaborate with others, and integrate feedback and new information, to enhance knowledge.

With respect to GDLEs, gaining a breadth and depth of knowledge is mapped to core courses as presented in Table 2.0. Overall, both the learning objectives and the courses show a sound relationship to the GDLEs.

Since the inception of the TRSM Graduate Program Council (GPC), curriculum is overseen by the Curriculum Committee. Representatives of TRSM and its GPC participate on the YSGS Council, which oversees new program proposals and major curriculum changes to ensure quality programs and course offerings at the doctoral level.

Table 2.0: Graduate Degree Level Expectations and Courses

GDLEs	Depth and Breadth of Knowledge	Research and Scholarship	Level of Application of Knowledge	Professional Capacity/Autonomy	Level of Communication Skills	Awareness of Limits of Knowledge
Core Courses						
Advanced Research Methods – Qualitative	√	√	√	√	√	√
Advanced Research Methods – Quantitative	√	√	√	√	√	√
Management and Organization Theory	√	√	√	√	√	√
Research Seminars	√	√	√	√	√	√
Candidacy Exam	√	√	√	√	√	√
Dissertation	√	√	√	√	√	√
Specialization Courses						
Digital Enterprise & Social Media	√	√	√	√	√	√
Real Estate	√	√	√	√	√	√
Retail and Consumer Services	√	√	√	√	√	√
Strategy, Innovation & Entrepreneurship	√	√	√	√	√	√

| Directed Reading Course

Note: Students may register for a directed reading course under the supervision of a faculty member. Generally students pursue directed readings on a special topic of interest for which there is no timetabled course in the curriculum.	√	√	√	√	√	√

2.a.iii.   Degree Nomenclature

The proposed degree is a PhD in Management. The program is named according to the broad discipline of Management to which the program belongs. The program nomenclature will be easily recognizable by prospective students, employers and other stakeholders. The PhD credential demonstrates mastery of the field and ability to conduct independent research.

2.b.   Admissions

2.b.i.   Admission Requirements

The admission committee will consider all aspects of the applicant's academic and professional backgrounds, with the goal of selecting students who are most likely to succeed in their studies/research and make a significant contribution to TRSM's research program. The review process will also suggest possible preparatory and other requisite courses that the student may need to take to satisfy all demands of the program. Admission into the PhD in Management program will be judged primarily on the applicant's potential to undertake research successfully and his/her prospects for completion of the program. Applicants will submit a research proposal statement on applying to the program.

Faculty strengths and interests will be highlighted early in the program for each incoming cohort. In addition, incoming students will be asked to identify proposed areas for research and a potential supervisor as a part of the admissions process. Attempts will be made to match these interests with faculty interests as early as possible.

Ryerson University Policy 164 stipulates that in some graduate programs, a student may transfer from a Master's program to a Doctoral program without completing the Master's degree.[37]

Students enrolled full-time in the MScM program at TRSM, may be permitted to transfer into the PhD program, without completing the master's thesis, provided they meet the following conditions:

- completion of all course requirements for the Master's degree with a minimum 3.67 GPA
- have demonstrated exceptional research potential
- make a formal application for admission to the PhD program no later than the third term of initial registration in the MScM program
- GPD and supervisor or Supervisory Committee's permission

Note: A student who transfers from a Master's program to a Doctoral program may not transfer back to the Master's level nor receive a Master's degree in that program.

Ryerson University has established the following general PhD admission requirements:

The minimum grade requirement for admission consideration to a master's program is a 3.0/4.33 (B or equivalent) in the last two years of study within a four-year undergraduate (or equivalent) bachelor's degree. For doctoral studies, students must have achieved a minimum of 3.33/4.33 (B+ or equivalent) in their master's program.[38]

---

[37] https://www.ryerson.ca/content/dam/senate/policies/pol164.pdf
[38] https://www.ryerson.ca/graduate/future-students/apply/requirements/

Additionally, to gain admission to graduate programs in Management/Business Administration, applicants are expected to take a Graduate Management Admission Test (GMAT) and/or a Graduate Record Examinations (GRE). There is no established minimum score for the GMAT and/or GRE however; test results will be an important part of applicants' profile.

The GMAT (Graduate Management Admission Test) is a 3½-hour standardized exam designed to predict how test takers will perform academically in Management/Business Administration programs. About two-thirds of the 1,900 plus graduate business schools around the world require GMAT scores for admission, with an increasing number of schools accepting the GRE General Test scores as an alternative to GMAT scores. Upon reviewing the admission requirements of 22 PhD in Management programs across Canada, 18 institutions require a GMAT/GRE. The GMAT seeks to measure four broad skill areas: analytical writing, quantitative reasoning, verbal reasoning, and integrated reasoning (which embraces analytical, quantitative, and verbal reasoning).

In repeated research studies, GMAT scores have been found to be an extremely accurate predictor of academic success in graduate management education programs. Unlike grade point averages, which vary according to the grading standards of each school, GMAT scores are based on the same standard for all test takers.

Undertaking a PhD is clearly about producing excellent research - but it is also about developing a candidate's professional capabilities. TRSM wants to recruit quality PhD students. This is essential to the success of the student, and to give them the best possible chance of completing on time and with good results. The admission criteria established is intended to gauge an applicant's chance of success. The current selection criteria are intended to identify students who have a strong background in the discipline and demonstrated research readiness or research capability.

2.b.ii.   Calendar Admission Requirements

Full-time and Part-time applicants seeking admission to the PhD in Management program must have:

- Master's degree from a recognized university*
- GPA = 3.33/4.33 (B+ or equivalent) in a master's program
- Demonstrated graduate level research capability and/or potential (e.g., Thesis, MRP, Peer Review Journal article)
- Knowledge of research methods prior to application as evidenced in their transcripts. (If this knowledge is not evident, applicants must successfully complete a research methods coursework equivalent to MT8103[39] and MT8104)[40]
- Two reference letters at least one of which is from a former professor familiar with the applicant's research abilities and/or potential
- A statement of intent (research interest)
- Faculty Supervisor Review: Applications that meet the admission criteria will be reviewed by potential

---

[39] Applied Research Methods I - Students are introduced to quantitative and qualitative research techniques, with particular emphasis on their application to the field of management.

[40] This course is a continuation of MT8103. In this course, students will refine their research question, develop expertise in the specific methodology to be used for their thesis research, and will develop a research proposal.

supervisors identified in the applicant's statement of interest
- Interview: An online or in-person interview may be required
- Appropriate/approved Graduate Management Admission Test (GMAT) and/or a valid Graduate Record Examinations (GRE) score.
  - Under exceptional circumstances or where an applicant possesses an MScM from TRSM, requests for GMAT/GRE waivers for admission may be considered at the discretion of the Program Director and only if the applicant can provide sufficient evidence of academic ability
- Identification of a confirmed supervisor

Applicants with a Master's degree should have acquired the knowledge and associated skills, in particular, with research methodology and processes. Requiring applicants to have a Master's degree will serve as a foundation in which all PhD candidates will have at least minimum knowledge and graduate experience, upon which to build work towards the completion of their doctoral degree.

*If the applicant does not hold a research-based master's degree and/or the degree is in an unrelated field, additional research and/or foundational management coursework may be required. The practice is that TRSM will extend a conditional offer of admission to the PhD in Management applicant who does not quite meet the minimum course requirements set in the admission requirements. Upon successful completion of the prescribed terms of study, the student will proceed directly into the program. Depending on the courses required by the student, the additional time is expected to not exceed a one a period.

Students admitted with conditional admission course requirements are not allowed to make academic progress toward their PhD in Management degree before they successfully complete the course work outlined by the Evaluation Committee.

English Proficiency: If applicants have not completed two or more years, full-time, at a Canadian university or a university at which English is the primary language of instruction, or have not completed a graduate degree at a university where English was the primary language of instruction, they will be required to provide certification of English language proficiency through one of the accepted examinations listed below. Scores are valid for two years from the test date.

Minimum English Proficiency Requirements for current TRSM Graduate Degree Programs (MBA, MBA-MTI, MScM): TOEFL (IBT) 100; IELTS ACADEMIC 7.5; MELAB 90; PTE 68.

2.b.iii.   Admission Requirements and Student Achievement of Learning Outcomes

When considering program specific admission requirements, knowledge, skills, and competencies consideration was given to how the presence of the indicated attributes or achievements will be fairly assessed toward successful program completion.

Meeting the minimum requirements of the posted admission criteria to the PhD does not guarantee admission. Applicants interested in this program may be required to meet individually with an admissions committee and program faculty in person or via teleconference technology to ascertain if their goals can be met by the program. Prospective students will demonstrate substantial comprehension of key principles related to required courses, and will be able to demonstrate the ability to synthesize, integrate, and analyze research literature. Communication skills will also be assessed at the time of application.

The learning outcomes associated with this program require an ability for students to demonstrate at the time of admission an ability to review the literature associated with research, conduct research according to standards and quality and communicate ideas, issues, arguments and research findings clearly and effectively in both oral and written formats in a manner that is accessible and appropriate to a variety of audiences.

2.b.iv.   Alternative Requirements (if applicable)

Under exceptional circumstances, TRSM will allow admission directly into the proposed PhD program on the basis of an appropriate bachelor's degree from a recognized university. Applicants are expected to be of exceptional promise and demonstrate superior academic performance.

Where an applicant is permitted direct entry from a bachelor's degree to the PhD program, the academic requirements for admission will be as follows:

- An appropriate bachelor's degree, or its equivalent from a recognized university, with at least an A average in courses in the relevant discipline
- Demonstration that the applicant is capable of independent research at an advanced level in the subject matter of the relevant program
- At least two strong supporting letters of recommendation attesting to the applicant's research potential
- Other qualifications as may be specified by the Admission Committee

A candidate accepted on the basis of a bachelor's degree will be admitted to a 5-year PhD program with a 7-year time limit for completion of all requirements for the degree. We expect that this type of student would be admitted on an exceptional basis.

When TRSM allows direct entry from a bachelor's degree to the PhD in Management program, the Supervisory Committee will specify the program requirements for such students, which will include a substantial portion of the requirements for TRSM's MScM degree, together with the program requirements for the PhD program.

The Supervisor/Supervisory Committee will closely monitor the progress of direct entry students during the first year of the PhD program. In particular, a minimum number of courses to be completed during the first year of the program, together with an acceptable minimum grade or average for those courses, will be specified.

2.c. Structure and Graduate Degree Level Expectations

The curriculum and its associated outcomes are in line with PhD degree level expectations of the Ontario Universities Council on Quality Assurance. At the program and course level, learning outcomes help define the destination for student learning, and in turn, allow students to be aware of what is expected of them. The learning outcomes encompass a broad base of competencies and students are expected to demonstrate these competencies throughout their study in this program.

The program curriculum is designed to advance students' knowledge and professional skills in fundamental and applied areas of Management beyond the graduate level and also to provide them with opportunities for professional development through engaging in complementary modes of delivery (research seminars) that enhance enabling competencies required by the GDLEs. The program is research-focused, but will take advantage of course-based activities to reinforce technical and professional development, such as reports,

oral presentations, examinations and many opportunities for face-to-face communications to achieve desired learning outcomes.

Since the inception of the TRSM Graduate Program Council (GPC), curriculum is overseen by the curriculum committee. Representatives of TRSM and its GPC participate on the YSGS Council, which oversees new program proposals and major curriculum changes to ensure quality programs and course offerings at the graduate level.

The mapping of the GDLEs to learning outcomes in Table 2.1 confirms that the structure of the curriculum is sufficient to meet the GDLEs at the PhD level. The course summaries provided below are excerpts from the course outlines (Appendix B) prepared by assigned faculty instructors.

Learning Outcomes and Curriculum Mapping was reviewed in consultation with Carolyn Hoessler, Curriculum Development Consultant on January 24, 2019.

Table 2.1: PhD in Management – Curriculum Map

Learning Outcomes / COURSES	LO1a		LO1b		LO1c		LO2a		LO2b		LO2c		LO3a		LO3b		LO3c		LO4a		LO4b		LO4c		LO5a		LO5b		LO5c		LO6a		LO6b	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Research Methods - Qualitative	F		F								F		F		F								F		F		F				F		F	
Research Methods - Quantitative	F		F		F			P		P	F		F			P	F							P		P		P				P		
Management and Organization Theory	F		F		F		F				F		F		F								F		F		F				F		F	
Research Seminar Course I	F		F		F		F				F		F		F				F				F		F		F				F		F	
Research Seminar Course II	F		F		F		F		F		F		F		F				F		F		F		F		F		F		F		F	
Research Seminar Course III	F		F		F		F		F		F		F		F				F		F		F		F		F		F		F		F	
Elective - Digital Enterprise and Social Media	P		F		P		P		F		F		F												F		F		F		F			
Elective - Real Estate Studies	P		F		F		P		F		F			P		P	F		F		F			P	F			P	F			P	F	
Elective - Retail and Consumer Services	P		F		F		P		F			P	F		F		F		F			P		P		P		P	F			P	F	
Elective – Strategy, Innovation, Entrepreneurship	P		F		F		P		F		F		F			P	F		F		F			P		P	F		F			P	F	
Develop a Proposal		P		P		P		P		P		P		P		P			F		F			P		P		P		P		P		P

47

Candidacy Exam	P	P	P	P	P	P	P	P				P	P	P	P	P	
Dissertation	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P	P
Dissertation Defense	P	P	P	P	P	P	P	P			P	P	P	P	P	P	

Note: F = Foundational Knowledge, P = Proficient

2.d.   Program Content and Curriculum

2.d.i.   Curriculum and Current State of the Discipline

TRSM and its faculty members participate in the development and evaluation of innovations in teaching and learning. At a minimum, there are formal processes in place to evaluate innovations and to develop best practices across TRSM. There is also extensive sharing across the University, facilitated by the Learning and Teaching Office.

The PhD in Management at TRSM begins with a curriculum of three PhD level core courses, three elective courses (two elective graduate level courses must be in the area of focus with at least one elective in the area of focus taken at the PhD level), and three research seminar courses. The academic coursework is designed to develop the knowledge base necessary for effective research and scholarship development. Participating faculty can decide to attribute the final grade for their courses based on exams, on project assessments, as well as on seminar participation.

All PhD students are required to attend three research seminars. The seminar series will provide students with a background in a variety of theoretical and methodological frameworks that are relevant to the practice of management research. Topics presented will reflect students' research backgrounds and specialization. The seminar will emphasize the connections between theory and method, and will prepare students to develop methodological and theoretical frameworks for their own doctoral research. Seminar goals are to prepare students to become reflexive members of a scholarly community through focused, intellectual discussion and inquiry, as well as through the development of specific research knowledge and skills.

Each PhD candidate selects a dissertation topic as an original contribution to knowledge in his/her specialization. At the end of the first year and during their second year, students write the first draft of a dissertation proposal. The proposal should contain original theoretical and/or empirical work developed by a student under the guidance of a Supervisor. Following the candidacy exam, students will defend a proposition of their project, which includes the motivation, a literature review, a discussion of the methodology, and expected results. The proposal has to be finalized and defended.

The candidate must present a dissertation showing the planning, conduct, and results of original research and scholarly creativity. The purpose of the dissertation is to encourage and ensure the development of broad intellectual capabilities as well as to demonstrate an intensive focus on a problem or research area. The dissertation should be of publishable quality in management journals.

2.d.ii.   Unique or Innovative Features

TRSM'S proposed PhD in Management program differentiates itself from other more traditional business PhD programs in two ways; firstly, based on TRSM faculty relationships between the academic and industrial sectors, the proposed program will be rooted in carrying out rigorous research that will contribute to solutions to management issues shared across business sectors, as well as accelerating solutions to themes in the proposed specializations. The program aims to stimulate research at TRSM and to bolster industrial competitiveness. Secondly the proposed program will offer specializations that are uniquely tailored to investigate the current, emerging and evolving realities, challenges and trends of today's business world.

The proposed program's specializations are:

- Digital Enterprise and Social Media

- Real Estate Studies
- Retail and Consumer Services
- Strategy, Innovation and Entrepreneurship

Additionally, TRSM is comprised of non-traditional business school programs, with research active faculty in Tourism and Hospitality Management, Law and Business, and Health Services Management who could attract PhD in Management students.

TRSM PhD in Management program is differentiated through our industry-connected faculty members, relationships with local and global businesses, and TRSM's location in the economic hub of Canada to give students more opportunities for engagement with stakeholders outside academia, access to experiential learning and programming to develop career-related skills. We want student research to be relevant and impactful and informed by the pressing issues in society. A natural extension of this mission is the provision of career development and employment opportunities.

The positive link between TRSM faculty research and industry innovation has been widely recognized among academics and practitioners. A remarkable volume of previous research emphasizes the importance of the transfer of academic knowledge into the industrial domain. There are numerous examples of faculty working with industry partners to advance new knowledge through research - below are just a few of examples:

- Dr. Wendy Cukier's SSHRC Partnership Engage grant explores the advancement of diverse leadership. Partnering with the Canadian Women's Foundation and Ryerson's Diversity Institute, Dr. Cukier's research seeks to analyze cross-sector leadership in the GTA and Montreal areas. It will examine trends over time, dig more deeply into factors that distinguish organizations – those that lead and those that lag, and consider the implication of within-group diversity and intersectionality. This partnership will advance knowledge of diversity data and develop innovative strategies and evidence-based initiatives promoting inclusive leadership across Canada.

- With funding from the NSERC Engage program, Dr. Aziz Guergachi aims to develop a decision support system to formulate inventory policy for products in an industry partner's (Sowingo) inventory management platform. The system requires the adoption of machine learning methods to estimate the demand for the supplies based on their usage patterns. Dr. Guergachi's research will also develop an algorithm to retrieve data from past purchases and the marketplace to guide the vendor selection decision with the goal of reducing the purchasing cost. The algorithm incorporates machine learning techniques to find relevant offers and promotions from the unstructured textual marketplace data.

- Dr. Ken Grant is engaged in a Multi-Year Study of the Early Entrepreneurship Ecosystem in Canada with the support of a Mitacs Accelerate grant. In collaboration with the National Angel Capital Organization (the only national industry association for Angel investors in Canada), NACO represents over 40 networks comprised of over 3000 Angel investors across Canada. For the last five years, NACO has conducted an annual survey of angel investment activities in Canada. This year NACO is adding a second research project with the broader objective of gathering data on the networks between entrepreneurs, angels, venture capitalists, and incubator/accelerator centers. The intent is to gain a deeper understanding of these relationships, to determine areas of strengths and opportunities for improvement that will help inform government policy and the actual behaviour of the various members of the ecosystem.

- NSERC Engage Grant recipient, Dr. Mehdi Kargar's research seeks to build a new search system for industry partner, Warranty Life. The search system will increase the revenue of Warranty Life and will

be directly beneficial to Canada as more revenue for Warranty Life means more investment from the company in Canada and hiring more Canadian talent to expand existing offers and products with respect to the developed technology.

- Dr. Deborah Fels' research seeks to enhance existing VoiceWriter software by streamlining and updating it, incorporating CEA708 digital captioning functionality and animated captions options, and adding speaker-dependent shadow captioning functionality for real-time and post production captioning. This project will endeavour to not only modernize the captioning functionality, but additionally to extend it by incorporating cutting edge captioning technology. This will result in improved accessibility to broadcast content for persons with disabilities (Deaf and HoH community), improved usability of the product/outcome and allow the broadcasting industry to address some of the captioning quality issues that have plagued the industry and standards setting bodies. Dr. Fels' research is supported with funding provided by the Broadcast Accessibility Fund.

Graduates of the proposed PhD in Management will be well prepared to contribute to existing Management theories and/or the development of a new theory, in a way that could substantially contribute to industry's needs and help to bridge the industry–academia research gap. The research conducted by students of this program is expected to produce tangible outcomes (e.g., grant income, patents, or peer-review publications) and have significant impact.

By conducting leading-edge research at the intersection between academia and industry, students will gain a solid understanding of both realms and their interconnectedness. Students will serve as a translator between the academic and business communities, while preparing themselves for a career, whether in research or in industry. Students will acquire a broad range of skills that enable them to develop a rewarding career, including the ability to translate research knowledge into a product, service or another end-use application and strengthen their professional skills.

With only one other school offering a part-time program for a PhD in Management in Canada, there is also an opportunity for TRSM to capitalize on this distinguishing feature and attract working professionals. It can be argued that a candidate pursuing the part-time study option may not afford the same level of engagement with faculty-based research. The proposed PhD in Management addresses this concern by presenting the option of dissertation work as either a single piece of coherent, original work or as a compilation thesis, which typically is comprised of a collection of three integrated, peer-reviewed papers that are book-ended by chapters drawing the papers together.

2.d.iii.   Professional Licensing/Accreditation (if applicable)

TRSM received initial accreditation from the Association to Advance Collegiate Schools of Business (AACSB) in 2011. AACSB conducted an external Continuous Improvement Review of our program offerings in January 2017 and TRSM received re-accreditation for an additional five years. AACSB provides internationally recognized, specialized accreditation for business and accounting programs. AACSB accreditation ensures a level of currency and quality of offerings including the latest ideas in business, theories and practical skills. Less than 5% of the world's 13,000 business programs have earned AACSB accreditation. The programmatic scope of AACSB accreditation (i.e., degree programs and other programmatic activities to be included in the AACSB review process and subject to alignment with accreditation standards) is agreed upon through AACSB processes and meets the spirit and intent of the conditions and expectations outlined in eligibility criteria. The proposed PhD program will be subject to AACSB programmatic review but not until such time that the program has produced at least two years of graduates.

Over the past few years, TRSM and several Schools within it (e.g., School of Accounting and Finance, Information Technology Management, Hospitality and Tourism Management) went through a successful series of accreditation initiatives including:

- AACSB accreditation for a five-year period
- Chartered Professional Accountant (CPA) Accreditation for Post-Secondary Institutions
- Business Technology Management Association of Canada
- SMART Premium Plus accreditation by Tourism HR Canada organization
- Chartered Financial Analyst® (CFA) Institute University Recognition Program
- Association of University Programs in Health Administration (AUPHA)

These accreditations exemplify TRSM's strong interface with the world of business, our contribution to the community, the quality of our programming and strong foundation for scholarship.

2.e.   Mode of Delivery and Graduate Degree Level Expectations

2.e.i.   Planned Modes of Delivery

The proposed PhD in Management program follows a research model. A supervisor plays a critical role in guiding student training, especially at the research proposal development and dissertation writing stages. A key learning philosophy is that of acquiring proficiency in the discipline from having taken introductory courses in a previous degree.

At the beginning of each course, instructors will distribute a course outline specifying course learning objectives, expectations regarding student work and participation, and methods of evaluation. Instructors may supplement discussion and participation with online teaching and learning opportunities. To achieve proficiency in the stated learning outcomes, in particular, developing strong and diverse research skills, the program uses the following modes of delivery:

- face-to-face coursework, which includes lectures, discussions and presentations, as well as research papers and project assignments
- directed readings and independent study direct supervision, in the dissertation stage

The program will utilize differing delivery modes that are central to specific courses. In this proposed program, the research/academic instruction balance demands significantly more independent research culminating in a dissertation. The fundamentals of Management and Organization Theory and Research Methods are provided through coursework that features knowledge sharing and problem-solving exercises that require significant interaction with faculty.

Where a Directed Reading course is taken in lieu of a PhD level specialization elective, evaluation will be based upon the student's preparedness for meetings and ability to discuss the readings thoughtfully each week, with the majority of the mark based upon a term paper, usually a literature review and/or research proposal.

Another primary mode of delivery includes the Research Seminar series, where students will complete reading assignments in preparation for participation in a focused discussion. Instructors will assess students' participation in seminars, and may also choose to assign papers and presentations throughout the semester. By encouraging interaction among students and faculty, the seminar format enables students to teach and

learn from one another, challenge one another's perspectives, and collaborate in the inquiry process. In the graduate seminar, the instructor acts more as a facilitator, and guide who works to establish an environment in which students can enhance conceptual, critical, and communication abilities demanded by advanced research that contributes in original and innovative ways to scholarly knowledge. These small group meetings are a highly effective way of nurturing a critical, multidisciplinary perspective appropriate for doctoral study by fostering lively interdisciplinary interaction and the exchange of knowledge across different peer groups.

In addition, by providing teaching assistantships, the program offers students a valuable opportunity to gain some teaching experience. Taken together, the chosen program model and modes of delivery are effective and appropriate to reach the intended program learning outcomes and Degree Level Expectations.

Table 2.2: Learning Objectives and Methods of Achievement

Required Course Name	Mode of Delivery	Teaching Methods	LOs Addressed	GDLEs
Research Methods - Qualitative	Discussion Lectures Hands-on Article Comparisons Independent Reading	Hands-on Research Projects or Grant Development Survey Design and Data Collection Design Research Study Discourse or Content Analysis Presentation Qualtrics Actor Simulation Interview and Critique NVIVO Case Studies	LO1a, LO1b, LO2c, LO3a, LO3b, LO4c, LO5a, LO5b, LO6a, LO6b	1, 2a, 2b, 3b, 5, 6
Research Methods - Quantitative	Seminar Lecture Discussion	Quizzes Computer Exercises Qualtrics Discussion Literature Review	LO1a, LO1b, LO2c, LO3a, LO3b, LO4c, LO5a, LO5b, LO6a, LO6b	1, 2a, 2b, 3a, 3b, 4a, 4b, 4c , 5, 6
Management and Organization Theory	Discussion Presentation/Defense Independent Reading	Literature Review Paper Short Summaries Class Participation Presentation Critical Analysis of Readings	LO1a, LO1b, LO1c, LO2a, LO2c, LO3a, LO3b, LO4c, LO5a, LO5b, LO6a, LO6b	1, 2b, 3b, 4a, 4b, 4d, 5, 6
Research Seminar Course I	Guest Lectures Discussion Independent Reading	Participation Writing Assignment	LO1a, LO1b, LO2a, LO2a, LO2c, LO3a, LO3b, LO4a, LO4c, LO5a, LO5b, LO6a, LO6b	1, 2a, 3b, 4b, 4c, 5, 6

Research Seminar Course II	Guest Lectures Discussion Independent Reading	Participation Presentation Writing Assignment	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	1, 2a, 3b, 4b, 4c, 5, 6
Research Seminar Course III	Guest Lectures Discussion Independent Reading	Participation Presentation Writing Assignment	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	1, 2a, 3b, 4b, 4c, 5, 6
Elective - Digital Enterprise and Social Media	Independent Reading Problem Based Learning Seminar Debate Presentations	Literature Review Group Project/Technology Review Course Paper/Research Proposal Presentation	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO5a, LO5b, LO5c, LO6a,	1, 2a, 2b, 2c, 3a, 3b, 4b, 4c, 5, 6
Elective – Real Estate Studies	Lectures Discussion Presentation Guest Lecture Independent Reading	Referee Reports and Presentations Analysis and Replication Assignment Term Paper Class Participation SAS, Stata and R	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO3c, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4c, 4d, 5, 6
Elective – Retail and Consumer Services	Lectures Independent Reading Presentation	Critical Analysis of Readings Seminar Contribution Quizzes Research Proposal	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO3c, LO4a,	1, 2a, 2b, 3b, 4a, 4b, 4c, 4d, 5, 6

		Research Paper	LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	
Elective – Strategy, Innovation and Entrepreneurship	Independent Reading Seminar Discussion Lecture Fieldwork Case	Review, analyze, and critically evaluate academic papers Case Development Engagement with Incubator/Start-ups	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO3c, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4c, 4d, 5, 6
Elective - Directed Reading Course	Independent Reading Discussion	Term Paper Review, analyze, and critically evaluate academic papers Course Paper/Research Proposal	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO5a, LO5b, LO5c, LO6a,	1, 2a, 2b, 2c, 3a, 3b, 4b, 4c, 5, 6
Develop a Proposal	Independent Under faculty supervision	Paper/ research proposal	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4c, 4d, 5, 6
Candidacy Exam	Independent	Oral and written exam	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4c, LO5a, LO5b, LO5c, LO6a	1, 2b, 3b,4b, 4c, 4d, 5, 6

Dissertation	Independent Under faculty supervision	Written dissertation	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4c, 4d, 5, 6

2.f. Assessment of Teaching and Learning and Graduate Degree Level Expectations (GDLEs)

There are various stages of formal assessment that unfold over the course of the proposed PhD in Management: coursework, research seminars, candidacy examination, and the dissertation.

Graduate Coursework

Students will take both required and elective courses, encouraging a broad range of study across one of the four of the program's specializations. Efforts in coursework will be assessed by course instructors using a variety of graded tools. All courses demand independently produced artefacts that may include essays, assignments or in-depth projects, which can include several graded components (essay/project proposal, annotated bibliography, workshop, etc.). Final course projects and papers are assessed for their level of critical engagement, breadth of knowledge demonstrated, grasp of the theoretical underpinnings of a line of argumentation or research, sophistication of methodology, originality of argument, and lucidity and concision of expression or method.

Research Seminars I, II and III:

The research seminars are mandatory that will be led by a qualified faculty member. The course will be assessed on a pass/fail basis. In Research Seminar I, Students will attend research presentations by TRSM faculty members and researchers, and critique and analyze the research designs and the presentation styles. They will also submit written analyses of assigned reading materials on topics related to professional development as an academic, such as strategies for improving productivity in academic writing, open-access publishing, and impacts of management research. Research Seminars II and III will require students to present work to the class and Ryerson community in conference poster presentation and oral presentation formats, in addition to attending presentations by other researchers organized by research centres and institutes across Ryerson University. They will critique their fellow students' work and presentations in a constructive and collegial atmosphere. The Research Seminar assignments permit assessment of the skills of oral presentation, research dissemination, and discussion facilitation. In seminar presentations, students are assessed on their ability to cogently and coherently summarize material for the audience, engage the audience in meaningful discussions, and present original research material in a compelling and accessible manner. The objective of the seminars is to keep students actively learning research ideas, some of which will become part of their dissertation work. The seminars also train students to produce original scholarship for presentation at a conference and/or suitable for peer reviewed publication.

Course instructors may also require students to submit additional material for assessment, including reading responses, peer evaluations, or participation assignments, such as online discussion boards or course websites/blogs.

Candidacy Examination

Students must demonstrate their expertise and ability to integrate the body of knowledge in the area of specialization, including major theories, relevant paradigms, and application of appropriate research methodology to major unresolved research questions.

The performance of a PhD candidate in the candidacy exam will be determined through a review of the candidate's responses to the open-ended questions by the supervisory committee in collaboration with professors with expertise in particular methodology.

<u>Dissertation</u>

Students must demonstrate that they are able to achieve tangible scientific contribution to the body of knowledge in the area of their chosen specialization.

The performance of a PhD candidate in the dissertation stage will be determined based on the novelty, merit, and publishability of the work by the supervisory committee.

2.f.i. Intended Teaching Methods

The proposed PhD courses and seminars, along with the electives cross listed with the MBA, MScM and MHA (CC), will be consistent with graduate level courses. A variety of relevant teaching methods have been identified by the faculty members responsible for course design and curriculum including the use of real life examples to illustrate concepts, discussion groups, reports, assignments and research papers.

Teaching methods will be used to reinforce and assess the learning outcomes identified for the PhD in Management. The list of learning outcomes in Table 2.2 supports a wide range of teaching methods to be utilized to reach the desired outcomes. Instructors will create transparent marking rubrics that provide detailed criteria for evaluation of specific program learning outcomes and doctoral degree level expectations.

In order to promote continuous improvement, Ryerson University has built in regular reviews of program effectiveness. As such, a variety of evaluation tools are used to promote and measure improvements. While there are contractual limitations to the nature of the interventions that may be imposed, there are a host of incentives and programs to promote improvements and innovations in teaching.

<u>Advanced Research Methods – Qualitative</u>

In the lectures, theoretical concepts will be discussed with practical application scenarios. The laboratory/tutorial sessions will be dedicated to practice solving problems/exercises designed to reinforce the learning of the concepts being taught in lectures. Furthermore, it will assist to develop associated web analysis and design skills. An individual project will be assigned to the students where they will demonstrate their understanding and skills by applying appropriate tools and technologies in designing a complete professional profile website for him/herself.

<u>Advanced Research Methods – Quantitative</u>

There is no textbook required for this course and different resources will be provided for each session. The course will be conducted in a seminar format, requiring students to not only attend the lectures, but also participate in discussions. The variety of teaching methods will include discussions, lectures, quizzes, and computer exercises. This course will help students in identifying, discussing and formulating a research problem, in selecting and applying appropriate quantitative research approaches and methods, and in presenting their results. Students will be able to recognize distinct nature of various research approaches and methodologies and apply them to examine a research problem Identify research problems, develop and justify research questions and hypothesis (if applicable) discuss ethical aspects of research and in particular those related to the research proposal.

Management and Organization Theory

Each week the professor will select two theories from a list of 40 for systematic analysis of their ontological assumptions, knowledge interests and epistemological implications. See course outline in Appendix B. For each of the two theories two empirical research papers will be reviewed and critically analyzed to enable the students to understand the special challenges of operationalizing the theories in organizational research. Students will be expected to write critical summaries of the textbook readings and selected research to enable the development a foundational understanding of the subject matter that can be operationalized in empirical research. For the final project each student will conduct a systematic literature review of selected areas.

Research Seminars

The research seminars will be led by a qualified faculty member. In Research Seminar I, students will attend research presentations by TRSM faculty members and researchers, and critique and analyze the research designs and the presentation styles. Students will work in various groups to brainstorm ideas and then present the group work with the entire class. They will also submit written analyses (individual work) of assigned reading materials on topics related to professional development as an academic, such as strategies for improving productivity in academic writing, open-access publishing, and impacts of management research. Individual analyses will be discussed in class as well.

Research Seminars II and III will require students to present work to the class and Ryerson community in conference poster presentation and oral presentation formats, in addition to attending presentations by other researchers organized by research centres and institutes across Ryerson University. They will critique their fellow students' work and presentations in a constructive and collegial atmosphere. A qualified instructor will lead the Research Seminar course and facilitate the in-class discussions on processing research presentations and student critiques. Students will work in various groups to brainstorm ideas and then present the group work with the entire class.

Digital Enterprise & Social Media Elective

As a doctoral level course, this course will be taught through a combination of extensive readings, problem-based learning, in-class debates, and oral presentations. Students will gain an understanding of the overarching concepts, ranging from technical to managerial, that are critical for the functioning of the digital enterprise. Students will develop the ability to identify theories relevant to research questions and apply them in the plan of a research study.

Through the teaching methods proposed, students will be able to integrate and critique a broad range of literature relevant to the broad area of digital enterprise; articulate the broader implications of research on digital enterprise; comprehensively and critically review the literature associated with the course objectives; evaluate the strengths and limitations of a range of various research approaches in relation to studying digital transformation and digital enterprises; synthesize and integrate findings from research into research reviews, critiques and proposals; and communicate complex ideas, issues, arguments and research findings clearly and effectively in both oral and written formats.

Real Estate Studies Elective

The class consists of a number of components. First, the instructor will give a lecture related to the topic and may include a paper of her/his own for discussion. When presenting these topics, the instructor will discuss the motivation and process of writing these papers so that students get a sense of how to initiate their own research.

Second, there will be one or two student presentations of the paper from the reading list.

Third, students will be asked to write a referee report on some of the most recent working papers. The instructor expects the class to have a lively discussion about these papers – so everyone should prepare to ask a lot of questions and engage in discussions. The presenter should make sure that students understand all the topics listed above and practice her/his presentation beforehand. This serves a good purpose – a student grows comfortable and confident in presenting in front of any audience.

Fourth, students will work on the commonly-used micro-level datasets, both collectively and individually, including data downloading, cleaning up, validating, analyzing and replicating using SAS, Stata and R. Throughout the semester, students will be assigned to conduct some basic analysis in SAS, Stata and R, and conduct replication of at least one important analysis in the papers that use these data sets, which may or may be on the reading list.

Finally, each student needs to submit a term paper at the end of the course. Students will work with the instructor and/or guest lecturer(s) to identify their research topics once the semester begins. A student's term paper is bound by the class duration – so time management is extremely important. The term paper will be evaluated on motivation, statement of research question, contribution to the literature, methodology, key findings, and clarity of writing.

Retail and Consumer Services Elective

This course features the use of four weekly articles that students are required to read prior to class. This course will incorporate teaching methods that require students to review, analyze, and critically evaluate four academic papers on a specific topic. The course will be conducted in a seminar format, requiring students to not only prepare the set of papers assigned, but also introduce a related paper that fits within the session's topic. The variety of teaching methods will include discussions, lectures, quizzes, and case development. The goal of this course is to assist students in developing an understanding of the major theoretical advances in the field of retail and consumer behavior. The course covers different types of methods, literature review, and how it functions within retail and consumer research. Students will gain an opportunity to generate research questions, formulate ideas, gather and analyze data (if applicable), and interpret data to formulate practical recommendations.

The key learning objectives and outcomes include integrating and critiquing a broad range of literature in management relevant to chosen area of research; comprehensively and critically review the literature associated with a research topic and evaluate the strengths and limitations of a range of various research approaches in relation to the discipline of management/specialization. Students should be able to contribute to new ideas, theories, skills, techniques, tools, and/or practices and synthesize and integrate findings from research into scholarly activities.

Students will be expected to model/facilitate the development of scholarship in novice and developing practitioners and demonstrate ethical behaviour consistent with academic integrity and the responsible conduct of research. Additionally students should be able to communicate complex ideas, issues, arguments and research findings clearly and effectively in both oral and written formats in a manner that is accessible and appropriate to a variety of audiences i.e. debate various types of knowledge and application of methods.

Strategy, Innovation, & Entrepreneurship Elective

There is no textbook required for this course. Students are required to read four weekly articles to read prior to each class. This course incorporates teaching methods that require the student to review, analyze, and critically evaluate a set of academic papers on a specific course topic each week. The course is conducted in a seminar format, requiring students to not only review the set of papers assigned, but also introduce a related paper that fits within the session's topic. The variety of teaching methods will include discussions, lectures, fieldwork, and case development.

The primary goal of this course is to assist students in developing an understanding of the major theoretical advances in the field of entrepreneurship and strategy. The course covers different types of methods, literature review, and their function within entrepreneurship and strategy research. Students will gain an opportunity to generate research questions, formulate ideas, gather and analyze data (if applicable), and interpret data to formulate practical recommendations. Students will be expected to engage with classroom, incubator and other start-ups activities at Ryerson.

Directed Reading Elective

A Directed Readings course is a tailored readings course, negotiated between an instructor and a student to enable that student to explore, in-depth, a particular topic in a specialization with the guidance of the faculty member. The course requirements will vary from one instructor to another but may typically include written and oral assignments based on research and analytical reasoning. All assignments will be geared to helping a student complete their thesis.
Evaluation will depend on three components where the weighting will be negotiated between faculty and student, but the final outcome should be approximately equivalent to an annotated reading list, a written assignment and a term paper of substance.

The Graduate Degree Level Expectations (GDLEs) Table 2.2 cross references and illustrates the mapping of methods and assessment employed in individual courses to the Degree Program's Graduate Level Expectations.

2.f.ii. Assessment Methods for Student Achievement and Learning Outcomes and Graduate Degree Level Expectations (GDLEs)

Success in the program will be defined by a mastery of disciplinary knowledge and a demonstrated ability to meaningfully engage in a range of problem-solving activities central to thinking in management. These are assessed both through specific assignments (research papers, assignments, comprehensive exam, dissertation, etc.) and through concrete steps taken towards professionalization through the qualifying research seminars.

The PhD Program Director will keep data on the results of assessment of the PhD learning outcomes plus program-level information such as:

- number of applicants, offers, and acceptances on a yearly basis
- student background qualifications (e.g., undergrad/graduate degrees, schools attended, GPA, GMAT scores, etc.)
- retention and graduation rates
- post-graduation employment
- continued support and funding from the University
- results of external reviews

All graduates will also participate in an exit interview with the PhD Program Director to describe their experience with the program – good and bad – as well as suggestions for improvement.

- Annual program of study review with doctoral supervisor and PhD Program Director
- Successful completion of research seminars
- Successful completion of core and elective program courses
- Successful completion of written and oral candidacy exam
- Successful completion of dissertation proposal defense
- Successful completion and defense of dissertation
- Acceptance of original research at an international conference and/or for publication in peer-reviewed journal
- Presentation of original research at an international conference
- Presentation of original research in a workshop at Ryerson University and/or another university
- Co-investigation in original research projects

All of the assessment information listed above will be reviewed annually in a meeting between the PhD Program Director and the TRSM Graduate Program Council Curriculum Committee. At this meeting, the full assessment package will be discussed in detail to determine if program goals are being met. As evidence is collected that curriculum, program requirements, or any other aspect of the program needs improvement, the PhD Program Director and the TRSM Graduate Program Council Curriculum Committee will move to make necessary changes.

- Graduate students must complete courses in accordance with their program's degree requirements.
- The course instructor assigns final course marks as letter grades or other defined status designations as appropriate.
- Credit towards program requirements will only be granted for a course where a student achieves a minimum grade of B.
- SRC requirements include, but are not limited to, conference/journal papers, research grant applications, candidacy examination, and dissertation. Graduate students in the PhD in Management program must complete a dissertation, creative work and/or an oral exam in accordance with their program requirements.
- Final evaluation for a SRC requirement is assigned by the Graduate Program Director, Supervisor, or examining committee as appropriate.
- Credit towards graduation requirements will only be granted where a final evaluation for a SRC requirement is indicated as completed.

- An examining committee will assess the written and/or creative work as well as a student's ability to defend it, where appropriate, by vote in accordance with the procedures.
- "Completed" is granted for work that meets the expectations of the examining committee; or "Fail" is granted for work that does not meet the expectations of the examining committee.
- Once students have begun SRC requirements, they will be assigned a performance designation by their supervisor/Supervisory Committee based on their annual progress reports. INP (in progress) is granted for satisfactory progress; or UNS (unsatisfactory) is granted for unsatisfactory progress.
- Any student who fails (i.e., earns lower than a B at) more than one course during the program will also face termination from the program.

2.f.iii. Student Performance and Graduate Degree Level Expectations (GDLEs)

TRSM places a significant emphasis on learning outcomes in our graduate programs. Both the Assurances of Learning (AoL) as part of the AACSB (Association to Advance Collegiate Schools of Business) accreditation review, and the Graduate Degree Level Expectations (GDLEs) are a baseline to assess whether TRSM graduate programs remain current with respect to higher education knowledge expectations and societal need. In addition, they allow us to ensure that we are providing students with the required skills for success after graduation. Existing quality assurance practices are well developed within TRSM and the appropriate assessment of learning outcomes will be applied to the proposed PhD in Management.

All coursework (written and oral) will use the same framework for student performance. The framework is based on a common rubric; however, additional items and specificity will be added as needed for individual course assignments. The framework is based on the Graduate Degree Level Expectations and the proposed program's Learning Outcomes.

Table 2.3: Evidence of Student Success and Course Learning Outcomes

Curriculum Name	GDLE	Learning Outcomes	Evidence Confirming Expectation Has Been Achieved
Research Methods - Qualitative	1, 4a, 4b, 4d	LO1a, LO1b, LO2c, LO3a, LO3b, LO4c, LO5a, LO5b, LO6a, LO6b	• Student demonstrates ability to locate and present cutting edge applications of qualitative methods for Management research • Student properly utilizes the main approaches characterizing qualitative research in different situations and are able to assess the rigour and trustworthiness of qualitative inquiry • Student can assess the applicability of a range of core qualitative approaches to their own research topics and understand how these approaches can be applied to conduct effective research • Student can implement a range of qualitative data collection techniques including interviews, observations, and documents
Research Methods - Quantitative	1, 2a, 2b, 3a, 3b, 4a, 4b, 4c , 5, 6	LO1a, LO1b, LO2c, LO3a, LO3b, LO4c, LO5a, LO5b, LO6a, LO6b	• Students are expected to actively participate in the discussions. • Student performance is evaluated by the instructor and the quality of participation will be monitored. • Active participation involves: i) Being fully prepared; ii) Showing engagement with the material; iii) Offering insightful comments and questions; iv) Giving constructive criticism of others' contributions; v) Effective and brief communication • Three exercises are considered to help students develop an understanding of how to use a particular statistical technique and then clearly interpret the results. • For each assignment, student should hand in a 2-3 write up report that presents all the techniques used to answer the exercise as well as a result section representing all the findings. • There will be three journal article readings and students are required to submit a 1500 word document containing what they have understood from the article with respect to the analytical techniques

			used.
Management and Organization Theory	1, 2a, 2b, 4a, 4b, 4d	LO1a, LO1b, LO1c, LO2a, LO2c, LO3a, LO3b, LO4c, LO5a, LO5b, LO6a, LO6b	● Student will be able to develop a systematic literature review written in a paper and expected to be of quality suitable for a refereed conference ● Students are expected to actively participate in the discussions. ● Student performance is evaluated by the instructor and the quality of participation will be monitored.
Research Seminar Course I	1, 2a, 2b, 2c, 3b, 4b, 4c, 4d, 5, 6	LO1a, LO1b, LO2a, LO2a, LO2c, LO3a, LO3b, LO4a, LO4c, LO5a, LO5b, LO6a, LO6b	● Modeling of appropriate behavior in seminars by faculty and peers
Research Seminar Course II	1,2a, 2b,2c,3b,4 b, 4c, 4d,5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	● Grade on formal seminar presentation based on outcomes rubrics ● Modeling of appropriate behavior in seminars by faculty and peers ● The student demonstrates full knowledge in explaining core concepts
Research Seminar Course III	1, 2a, 2b, 2c, 3b, 4b, 4c, 4d, 5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	● Grade on formal seminar presentation based on outcomes rubrics ● Modeling of appropriate behavior in seminars by faculty and peers ● The student demonstrates full knowledge in explaining core concepts
Elective – Digital Enterprise and Social Media	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4d, 5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO5a, LO5b, LO5c, LO6a,	● Explain and contrast basic concepts, frameworks and common theories related to digital enterprise ● Discuss and explain today's digital economy, knowledge intensive firms and knowledge workers

			● Describe the major roles and responsibilities of members in digital enterprise ● Identify different types of data and knowledge, and the ways in which knowledge is created, digitized, shared and used ● Develop and implement projects and strategies that utilize the latest digital technologies and approaches such as artificial intelligence and data analytics ● Identify and evaluate important issues related to running a digital enterprise such as ethics, ownership, intellectual property and knowledge sharing incentives ● Discuss and explain how organizations (both public and private) can use social media to achieve their organizational goals and improve organizational performance ● Apply different types of data analytics to derive insights from social media and other types of available data, including methods such as sentiment analysis, geo-based analytics, and social network analysis ● Demonstrate competence in analyzing business cases and developing reports for decision making related to managing a digital enterprise
Elective - Real Estate Studies	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4d, 5	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO3c, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	● There will be student presentations of a paper from reading list ● Students will be asked to write a referee report on recent working papers ● Students will work on the commonly-used micro-level datasets, both collectively and individually, including data downloading, cleaning up, validating, analyzing and replicating using SAS, Stata and R ● Each student will submit a term paper at the end of the course and present the paper

			● The term paper will be evaluated on motivation, statement of research question, contribution to the literature, methodology, key findings, and clarity of writing
Elective – Retail and Consumer Services	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4d, 5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO3c, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	● Key vehicle for learning is discussion of the assigned readings. ● Each student will prepare a two-page summary that encapsulates the readings assigned to the weekly session. ● Performance on quizzes that will test understanding of key theoretical concepts covered in the class ● Perform an article critique based on the techniques covered in class - students are expected to provide a peer review of an article, identifying weaknesses in argumentation, methodology, and findings/conclusions
Elective – Strategy, Innovation, Entrepreneurship	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4d, 5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO3c, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	● A key vehicle for learning is discussion of the assigned readings. Each student is expected to prepare a two-page summary that encapsulates the readings assigned to the weekly session ● Students will identify a topic area and relevant questions that they will address using field work. Students will interview participants in entrepreneurial or strategic roles to gain insights, as well as carrying out a review of relevant documents, and write a short report that describes the results of their investigation and links to theory from the course ● Students will be required to develop a detailed article critique based on the techniques that we have covered in class. Students are expected to provide a peer review of an article, relevant to the course objectives and agreed in advance with the instructor, identifying weaknesses in argumentation, methodology, and findings/conclusions

			• The main deliverable of this course is a research term paper. The purpose of the paper is to explore a potential research stream of interest and, if possible, execute some of the planned research activities. Ideally, students should work with their supervisor to develop a topic of mutual interest. This paper will be graded by the instructor
Elective – Directed Reading Course	1, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4d, 5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO3c, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	• Student will be able to develop a systematic literature review written in a paper and expected to be of quality suitable for a refereed conference • The main deliverable of this course is a research term paper. The purpose of the paper is to explore a potential research stream of interest and, if possible, execute some of the planned research activities. Ideally, students should work with their supervisor to develop a topic of mutual interest. This paper will be graded by the instructor • Students will be required to develop a detailed article critique based on the techniques that we have covered in cl
Develop a Proposal	1, 2a, 2c, 3b, 4a, 4b, 4c, 5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4a, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a, LO6b	• Literature search supports that research is original • Direct assessment of progress by the Supervisor/Supervisory Committee for the dissertation • Demonstration of depth of understanding of the chosen areas of focus • Clearly states the purpose of the research with rationale and research questions are clearly posed • Articulates clear definitions given the purpose, design and methods of the proposed study
Candidacy Exam	1, 2a, 3b, 4b, 4c,5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4c,	• The student successfully completed all requirements of the examination • Students demonstrate their depth and breadth of knowledge through the analysis, synthesis, and critical evaluation within the

		LO5a, LO5b, LO5c, LO6a	field. Students are expected to address a significant question or issue within the field that is relevant to their dissertation research
Dissertation	1, 2a, 2b, 2c, 3b, 4a, 4b, 4c, 5, 6	LO1a, LO1b, LO1c, LO2a, LO2b, LO2c, LO3a, LO3b, LO4b, LO4c, LO5a, LO5b, LO5c, LO6a	● Demonstrates comprehensive knowledge of current research in field and generates viable research question and a testable hypothesis ● Dissertation is clearly written and communicates high level material well with the reader and requires no or minimal changes to be ● Literature search supports that research is original ● Use of higher-order thinking skills such as applying, analyzing, evaluating, or creating demonstrates depth and breadth of knowledge ● Writing is publication quality ● Exceptional theoretical or applied significance that has excellent publication potential
Dissertation Defense	1, 2a, 3b, 4b, 4c, 5, 6	LO1b, LO2c, LO3a, LO4c, LO5a, LO6a	● Oral explanations are clear and to the point ● Use of higher-order thinking skills such as applying, analyzing, evaluating, or creating demonstrates depth and breadth of knowledge

2.f.iv. Promotion and Graduate Requirements (if applicable)

Not applicable.

2.g.   Resources (Developed in Consultation with University Planning Office)

A preliminary assessment of financial viability of the proposed PhD in Management was carried by the University Planning Office as part of the Letter of Intent assessment. The proposal will not be submitted for Decanal approval prior to this preliminary assessment.

The assessment of financial viability of the full proposal will be carried out by the University Planning Office in consultation with the appropriate Deans.

This section should include the following headings:

2.g.i.   Human, Physical, and Financial Resources

Physical Space provided within the TRSM building includes four dedicated classrooms for the graduate programs (TRS 3-099, 3-109, 3-119 and 3-129). Graduate students also have dedicated cubicles with personal storage spaces, a kitchen room, and the graduate student workroom (TRS 3-182). These dedicated spaces are accessible only to graduate students and staff. There are also six computer labs in the TRSM building. One lab, TRS 3-180 has 90 workstations shared between the TRSM graduate programs and the undergraduate students. The other five computer labs have 264 workstations and are available between classes. The proposed courses will be held during the traditional academic year and there will be adequate physical space and adequate technological resources to meet the needs of the program.

Doctoral students working on research affiliated with TRSM research institutes/centres that have physical space will also be housed there. There are current plans for future research space and flex space for researchers at 1 Dundas. The University has arranged for leased space at 1 Dundas and the space in currently under design and set-up. TRSM has been allocated approximately 3000 square feet in Suite YDI410.

Funding Opportunities

- Proposed target funding of $25,000 per year for four years from all sources
- Stipends from research grants held by supervisors, Research Assistantships, Teaching, GAships, Scholarships, Awards. A per Ryerson's policy for RAships, GAships and teaching, students can be employed for a maximum of 10 hours per week. (The rate of pay can be found on the Human Resources website in the CUPE Local 3904 Unit 3 Collective Agreement. Students may be offered a GA position by their program, and/or the positions will be posted on the HR website. The terms of employment of graduate students will be consistent with the collective agreements between Ryerson and its employee groups)
- Average annual management doctoral program tuition at Canadian Schools = $6,920
- Tuition range at Canadian Schools: $4,200.00 - $9,200.00
- Average funding at Canadian Schools: $25,538.00;
- Funding range at Canadian Schools: $15,000.00 - $33,000.

Table 2.4: Canadian Schools of Business Funding and Tuition

University	School	Tuition/year	Funding
University of Alberta	Alberta School of Business	$5,600	Based on credentials – application required
University of Calgary	Haskayne School of Business	$5,593	$25K/year plus tuition fee
Simon Fraser University	Beedie School of Business	Not available on website	Minimum $28K/year
University of British Columbia	Sauder School of Business	Financial support includes tuition for five years	$30K/year plus tuition fee
University of Victoria	Peter B. Gustavson School of Business	$8,200	Up to $20k per year
University of Manitoba	Asper School of Business	$5,000	Based on credentials – application required
Memorial University	Faculty of Business Administration	$6,000	Based on credentials – application required
Saint Mary's University	Sobey School of Business	$6,800	Up to $15K/year
Carleton University	Sprott School of Business	$8,100	Based on credentials – application required
University of Guelph	College of Business and Economics	$7,800	Not available on website
McMaster University	De Groote School of Business	$7,000	Minimum $20K/year
University of Ottawa	Telfer School of Management	$9,200	Up to $27K/year

Queen's University	Smith School of Business	$7,500	$33K/year
University of Toronto	The Rotman School	$8,500	$22 - $28K/year plus tuition fee
University of Waterloo	School of Accounting and Finance	$7,500	$22K/year
Western University	Ivey Business School	$8,300	Minimum $25K/year
Wilfred Laurier University	Lazaridis School of Business and Economics	$6,300	Minimum of $24K/year
York University	Schulich School of Business	$5,500	$32K/year
Concordia University	John Molson School of Business	$7,200	Based on credentials – application required
HEC Montreal	School of Management	$7,200	Based on credentials – application required
McGill	Desautels Faculty of Management	$4,200	Minimum $25K/year
Universite du Quebec a Montreal	School of Management Science	Not available on website	Minimum $20K/year

Course Development

The PhD in Management program will extend the MBA, MScM, and MHA (CC) graduate programs already in place at TRSM. We do not expect this program to take enrollment away from other existing programs (PhD or otherwise).

TRSM will need to initiate ten new PhD-level courses, including research seminar, management and organization theory, research methods courses and four specialization electives.

The first requirement of the proposed PhD in Management will be satisfied when candidates have demonstrated a broad knowledge of their field to the satisfaction of the supervisor, normally by the successful completion of an assigned program of courses. Table 2.5 reveals the number of required courses (including required courses in a specialization) of comparator programs across Canada. A review of the 22 PhD programs in Canada reveals that the number of required courses is in agreement with the requirements of those proposed. Additionally, the number of required electives at comparator schools varies depending on specialization but typically between two and four are required.

The courses listed in the proposed program will be offered at TRSM during the three semesters comprising the academic year, however, not all courses will be offered during any one semester. New courses in the specialization areas will be developed and the Office of the Dean is committed to the resources required for course development. It is unlikely, that given projected enrolments, to think all specializations will run in the first year of the program.

The proposed PhD in Management requires the completion of three elective courses, one of which will be taken at the PhD level. The remaining electives may be selected from courses offered by the TRSM MBA and/or from courses offered by other departments. PhD in Management students who would like to take graduate courses in other departments will require permission of the Supervisor. A Directed Reading course will be created when an individual student (or a very small group of students) wish to specialize in a topic not currently offered as a PhD elective in a given academic year". In this instance, the student and faculty member will create the learning goals, deliverables, resources, timeline, and mechanism for feedback. These courses will not appear on the timetable.

Along with development and delivery of the new courses, success of the PhD program will require that faculty be available as supervisors to graduate students, providing research and teaching experience and oversight. This will be in addition to their current teaching, scholarship, and service expectations.

Table 2.5: Required Courses for a PhD in Management at Comparator Schools

University	School	Length	Required Courses	Delivery
University of Alberta	Alberta School of Business	4 years	7-8 depending on specialization	Full time/On-site
University of Calgary	Haskayne School of Business	4 years	5	Full time/On-site
Simon Fraser University	Beedie School of Business	4 - 5 years	8	Full time/On-site

University of British Columbia	Sauder School of Business	4 - 6 years	7-8 depending on specialization	Full time/On-site
University of Victoria	Peter B. Gustavson School of Business	4 years	10	Full time/On-site
University of Manitoba	Asper School of Business	4 years	4-7 depending on specialization	Full time/On-site
Memorial University	Faculty of Business Administration	4 years	7-8 depending on specialization	Full time/On-site
Saint Mary's University	Sobey School of Business	4 years	7	Full time/On-site (thesis can be off site)
Carleton University	Sprott School of Business	3 years + thesis (FT)	8	Full or Part-time/On-site
University of Guelph	College of Business and Economics	2 years + thesis	12	Full time/On-site
McMaster University	De Groote School of Business	2 years + thesis	6-12 depending on specialization	Full time/On-site
University of Ottawa	Telfer School of Management	4 years	9	Full time/On-site
Queen's University	Smith School of Business	2 years + thesis	7-8 depending on specialization	Full time/On-site
University of Toronto	The Rotman School	4 - 6 years	8-10 depending on specialization	Full time/On-site
University of Waterloo		4 - 5 years	6	Full time/On-site
University of Western Ontario	Ivey Business School	4 - 5 years	5	Full time/On-site
Wilfred Laurier University	Lazaridis School of Business and Economics	4 years	11	Full time/On-site
York University	Schulich School of Business	4 - 6 years		Full time/On-site
Concordia University	John Molson School of Business	5 year program	7	Full time/On-site
HEC Montreal		4 years	7	Full time/On-site
McGill	Desautels Faculty of Management	4 - 5 years	7	Full time/On-site
Universite du Quebec a Montreal		4 years	11 depending on specialization	Full-time/On-site

2.g.ii.   Quality Graduate Research Support

TRSM sets expectations for the nature and level of research and/or scholarly activity of its business faculty. With no exceptions, TRSM faculty members supervising PhD candidates will have PhD degrees and tenure-stream positions. PhD program faculty are expected to conduct original research and publish in appropriate disciplinary journals. We anticipate that these expectations for scholarly activity will continue, and we also expect that program faculty will advise and mentor PhD students and involve the students in their research. Program faculty will also be expected to continue their involvement with academic and/or professional associations to ensure visibility of TRSM and the PhD program in the academic community. Indicators of success of faculty will include but not be limited to:

- Scholarly productivity in disciplinary and/or interdisciplinary journals
- Participation in national conferences and invited research workshops
- Participation and leadership in relevant committees of applicable academic and professional associations
- Participation on editorial boards and editorship of scholarly journals
- Impact of research to management outcomes

Faculty members are also associated with TRSM's 14 Research Centre/Institutes and play a central role in research and educational activities that span a wide variety of disciplinary topics. The Centres/Institutes build close relationships with organizations in a wide variety of industries and work with them in providing an active forum where communities can gather to exchange and cross-pollinate ideas and share expertise on management related issues. Each of the Centres/Institutes will provide our PhD candidates with an environment where they will have access to funding support mechanisms, external grants to attend and present at conferences, relevant databases and an extensive set of seminars and events.

Additionally, the Yeates School of Graduate Studies (YSGS) is a resource for graduate students seeking help with many aspects of graduate student life including funding applications, writing and editing, and navigating the job search process. Instruction, information and research-skills support currently available to graduate students include regular or occasional workshops by Library staff such as Navigating the Library Resources, Census and Business Data Made Easy: Get Mapping with Simply Map Canada, and Advanced Library Research Methods for Graduate Students. The current workshop schedule is available at: http://library.ryerson.ca/info/whats-new/workshops-and-events/. Workshops specifically tailored for graduate students are available at: http://library.ryerson.ca/services/grads/gworkshops/

YSGS also offers the "Future Smart" program, Grad Café, and numerous events to facilitate networking, professional development, and career success.

There is a rich source of potential support from individuals, groups, and agencies external to TRSM. TRSM is committed to maintaining active connections with business industry leaders. Since 2013, TRSM has actively recruited 200 leaders from across industry who serve as members of Program Advisory Councils (PAC). PACs meet three times annually, and provide an important mechanism for TRSM to remain current with and connected to professional practice and leaders of industry. Although a PAC for the PhD program is not envisioned at this time, existing PACs and the Dean's Advisory Council have the opportunity to impact the programs, research activities, and local and international partners for a great number of students who will be Canada's future business leaders.

2.g.iii.　　　　Faculty Expertise

TRSM faculty members in areas related to the proposed specializations have the necessary qualifications, experience, and expertise to ensure that the PhD in Management provides a rigorous and rewarding program of study that prepares students to become productive members of the academy. Faculty members have received advanced training in a variety of disciplines and methodological orientations, and have been instrumental in training research assistants, graduate students, and post-doctoral fellows within TRSM and Ryerson, as well as at other academic institutions. Additionally, given that 60% of our faculty obtained their academic credentials outside of Canada, TRSM faculty bring a global perspective to management issues, which is essential to understanding and effectively tackling problems in the contemporary globalized world.

Research Output

Central to the TRSM mission is the goal to increase research intensity and to promote impactful and relevant research. TRSM strives to be a recognized leader in societally relevant, rigorous research with local, national, and global impact. Consequently, the intellectual contributions of faculty in TRSM include both peer-reviewed journal (PRJ) articles and a range of other intellectual contributions (IC) that reflect our mandate of producing scholarship that is geared toward innovative problem-solving through a social responsibility lens – reports, books, book chapters, conference papers, policy papers, software development, etc. In total, 3,147 ICs were made over the period of 2013–2017. The majority, 89% of faculty members produced ICs during the five-year period. Total annual ICs reached 765 in 2017 versus 488 in 2013, representing a 57% increase in research output in five years.

TRSM's unique collection of Schools and Departments greatly expands potential students' options for faculty supervisors. The diversity of our faculty's interests and disciplinary backgrounds is celebrated at TRSM and expands our audiences reached. Between 2013 and 2017, TRSM core faculty authored 527 PRJ articles, 60% of which are classified as being practice-focused, and therefore relevant to industry, community, and government stakeholders. TRSM saw a 45% increase in PRJ output over the five years, from 93 in 2013 to 135 in 2017. Table 2.6 below summarizes research output by TRSM core faculty in the 2013-17 time period.

Table 2.6: Research Output of TRSM Faculty

Research Type	2013	2014	2015	2016	2017
Peer Reviewed Journal Articles	93	92	96	109	135
Papers in academic conferences (peer-reviewed)	221	234	206	205	221
Papers in professional conferences	0	0	0	6	9
Published Case Studies	1	1	2	1	1
Other R&D Publications	35	77	74	65	56

Research Funding

Total external research funding in the most recent five-year window (2013-2018) reached $14,113,404.79, up 93% from the $7,320,187.31 total in the previous five-year window (2008-2013). An area in which TRSM excels is societally-relevant research in collaboration with industry, government, community and other academic partners. There has been a tremendous increase in externally funded projects with industry and non-profits, which now account for over half of the grants received (56%). In the past five years, industry/non-

profits have contributed over $6 million to support research projects with TRSM faculty members. In addition to industry/non-profit funding, TRSM faculty secured $3.3 million in funds from all three of the tri-agencies (SSHRC, NSERC, and CIHR) – a unique feat for a business school and indicative of TRSM's disciplinary diversity.

Faculty Qualifications

TRSM employs appropriately qualified faculty to accomplish the mission and goals of the School. All new tenured and tenure-track hires must possess a terminal qualification. Of note, TRSM secured an additional 20 tenured or tenure-track positions for the school year 2016-17 & 2017-18. TRSM efforts to enhance research intensity and quality are well underway and include: a competitive post-doctoral fellowships program; providing formal and informal mentoring; integrating research into teaching to enhance the student learning experience at all levels; and increasing internal and external communication about research in TRSM.

The academic backgrounds of faculty in the proposed specialization areas cover a wide range of disciplines, including business administration/management, computer science, computer engineering, information systems, sociology, recreation and leisure studies, geography, information studies, urban planning/studies, kinesiology, industrial engineering, law, economics, and finance. This diversity of academic expertise translates into a faculty complement that has solid foundations in a wide variety of quantitative and qualitative methodological approaches and techniques grounded in the social sciences, natural sciences, and engineering.

Expertise in Digital Enterprise & Social Media

TRSM has researchers spanning multiple departments/schools conducting research in the area of digital enterprise and social media. Included in this cluster are a current Canada Research Chair (Gruzd), a former Canada Research Chair (Middleton), as well as two members of the Royal Society of Canada's College of New Scholars, Artists and Scientists (Gruzd, Middleton). In addition to accomplished scholars, four TRSM research centres and institutes (Table 2.7) directly support research activity in this area, including, the **Social Media Lab**, the **Institute for Innovation and Technology Management**, the **Cybersecurity Research Lab**, and the **Inclusive Media & Design Centre**. Below is an overview of the research expertise of faculty members conducting research related to the digital enterprise and social media specialization:

- Dr. Catherine Middleton is a former two-term Canada Research Chair (Tier II) in Communication Technologies in the Information Society who studies policy issues in **digital/mobile communication**. In 2014, she was named as a Member of the Royal Society of Canada's College of New Scholars, Artists and Scientists.
- Drs. Youcef Derbal and Aziz Guergachi are experts in **modeling of complex problems**.
- Dr. Linying Dong studies **business processes in the enterprise**.
- Dr. Sameh Al-Natour studies **behavioral decision making** and **e-commerce**.
- Dr. Deborah Fels studies the use of information **technologies to improve inclusivity** and is the Director of the Inclusive Media & Design Centre.
- Drs. Ozgur Turetken and Morteza Zihayat Kermani research the **application of big data analytics techniques to individual-level decisions**.
- Drs. Farid Shirazi and Youcef Derbal have technical and research expertise in **big data and cloud computing**.

- Drs. Anatoliy Gruzd and Bouchaib Bahli examine issues involving **social media**. Dr. Gruzd is a Canada Research Chair (Tier II) in Social Media Data Stewardship and was named a Member of the Royal Society of Canada's College of New Scholars, Artists and Scientists in 2017.
- Dr. Ojelanki Ngwenyama is an expert in **organizational innovation and design**, with an emphasis on finding innovative solutions to real-world technology management problems. Dr. Ngwenyama is the Director of the Institute for Innovation and Technology Management.
- Drs. Avner Levin and Atty Mashatan conduct research in **cybersecurity** – Levin focuses on the protection and legal regulation of personal and private information, while Mashatan's work involves information systems security, cryptography, and combinatorics. Dr. Mashatan is the Director of the Cybersecurity Research Lab.
- Drs. Julien Meyer, Aziz Guergachi, and Youcef Derbal research the **application of information technologies in the healthcare sector**. Dr. Meyer examines the transformative role of information technologies in healthcare organizations, while Guergachi and Derbal apply complex modeling to better understand disease and improve health outcomes.

Table 2.7: Research Centres and Institutes Supporting Scholarship in Digital Enterprise & Social Media

Centres/Institutes/Labs	Description
Social Media Lab	Studies how social media is changing the ways in which people communicate, disseminate information, conduct business and form communities, and how these changes impact the social, economic and political structures of modern society.
Institute for Innovation and Technology Management	Aims to find innovative solutions to real-world technology management problems. The Institute understands that these problems are interdisciplinary and, as such, any solution must go beyond traditional views of organization and technology.
Cybersecurity Research Lab	Aims to be a centre of excellence in cybersecurity research and development by conducting cutting-edge research, training the next generation of cybersecurity experts, and spearheading a crucial and ongoing dialogue with the Information and Computer Technology (ICT) industry.
Inclusive Media & Design Centre	Designs, creates, and evaluates inclusive media and technology such as Tecla Shield 3.0 assistive technology, Voicewriter captioning software, and WebMoti, which allows children with Autism Spectrum Conditions to control their social and auditory presence at school.

Expertise in Real Estate Studies

Researchers in the area of real estate studies have backgrounds in a variety of disciplines, including urban planning/studies, geography, finance, and economics, providing a solid foundation for a Candidacy examination of real estate issues. While situated within the Real Estate department, real estate scholars collaborate with TRSM colleagues in Retail Management and Finance, as well as with researchers across

Ryerson University in geography and environmental studies and urban planning. Research in this cluster is supported by two TRSM research centres – the **Urban Analytics Institute** and the **Centre for the Study of Commercial Activity**, with additional infrastructure provided by two other Ryerson University centres of excellence focused on the built environment – the City Building Institute and the Centre for Urban Research and Land Development. Below is an overview of the research expertise of faculty members conducting research related to the real estate studies specialization:

- Dr. Murtaza Haider focuses on the **use of analytics and statistical models to analyze issues related to urban economics, housing markets, urban planning, and transport planning**. Dr. Haider is the Director of the Urban Analytics Institute.
- Dr. Cynthia Holmes studies **real estate finance and housing policy**.
- Dr. David Scofield examines **microfoundations of real estate markets**, **real estate investment and development**, and the **effects of organization, networks and institutions on liquidity and transaction costs in commercial real estate**.
- Dr. Youngme Seo researches **mortgage default**, **real estate finance**, **urban housing economics**, and **spatial econometrics**.
- Dr. Dogan Tirtiroglu focuses on real estate (in particular **REITs and house price indices**), **banking**, and **corporate finance**.
- Dr. Tony Hernandez is an expert in **retail location decision-making, strategy, planning, and analytics**. He is the Director of the Centre for the Study of Commercial Activity and the current Eaton Chair in Retailing. As Eaton Chair in Retailing, Dr. Hernandez is tasked with fostering retail research excellence in Canada through the dissemination of results-oriented research and information that would profile the strategic significance of the Canadian retail economy.

Table 2.8: Research Centres and Institutes Supporting Scholarship in Real Estate Studies

Centres/Institutes/Labs	Description
Urban Analytics Institute	Builds relationships within the public, private and non-profit sectors to identify urgent urban challenges and help them implement smart city solutions. The Institute collaborates with partners in research as well as in the implementation of technologies involving big data analytics, deep learning, and artificial intelligence.
Centre for the Study of Commercial Activity	Innovatively applies location-based research, education and outreach to enhance the competitiveness of the consumer service sector for the benefit of Canadian society.

Research Collaboration and Internationalization

Research collaboration and internationalization are increasingly important in the academy. They ensure the continued intellectual development of scholars as networks grow, partnerships form, and different types of knowledge are mobilized across the globe. TRSM faculty have put a great deal of emphasis on building connections locally, nationally, and globally, which is enhancing the quality and impact of their research. Students in the PhD in Management program will have the opportunity to interact, learn, and conduct

research with partners from across the globe, enriching their academic experience and providing a head-start in building relationships and networks that will serve them well in their careers.

In the past two years, TRSM researchers have collaborated with over 450 external partners from government, industry, non-profits, and community organizations and have made significant contributions to projects funded by other global entities such as the European Union and the Western Norway Research Institute. These activities are in addition to collaborative research activities conducted as part of joint research agreements with international academic institutions such as the Hong Kong Polytechnic University, Tsinghua University School of Economics and Management and Fudan University. Many scholarly partnerships have been spearheaded by several of the TRSM research institutes and centres such as the Canada-China Institute for Business and Development.

For example, the Entrepreneurship Research Institute is devoted to investigating the role that entrepreneurs play in modern economies. In keeping with the reputation of TRSM as a leader in entrepreneurial education, ERI focuses on research of high academic and intellectual value, with clear applicability to practitioners in the business community:

● The Government of Bhutan reached out to ERI for help in understanding the role of entrepreneurship as a viable career path for youth living in rural areas of the country who are unemployed and lack adequate education. The research project has resulted in many academic publications and an opportunity for TRSM student research assistants to participate in a unique international research collaboration. It has already provided educators and policy-makers in Bhutan with vital information to inform their development of actionable strategies for increasing entrepreneurship among its at-risk youth.
● ERI continues to work with Futurpreneur Canada to implement a research program devoted to better understanding the causes of successful mentoring and support for new youth-based ventures. Based on this success, it continues to expand this work to include similar research programs with equivalent partner organizations in Australia, New Zealand, South Africa, and UK.

In the last decade, international research collaboration at TRSM has intensified. Cooperation with academic colleagues around the globe is an important priority for TRSM. TRSM is achieving global impact through strategic linkages and projects with other parts of the world. In the past two years, research centres have hosted international visiting scholars and partnered with researchers in 36 different countries such as China, South Africa, Australia, India, Germany, Mexico, Russia, Israel to name a few.
Our international recognition is expanded further by high profile research service activities:

● 88 editorial roles (e.g. editorships, associate editorships, guest editorships) at international journals and conferences, including the *Journal of Business Ethics*, *European Journal of Information Systems*, *Journal of Sustainable Tourism*, and the *Association for Information Systems*.
● 24 keynote presentations at international symposiums and conferences, including the 2nd UNWTO Conference on Destination Management in the Mediterranean, the American Council for the Blind Conference, and the University of the West Indies Sustainable Tourism Symposium.
● 121 editorial board memberships at international journals and conferences, including the *Journal of Business Research*, *Journal of Information Technology*, and the *International Journal of Contemporary Hospitality Management*.
● 128 chair/organizational roles at international workshops, symposia, and conferences, including the Academy of Management Conference, International Conference on Human-Computer Interaction, and the International Conference on Social Media & Society – an annual gathering of leading social media researchers from across the globe organized by TRSM's Social Media Lab.

<u>Expertise in Retail and Consumer Services</u>

Researchers in the area of retail and consumer studies are situated across TRSM's departments/schools, with a concentration in Retail Management, Marketing Management, and Hospitality & Tourism Management. Their backgrounds in marketing, consumer behavior, psychology, geography, and management combined with expertise of colleagues in other department/schools conducting scholarship in business analytics, real estate, international/global business, and entrepreneurship & strategy, provide a solid foundation for advanced studies of the retail industry and consumer behavior. Research activity in this cluster is further bolstered by three research centers and institutes (Table 2.9), including the Institute for Hospitality & Tourism Research, the Future of Sport Lab, and the Centre for the Study of Commercial Activity, the latter of which is headed by the Eaton Chair in Retailing (endowed Chair). Below is an overview of the research expertise of faculty members conducting research related to the retail and consumer studies specialization:

- Dr. Hong Yu researches **consumer behaviour and marketing strategies in the context of the experience economy**, with an emphasis on the shopping experiences of particular consumer groups and the role of product innovation and retail environment and service designs in marketing strategies.
- Dr. Donna Smith examines **business-to-business (B2B) partnerships in the retail industry**.
- Drs. Joanne McNeish, Norman Shaw, Chris Gibbs, and Anthony Francescucci explore **technology and innovation adoption by consumers and businesses**.
- Dr. Seung Hwan (Mark) Lee focuses on the **effect of sensory marketing and virtual reality (VR) on consumer behaviour**.
- Drs. Jenna Jacobson and Donna Smith analyze the **consumer and producer perspectives of digital technologies** with a focus on social media, branding, and user behaviour.
- Dr. Tony Hernandez is an expert in **retail location decision-making, strategy, planning, and analytics**. He is the Director of the Centre for the Study of Commercial Activity and the current Eaton Chair in Retailing. As Eaton Chair in Retailing, Dr. Hernandez is tasked with fostering retail research excellence in Canada through the dissemination of results-oriented research and information that would profile the strategic significance of the Canadian retail economy.
- Dr. Frances Gunn researches **service quality and innovation in retail services**.
- Drs. Cheri Bradish and Katie Lebel conduct research in **sport marketing and business strategy**. Dr. Bradish is the Director of the Future of Sport Lab and the current Loretta Rogers Research Chair in Sport Marketing.
- Dr. Martin Pyle researches **word-of-mouth**, developing theory to explain why people choose certain language to share their experiences, and the effect this has on people who receive the message.
- Drs. Frederic Dimanche, Rachel Dodds, Sonya Graci, and Tom Griffin examine **marketing, consumer behaviour, and service design in the hospitality and tourism sector**. Dr. Sonya Graci is the Director of the Institute for Hospitality & Tourism Research.

Table 2.9: Research Centres, Institutes and Labs Supporting Scholarship in Retail and Consumer Studies

Centre/Institute/Lab	Description
Centre for the Study of Commercial Activity	Innovatively applies location-based research, education and outreach to enhance the competitiveness of the consumer service sector for the benefit of Canadian society.
Future of Sport Lab	Collaborative lab for sport innovation and research supported and co-managed by Maple Leaf Sports &

	Entertainment Ltd. (MLSE). FSL aims to be Canada's leader in fostering innovative sport business solutions and technologies, along with related research and insights.
Institute for Hospitality & Tourism Research	Works with industry partners to conduct applied research projects that provide our students with opportunities to learn and grow, and that have both scholarly value and significance to the tourism and hospitality field.

Expertise in Strategy, Innovation & Entrepreneurship

Strategy, innovation, and entrepreneurship are core themes that permeate through all research at TRSM. Although they are essential components of all business and management scholarship, the in-depth study of the mechanics of strategy, innovation, and entrepreneurship is situated within the Entrepreneurship & Strategy department, with several faculty members in Global Management Studies also contributing a great deal of scholarship in these areas. In addition, studies in strategy, innovation, and entrepreneurship are enhanced by incubators and experiential learning zones that comprise Ryerson's well-developed entrepreneurship ecosystem. Examples include the Digital Media Zone and the Brookfield Institute for Innovation and Entrepreneurship.

Within TRSM, several research centres and institutes (Table 2.10) also provide necessary infrastructure for the advancement of knowledge in this cluster, including the **Entrepreneurship Research Institute**, the **Canada-China Institute for Business and Development**, the **Diversity Institute**, the **Institute for Innovation and Technology Management**, and the **Institute for the Study of Corporate Social Responsibility**. Below is an overview of the research expertise of faculty members conducting research related to the strategy, innovation, and entrepreneurship specialization:

- Dr. Kim Bates explores **innovation and corporate governance**.
- Dr. Wendy Cukier is an expert in **social innovation strategy** and led Ryerson's social innovation strategy during her time as Vice-President, Research and Innovation. Dr. Cukier has received numerous honours in recognition of her work, including the Governor General's Meritorious Cross, and in 2013 was named as one of Canada's Top 25 Women of Influence. She is currently the Director of the Diversity Institute.
- Dr. Ken Grant examines **knowledge management and innovation**.
- Dr. Mary Han is recognized for her work on the relations between **organization adaptation, multinational strategy in emerging markets, strategic entrepreneurship and business model innovation.**
- Drs. Alison Kemper, Deborah de Lange, and Kernaghan Webb research the **impact of social and environmental issues on business strategy/corporate social responsibility**. Dr. Webb is Director of the Institute for Corporate Social Responsibility.
- Dr. Andre Laplume studies the **competitive and institutional barriers** preventing potential entrepreneurs from launching new ventures successfully as well as the **preparatory experiences of entrepreneurs** that help to develop entrepreneurial capacity.

- Dr. Charlene Nicholls-Nixon studies **entrepreneurship in emerging markets** and the **role of start-up incubators in entrepreneurship**. Dr. Nicholls-Nixon is the Director of the Entrepreneurship Research Institute.
- Dr. Dave Valliere researches **entrepreneurial finance** and the **social and cultural determinants of entrepreneurial intent**.
- Dr. Philip Walsh examines **innovation, sustainability, and finance in the energy sector**.
- Dr. Sean Wise studies **venture finance and start-ups**.
- Drs. Howard Lin, Horatio Morgan, and Sui focus on **international business strategy**, including international joint ventures, foreign direct investment, emerging markets, cross-cultural & comparative management, and transnational & immigrant entrepreneurship. Dr. Lin is the Director of the Canada-China Institute for Business and Development.
- Dr. Ojelanki Ngwenyama is an expert in **organizational innovation and design**, with an emphasis on finding innovative solutions to real-world technology management problems. Dr. Ngwenyama is the Director of the Institute for Innovation and Technology Management.
- Drs. Ron Babin and Joanne McNeish research **disruptive innovation**, with Dr. Babin focusing on IT and Dr. McNeish focusing on consumer products.

Table 2.10: Research Centres, Institutes and Labs Supporting Scholarship in Strategy, Innovation, and Entrepreneurship

Centres/Institutes/Labs	Description
Entrepreneurship Research Institute	Devoted to investigating the role that entrepreneurs play in modern economies. The Institute focuses on research of high academic and intellectual value, with clear applicability to practitioners in the business community. ERI also plans periodic seminars and symposia on topics of interest to scholars of entrepreneurship.
Canada-China Institute for Business and Development	Aims to build and advance understanding of China through research, innovative educational and training programs, and influential public events. The Institute serves as a centre of excellence for education and knowledge dissemination of China, past and present day, to Canadian business, academics, policy makers, governments and other stakeholders looking to do business with China and/or to partner with Chinese Organizations.
Diversity Institute	Works with organizations to develop customized strategies, programming, and resources to promote new, interdisciplinary knowledge and practice about diversity with respect to gender, race/ethnicity, Aboriginal peoples, abilities, and sexual orientation.

Institute for Innovation and Technology Management	Aims to find innovative solutions to real-world technology management problems. The Institute understands that these problems are interdisciplinary and, as such, any solution must go beyond traditional views of organization and technology.
Institute for the Study of Corporate Social Responsibility	Dedicated to becoming a Centre of Excellence on social responsibility issues, producing and disseminating high quality SR research, holding events that explore how SR can be effectively implemented and the challenges associated with such implementation, and to bringing together actors from government, private sector, and civil society (including academia) for constructive learning on social responsibility.

For details on research output by faculty member please see Appendix D: Faculty Qualifications and CVs.

2.g.iv.   Supervisory Loads and Relationship

Every doctoral student will be guided during his/her period of registered study by (a) supervisor(s) with suitable academic qualifications, appropriate expertise in the agreed area of the student's research topic, and an acceptable level of supervision experience. The eligibility criteria are consistent with the policies and processes governing membership in the YSGS, at Ryerson University. Membership with YSGS signifies commitment to scholarship, research and creative (SRC) activities, productive supervisor/student relationships, and excellence in graduate education.[41]

The supervisory relationship and obligation is guided by Ryerson University Policy 164. The role of the faculty advisor or supervisor is to provide academic advising and monitor the student's progress toward the completion of the program. Where a dissertation, thesis or MRP is part of a student's curriculum, Policy 164 stipulates that student's supervisor shall:

- meet regularly with the student
- review the student's proposal and recommend its approval to the GPD normally not less than one to two terms (depending on the length of the program) prior to the expected date of program completion
- complete the supervisor's portion of the student's annual Progress Report
- evaluate the readiness of the MRP, thesis or dissertation (and the paper or project if required) to be examined orally, and make a recommendation to the GPD regarding a date for the defence and the composition of the Examining Committee
- ensure that a copy of the student's work is sent to each member of the student's Examining Committee when required
- uphold any graduate program specific expectations of supervisors

---

[41] https://www.ryerson.ca/graduate/faculty-staff/membership-policy/

Graduate education at Ryerson University is overseen by the YSGS Council. The council deals with such issues as the development and evaluation of new graduate programs and policy that is relevant to graduate programs and students. The council is comprised of the Vice-Provost and Dean of Graduate Studies as well as affiliated faculty members from each of Ryerson's faculties, graduate program directors and students.[42]

Ryerson University Policy 164 provides the following guidance on the membership of a student's Supervisory Committee:

- composed of two to four members, who should remain on the committee throughout the student's research, including: the student's supervisor(s) and one faculty member from the student's program who is a member of YSGS
- may include a non-academic expert professional in the field of research or a Ryerson University faculty member who is not a member of YSGS
- is recommended by a student's supervisor to the GPD for approval
- the GPD shall forward to the Vice-Provost and Dean, YSGS the recommendations for committee appointments in accordance with program expectations no later than the beginning of the third year of study

 Additionally, the policy states that the Supervisory Committee shall:

- be chaired by the student's supervisor
- at minimum, meet once annually with the student
- review the student's preparedness and establish a timeline of expected progress
- update the GPD when the student successfully completes a non-course program component and has set a research topic
- update the GPD when the student is unsuccessful in completing a non-course program component and provide detailed reasons for the decision to the GPD, Vice-Provost and Dean, YSGS, and the student within two weeks of the failed attempt
- formally approve the dissertation proposal
- complete any requirements as indicated by the graduate program
- evaluate the readiness of the dissertation to be examined and, with a minimum of majority agreement, make a recommendation to the GPD regarding the formation of the Examining Committee

The chair of a given student's PhD supervisory committee must be in the student's specialization option, and other committee members may come from any of the relevant disciplines. If we look at TRSM faculty who can serve as a PhD supervisor, we expect about 46 across TRSM – see Appendix D: Faculty Qualifications and CVs. If we estimate that there will be 24 PhD students in the program by year 4 of the program, a rough calculation of the student/faculty ratio is approximately 0.52, which is consistent with the 0.65 ratio for other schools according to AACSB data.

Eligible Teaching and Supervisory Personnel

YSGS membership consist of three groups: those who are RFA faculty employees of Ryerson University (Assistant, Associate, Full Professors and Limited Term Faculty), those who are not (research scientists,

research associates, postdoctoral fellows, adjunct professors, and visiting professors) and retired members of YSGS who continue to meet the membership criteria.

Role	Eligibility and Requirements
Teaching Faculty	Faculty tenure status, rank, and degree: ● Tenure-track Assistant Professors holding a doctoral degree ● Tenured faculty of any rank holding a doctoral degree Additional requirements: ● Member of Yeates School of Graduate Studies ● Evidence from graduate courses taught in the previous five-year period; student evaluations, peer evaluations and where appropriate, the quality of the MScM thesis/MRP supervised. ● May only teach one doctoral-level course per year
Primary Supervisors	Faculty tenure status, rank, and degree: ● Tenure-track assistant professors with a doctoral degree ● TRSM tenured faculty of any rank who possess a doctoral degree Additional requirements: ● Previous experience as a graduate student supervisor ● Possess "full" or "emeritus" membership status with Yeates School of Graduate Studies ● Evidence from graduate courses taught in the previous five-year period; student evaluations, peer evaluations and where appropriate, the quality of the MScM thesis/MRP supervised. ● Demonstrate substantial and relevant research accomplishments in the relevant discipline and demonstrate that they intend to remain in the role for the normal duration of a doctoral program. ○ must publish three or more peer reviewed articles in their field over the previous five-year period with at least one high quality scholarly work or be awarded a tri-council competitive research grant. ○ evidence of at least two other forms of scholarship – this includes activities such as journal editorships, editorial committee memberships, published peer-reviewed proceedings, peer-reviewed presentations at conferences etc. ● Ideally, be able to demonstrate financial support to a doctoral candidate, and/or demonstrate that they are engaged in seeking grants. A Supervisor must clearly state any expectations associated with the financial support arrangement such as progress in the program and contribution to research.

Co-Supervisors	Faculty tenure status, rank, and degree:
	● Tenure-track assistant professors with a doctoral degree
	● Tenured professors of any rank with a doctoral degree
	
	Additional Requirements:
	● Must share PhD student supervisory responsibility with a primary supervisor as defined above.
	● Member of Yeates School of Graduate Studies
	● Demonstrate substantial and relevant research accomplishments in the relevant discipline and demonstrate that they intend to remain in the role for the normal duration of a doctoral program.
	    ○ must publish two or more peer reviewed articles in their field over the previous five-year period with at least one high quality scholarly work or be awarded a tri-council competitive research grant.
	    ○ evidence of at least one other form of scholarship – this includes activities such as journal editorships, editorial committee memberships, published peer-reviewed proceedings, peer-reviewed presentations at conferences etc.

Supervisory Committee Members	Faculty tenure status, rank, and degree: ● Tenure-track assistant professors holding a doctoral degree ● Tenured professors of any rank holding a doctoral degree

Note: Each supervisor may supervise a maximum of two TRSM's doctoral candidates in any given time period. The supervision of the candidate concludes at the time when the dissertation is presented and defended or if the candidate withdraws.

Faculty seeking to teach or supervise at in the PhD in Management program will go through an established application process. The Associate Dean, Graduate Programs will maintain a database of the doctoral level teaching and supervisory profile of academic staff within TRSM, including the number of courses taught and supervisions being carried by each academic staff member. See Appendix D; Faculty Qualifications and CVs. In total, 67 faculty have previous experience supervising graduate students in various capacities including MRP supervisions, MRP second readers, MRP defence committees, master's thesis supervision, master's thesis defence committees, doctoral supervision, doctoral co-supervision, doctoral committee supervision, candidacy exam participation, dissertation defence committee participation, and post-doctoral fellows.

Faculty involved in the supervision of doctoral students must balance this responsibility with their existing obligations to teaching, research and service. The Ryerson University Collective Agreement sets out the calculation of workload allocation. In accordance with the provisions of the Collective Agreement, including Article 7 and the academic responsibilities of members in Article 10, the norm is two half course equivalents in one semester and two half-course equivalents in the other semester. For the purposes of determining teaching load, graduate supervision does not count as part of the 2+2 course load and any points system for graduate supervision that existed previously was discontinued when Departments/Schools achieved a 2 + 2 teaching load.

2.g.v. Number of Faculty and Support Staff

Core faculty in the proposed program are active researchers in their fields, publishing cutting edge research in leading journals, and collaborating with, applying or creating leading research in management.

The current faculty complement is sufficient to launch the proposed PhD program, however, in addition to current succession and replacement plans, there should be attention paid to the proposed specialty areas for future positions, to ensure the responsibilities to the PhD program in its likely higher demand areas can be met. Future consideration should also be given to open rank hiring, to augment experienced faculty for PhD student advising.

Table 2.11: TRSM Faculty Count by Department

Department	LTF	Probation	Tenured	Grand Total
TRSM Accounting	3	2	10	15
TRSM Entrepreneur & Strategy	3	1	13	17
TRSM Finance		4	10	14
TRSM Global Management Studies		5	10	15
TRSM Health Services Mgmt		1	4	5
TRSM Hospital. & Tourism Mgmt		2	9	11
TRSM HR & Org Behaviour		3	9	12
TRSM Information Tech Mgmt	5	4	17	26
TRSM Law and Business	1	2	8	11
TRSM Marketing	3	2	9	14
TRSM Real Estate	1	1	4	6
TRSM Retail Management	1	1	6	8
Grand Total	**17**	**28**	**109**	**154**

A new Graduate Program Administrator (GPA) was included in the 2017/18 base budget for the current and planned increase in graduate programs and students. The position has been filled and currently works with the MScM and MHA (CC) programs. There is another GPA for the MBA programs. Given the proposed size of the PhD program, it is likely that adding a Program Assistant (OPSEU 9 level) could provide support to the Graduate Program Administrator, and the Director of the PhD in Management program.

2.g.vi. Projected Enrolment

Based on the projected enrolment of six students (full-time equivalent or FTE) per year, the program should reach 24 FTEs at steady. This would consist of full and part-time students, with the anticipated majority being full-time.

2.g.vii.   Tuition

2017-2018 tuition for three semesters (one year) of doctoral studies at Ryerson University was set at $9,283.80 for all programs with the exception of the Communications and Culture program. The tuition for three semesters (one year) of doctoral studies in the Communications and Culture program, offered jointly with York University is $5,610.35.

Program tuition fees across Ontario for PhD programs in business/management range from $7,000 per year (three semesters) to $9,200.00 per year (three semesters). The average tuition for one year (three semesters) is $7,800.00.

For a detailed breakdown of program tuition and funding for PhD in Business/Management programs in Canada, please see Section 2.g.i - Table 2.4.

2.g.viii.   Student Financial Assistance

TRSM encourages a research culture where faculty members engage students in research by providing physical space for graduate students, supervision of graduate research, and by promoting faculty applications for funding that include support for hiring graduate research assistants.

Base Funding

Graduate student funding support would be a multi-pronged approach that includes: internal and external fellowships and scholarships, teaching assistantships, graduate assistantships, and research stipends and assistantships. Eligible domestic students admitted to study full time would receive a minimum of $25,000 a year for up to four years composed of a combination of these sources. Incoming full-time PhD students are the top hiring priority for TA/GAs. The average annual funding at Canadian Schools is $25,538.00, ranging from $15,000-$33,000.[43] When comparing available funding with institutions in the Toronto area, average funding is closer to $30,000.00.

Research and Graduate Assistantships

Students will have access to Research Assistantships in which students will work with a principal investigator in conducting research activities not related to their studies.

"The minimum rate of pay will be defined by the Granting Council (SSHRC, NSERC or CIHR) or organization/institution which is funding the principal investigator. The minimum rate of pay at Ryerson University is defined in the OPSEU Collective Agreement, Article 14, Section 14.06. The terms of employment of graduate students will be consistent with this collective agreement. However, the minimum recommended rate of pay for graduate students is the rate at which Graduate (Teaching) Assistants are paid, which is outlined in the CUPE 3 Collective Agreement."[44]

Students will also have access to Graduate (Teaching) Assistantships, in which they will be:

"Employed to assist with teaching or related duties for a maximum of 10 hours per week. The rate of pay can be found on the Human Resources website in the CUPE Local 3904 Unit 3 Collective Agreement. Students may be offered a GA position by their program, and/or the positions will be posted on the HR

---

[43] Chestnut

[44] https://www.ryerson.ca/graduate/future-students/financing-your-studies/

website. The terms of employment of graduate students will be consistent with the collective agreements between Ryerson and its employee groups."[45]

<u>Alternative Funding Sources</u>

The need to succeed at getting grants is a continuing part of academic life at research institutions. Bringing in outside funding is critical if one is to sustain an independent research-driven career in an academic setting. Preparing grant applications is a valuable exercise, and an excellent opportunity for students to network with agency representatives.

Working with the support of faculty supervisors, TRSM research support staff and OVPRI Grant Officers, PhD students will be encouraged to secure research grants of their own. There are a number of funding packages – internal and external – available to Ted Rogers graduate students. Competitive scholarship opportunities include tri-council (Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council (SSHRC), among others (e.g., Vanier, OGS).

<u>Scholarship and Awards</u>

PhD students face significant financial hurdles related to tuition and expenses associated with research and dissertations. PhD students conduct original research that requires dedication and long hours. As a result, undertaking paid work is often challenging for graduate students. To bridge the financial gap for doctoral students, a wide cross-section of funding sources is available in the form of scholarships and awards.

A comprehensive list of scholarships and awards can be found on the YSGS website. [46] Financial support initiatives can be general in their eligibility requirements, or specifically targeted to individual student groups.

Additionally, thanks to a generous donation from Ted and Loretta Rogers, each year the Ted Rogers School of Management issues a total of 24 Graduate Entrance Scholarships and Awards worth up to $20,000.00 each. Augmenting these would be a priority of TRSM Development staff. TRSM endowments have grown by 14% between 2011 and 2015, standing at $39.2M.

2.g.ix. Library

A review of the Library's collection of electronic resources and journals was undertaken to ensure that they are aligned with the proposed program's core curriculum, as stated in the program proposal's detailed course outlines. The Library is recommending that consideration be given to acquiring several additional electronic resources and journals to enhance support for the program. These proposed acquisitions are consistent with developing a collection to address the research needs of students enrolled in a PhD in Management program.

The Ryerson University Library report demonstrates its commitment to supporting student learning in the proposed PhD in Management. Specifically, the reports states that "a review of the course outlines accompanying the program proposal suggests that written work requiring in-depth Library research represents a significant component of many courses. Though developing collections to support this research is

---

[45] https://www.ryerson.ca/graduate/future-students/financing-your-studies/
[46] https://www.ryerson.ca/graduate/future-students/financing-your-studies/scholarships-awards/

critical, so too is the role librarians play in providing expert instruction and research assistance to students, particularly at the graduate level. The Library's subject liaison librarians for business currently deliver classes, workshops and one-on-one in depth research assistance to TRSM's undergraduate and graduate students. This program of instruction and assistance will be extended to include students in the proposed doctoral program."

Additionally, the report indicates "that while a core of databases relevant to several aspects of the proposed program is available at Ryerson, consideration should be given to augmenting the existing Library collection to provide needed enhanced support for research in the potential areas of program specialization reflected in the detailed course outlines that accompanied the proposal. Based on those outlines, the Library has identified several numeric and full text databases that will provide resources for independent research by students enrolled the program by ensuring access to additional sources of qualitative and quantitative data." See Appendix E for the full Library Report.

2.h.   Quality and Other Indicators

2.h.i.   Quality Indicator Definitions and Use

Indicator 1: Publications in Top-Tier Journals

The Australian Business Deans' Council (ABDC) Journal Quality List is used to guide faculty in identifying appropriate outlets for their work. In the 2013-2017 time period, 47% of the PRJ's were published in journals on the ABDC list and almost a quarter (23%) of all peer-reviewed journal articles (PRJs) were published in ABDC list top-tier journals (A* and A). The other PRJs (53%) were published in journals not on the ABDC List. This is not surprising due to the diversity and breadth of the intellectual expertise of TRSM faculty, which goes beyond traditional business schools. Many of our faculty publish in top-tier journals in information technology (Computers & Industrial Engineering, 2015 5-Year Impact Factor of 2.517), digital media (New Media & Society, 2015 5-Year Impact Factor of 3.957 | Cyberpsychology Behavior and Social Networking, 2015 5-Year Impact Factor of 3.246) sustainability and energy (Applied Energy 2015 5-Year Impact Factor of 4.783 | Renewable Energy 2015 5-Year Impact Factor: 4.068 | Journal of Cleaner Production, 2015 5-Year Impact Factor: 5.315), management science (OMEGA: The International Journal of Management Science, 2015 5-Year Impact Factor of 4.289), ethics and law (American Journal of Bioethics, 2015 5-Year Impact Factor of 4.943), and health science journals (PLOS ONE, 2015 5-Year Impact Factor of 3.535).

Ensuring accessibility to research findings and reflecting the multicultural communities in which students, staff, and faculty live and work is another goal to which TRSM aspires. Several faculty members have published articles in niche journals aimed at diverse audiences, such as bilingual journals and journals with an emphasis on addressing issues in particular communities and/or in certain parts of the world. This is in addition to publishing in some of the most prestigious journals in business management, including the Academy of Management Journal, International Entrepreneurship and Management Journal, MIS Quarterly, Annals of Tourism Research, Journal of Consumer Research, Journal of Business Ethics, Strategic Management Journal, and Organization Science.

Indicator 2: Award Winning Intellectual Contributions

The high quality of TRSM intellectual contributions is also recognized externally via awards for outstanding scholarly works, including best/highly commended/distinguished papers, best posters/presentations, best

paper proceedings, top-ranked grants/grant proposals, and PhD dissertation excellence awards. Table 2.12 below lists a sample of awards received by TRSM faculty members between 2013 and 2017 for exceptional scholarship.

Table 2.12: A Sample of TRSM Award Winning Intellectual Contributions

Legend: DSM = Digital Enterprise and Social Media, RES = Real Estate Studies, RCS = Retail and Consumer Services, SIE = Strategy, Innovation and Entrepreneurship

Recipient(s)	Area	Award	Awarding Body/Organization
Gunn, F., Lee, S.H.	RCS	Best Paper Award for "Profiling People's Perceptions of Retail Management Careers"	European Association for Education and Research in Commercial Distribution
Lee, S.H., Kandaurova, M.*, Sergueeva, K.*, Griffin, T., Dimanche, F., Guttentag, D., & Giberson, J.*	RCS	Best Paper Award - Tourism & Sports Management Division for "Virtual Reality Enhances Visual Comprehension and Memory of Tourism Destinations"	2017 Administrative Sciences Association of Canada Conference
Gandomi, A. & Haider, M.	RES	Article "Beyond the Hype: Big Data Concepts, Methods, and Analytics" Ranked 1st Among the "Most Downloaded Articles" of the Journal (April 2015 to December 2016)	International Journal of Information Management – Elsevier
Gibbs, C. & MacKay, K.	RCS	2016 Highly Commended Paper Award for "Social Media Usage in Hotel Human Resources: Recruitment, Hiring and Communication"	International Journal of Contemporary Hospitality Management, Emerald Literati Network
Lee, S.H.	RCS	2016 Best Article of the Year Award for "Learning Beyond Negotiation Tactics: The Sales Marketplace"	Journal of Advancement of Marketing Education
Lee, S.H.	RCS	2016 Best Paper Award - Tourism & Sport Management Division for "Forgiving Sports Celebrities with Ethical Transgressions: Parasocial Relationships and Regulatory Focus Orientation"	2016 Administrative Sciences Association of Canada Conference

Malhotra, S. & Sui S.	SIE	Best Paper Proceedings Award for "The Influence of Entry Density on the Survivability of SMEs in International Markets"	2015 Annual Meeting of the Academy of Management
Dodds, R.	RCS	Best Paper Award for "Sustainable Tourism Using a Watershed Management Approach"	2015 Advances in Hospitality and Tourism Marketing and Management Conference
Gruzd, A.	DSM	Best Paper Award for "Politically Polarized Online Groups and their Social Structures formed around the 2013-2014 crisis in Ukraine"	2014 The Internet, Policy & Politics Conference, University of Oxford
Scofield, D.	RES	2014 Highly Commended Paper Award for "Broker Use and the Price of Liquidity in Commercial Real Estate Investment" in the Journal of European Real Estate Research	Emerald Publishing
Lee, S.H.	RCS	2014 Best Paper Award for "A CIT Investigation of Disruptive Student Behaviors: The Students' Perspective" in Marketing Education Review	Marketing Education Review

*TRSM student

Indicator 3: Scholars Recognized for Contributions to Theory and Scholarship

Many TRSM faculty members have been recognized by external bodies and organizations for their impact on and contributions to furthering academic scholarship. In the 2013-17 time period, TRSM faculty have received awards and honours for outstanding reviewing activities and their overall influence and contributions to a field of study. Table 2.13 below lists awards and honours received by TRSM faculty recognizing their impact on theory and scholarship.

Table 2.13: Awards and Honours Recognizing Impact of TRSM Researchers on Theory and Scholarship

Recipient(s)	Area	Type of Award/Honour	Award/Honour	Awarding Body/Organization
Cukier, W.	SIE	Honouring Research Accomplishments	2017 Social Innovation and Action Research Award	Ryerson University
Fels, D.	DSM	Research Award (Nomination)	Named Finalist for a 2017 SSHRC Insight Award	Social Sciences and Humanities Research Council
Gruzd, A.	DSM	Honouring Research Accomplishments	2017 Collaborative Research Award	Ryerson University
Gruzd, A.	DSM	Honouring Research Accomplishments	Named as a Member of the College of New	Royal Society of Canada

			Scholars, Artists and Scientists (2017)	
Dimanche, F.	RCS	Recognizing Research Accomplishments	Listed in Top 0.5% of Researchers by 30-Day Views (April-May 2016)	Academia.edu
Farrar, J.	RES	Fellowship	Named Associate Research Fellow	Tax Administration Research Centre, University of Exeter
Farrar, J.	RES	Fellowship	Named Doctoral Fellow	CPA Ontario
Gruzd, A.	DSM	Research Award	Named Canada Research Chair (Tier II) in Social Media Data Stewardship	Canada Research Chairs
Gruzd, A.	DSM	Fellowship	Named Ontario/Baden-Württemberg Faculty Research Fellow	Ontario Universities International
Ngwenyama, O.	DSM, SIE	Fellowship	Appointed Professorial Research Fellow in the Department of Information Systems and Business Analytics	Faculty of Business and Law – Deakin University (Australia)
Ngwenyama, O.	DSM, SIE	Visiting Scholar	Appointed Visiting Professor	Institut d'Economie et Management de Nantes –Université de Nantes (France).
Ngwenyama, O.	DSM, SIE	Honouring Research Accomplishments	Inducted as a Member	Academy of Science of South Africa
Ngwenyama, O.	DSM, SIE	Recognizing Research Accomplishments	Named One of the Top 100 Information Systems Researchers (1990-2015)	Association for Information Systems (AIS)
Fels, D.	DSM	Honouring Research Accomplishments	2015 Collaborative Research Award	Ryerson University
Sui, S.	SIE	Best Reviewer Award – Journal	Best Reviewer Award, Strategic Management and International Business Area (2015)	Canadian Journal of Administrative Sciences

Lee, S.H.	RCS	Best Reviewer Award – Journal	Best Reviewer of the Year Award (2015)	Marketing Education Review
Middleton, C.	DSM	Honouring Research Accomplishments	Named to the Royal Society of Canada College of New Scholars, Artists and Scientists (2014)	Royal Society of Canada
Dimanche, F.	RCS	Fellowship	Elected a Fellow of the International Academy for the Study of Tourism (2013)	International Academy for the Study of Tourism
Fels, D.	DSM	Honouring Research Accomplishments	Margaret R. Pfanstiehl Memorial Achievement Award for Research Contributions and Development in Audio Description (2013)	American Council of the Blind

Indicator 4: Impact on Theory and Scholarship Through Service

TRSM faculty members also influence theory and scholarship through their roles in scholarly organizations. Table 2.14 below lists the organizations for which TRSM faculty members have served through leadership roles, editorial activities, and as members of advisory boards and on boards of directors.

Table 2.14: Sample of Editorial Activities and Significant Roles in Scholarly Organizations

Type	Organization
Editorships & Co-Editorships (Peer-Reviewed Journals and Academic Conferences)	AIS Transactions on Human-Computer Interaction ALSB Journal of Employment and Labor Law Association for Information Systems Big Data & Society Journal Business Ethics Journal Review European Conference on Information Systems European Journal of Information Systems Global Journal of Business and Economics Global Science & Technology Forum - Journal of Business Review Human Behavior and IS track - International Conference on Information Systems Decision Analytics and Support track - International Conference on Information Systems

	International Journal of Information Systems and Change Management
	IT Implementation, Adoption, and Use track - International Conference on Information Systems
	Journal of Business Ethics
	Journal of Small Business and Entrepreneurship
	Journal of Sustainable Tourism
	Journal of Tourism Challenges and Trends
	Journal of Tourism Futures
	Networked Influence - American Behavioral Scientist
	Online Communities for Information, Communication & Society
	Social Media Research and Analytics track - European Conference on Information Systems
	Special Issue on Human-Computer Interaction in the Web 2.0 Era - AIS Transactions on Human-Computer Interaction
	Technology and Disabilities
	Teoros Special Edition: Innovations in Sustainable Tourism
	Tourism Analysis: An Interdisciplinary Journal
Editorial Board Memberships (Peer-Reviewed Journals and Academic Conferences)	ARA Journal of Travel Research
	Athens Institute for Education and Research
	Contemporary Accounting Research
	Electronic Journal of Knowledge Management
	EUMMAS 2014 International Conference on Marketing, Management and Economics
	European Retail Research
	i-Manager's Journal on Management
	International Journal of Applied Geospatial Research
	International Journal of Business Environment
	International Journal of Contemporary Hospitality Management
	International Journal of Hospitality & Tourism Administration
	International Journal of Hospitality and Event Management
	International Journal of Sport Marketing and Sponsorship
	International Sport Facility and Event Management Journal
	Journal of Business Research
	Journal of African Business
	Journal of Business Ethics
	Journal of Place Management and Development
	Journal of Travel Research
	Journal Recent Patents on Computer Science
	Papers in Applied Geography
	SMEDA Research Journal
	Strategic Management Journal
	Sustainability Journal

	Teoros Journal The Shield: International Research Journal of Physical Education and Sports Science
Leadership Roles	Association of Information Systems Special Interest Group on Decision Support and Analytics Association of Internet Researchers International Congress on Environmental Modelling and Software Journal Review Foundation of the Americas Travel & Tourism Research Association Canada Travel and Tourism Research Association Europe
Membership on Boards of Directors	CANARIE (Canada's Advanced Research and Education Network) Consortium for Aerospace Research and Innovation in Canada Iranian Scholars Worldwide Japan Studies Association of Canada Travel & Tourism Research Association Travel and Tourism Research Association Europe
Membership on Advisory Boards	1st Biannual Forum - Advances in Destination Management Business Ethics Journal Review Business Specialty Group, American Association of Geographers Canadian Business Ethics Research Network Canadian Journal of Non-profit and Social Economy Research Centre for Outsourcing Research and Education (CORE) Equity Policy of the Canada Research Chairs Program International Journal of Contemporary Hospitality Management Journal of Information Policy Journal of Information Technology Journal of Natural Resources and Development Journal of Non-profit and Public Sector Marketing Sports Marketing and Management Conference Strategic Outsourcing, International Journal Summer Research Institute, Consortium for the Science of Socio-Technical Systems Tourism Review International

Indicator 5: Impact on Practice Through Service

The impact of TRSM faculty on practice is demonstrated by faculty service roles in industry, government, and community organizations. The significant roles listed in Table 2.15 below testify to the influence of TRSM faculty on practice in various fields and sectors. Their contributions have resulted in enhanced decision-making and in the implementation of strategies capable of improving quality of life and achieving economic, social, and environmental goals at the local, national, and international level.

Table 2.15: Significant Roles in Industry, Government, and Community Organizations

Role	Organization
Advisory Roles & Membership on Advisory Boards, Boards of Trustees, and Boards of Directors	Big Brothers and Sisters Canada Oriental Culinary Society Canadian Association of Fairs and Exhibitions Canadian Entrepreneurship & Innovation Platform Crossbar Group (Diversity & Inclusion Study) Environics Institute Flybits, ICT startup Guelph Community Sports The Icarus Foundation International Data Corporation Ontario Ministry of Community and Social Services Municipal Property Assessment Corporation of Ontario NEST Network Board of Directors NPower Canada Regional Advisory Board Online Revealed Canada Ontario Government Changing Workplaces Review Social Policy Advisory Council (Government of Ontario) St Joseph's Rehabilitation Corporation The Responsible Gambling Council of Ontario Toronto International Film Festival United Nations Global Compact (ISO 26000 Social Responsibility Standard) Women's College Hospital Board of Directors
Membership on Committees and Task Forces	American Collegiate Retailing Association Baycrest Health FIPPA Committee Baycrest Health Privacy Committee Brazil-Canada ICT Working Group Canadian Association of Chiefs of Police, Quality Assurance Committee Canadian Committee for International Standard ISO 37500 Canadian Industrial Relations Association (CIRA) CFA Award of Excellence Committee, Canadian Franchise Association Complaints Committee Society of Management Accountants of Ontario CSR Centre of Excellence for Extractive Sector Diversity Forum, Toronto Board of Trade Ecobiz Tourism Commission, Nice French Riviera Chamber of Commerce Equity & Community Advisory Committee, Women's College Hospital Greening Events Committee, The Icarus Foundation, Canada Canadian Retail Group Committee, International Council of Shopping Centres International Women's Forum Laser Safety in Health Care Facilities for CSA Standard Z386, Technical Committee

	North American Research Taskforce, International Council of Shopping Centres
	PRIDES (Pôle Régional d'Innovation et de Développement Economique Solidaire), Tourisme d'Affaires et de Congrès
	Research Advisory Committee, Real Property Association of Canada
	Rules Committee, Ontario Court of Justice
	Services Advisory Board, Statistics Canada
	Sustainable Canada Dialogues Initiative (Ontario)
	Telecom Valley M-tourism Commission
	Toronto Community and Cultural Centre
	Toronto Region Immigrant Employment Council Advisory Council
	Transportation Options (Canada)
	Women's College Hospital Foundation
	Women's College Hospital, Quality Assurance Committee

2.h.ii.   Intellectual Quality of Student Experience

The overarching goal of this PhD in Management program is to provide an outstanding educational experience for TRSM graduate students from enquiry to graduation and beyond.

PhD study is characterized by increased student autonomy, higher academic demands, closer relationships with faculty, and potentially exciting and rewarding outcomes for both faculty and students. The overall goal is to achieve the timely completion of an excellent degree for every student.

Student Learning Support

For graduate students with specific concerns about their academic skills and the demands of graduate-level study, the Ryerson Student Learning Support Centre (SLS) programming will help candidates to further develop these skills under the guidance of staff.

Programming includes graduate writing groups, dissertation retreats, dissertation coaching, graduate research and writing institutes and tailored workshops.

The SLS offers a variety of free support programs designed to help students improve and develop their communication skills – help with writing, speaking, listening, and reading. This also becomes an opportunity to meet fellow students and practice language skills in a friendly, stress-free environment. Students may book individual appointments with an English language facilitator or take part in Group sessions that aim to improve oral fluency and interpersonal communication skills through group discussions, real-life tasks and presentations.

Yeates School of Graduate Studies Support

The Yeates School of Graduate Studies (YSGS) is another resource for graduate students seeking help with many aspects of graduate student life, including funding applications, writing and editing, and navigating the job search process.

Instruction, information and research-skills support currently available to graduate students include regular or occasional workshops such as Navigating the Library Resources; Grad Talks, and Dissertation and Exam support to name a few. YSGS provides a student orientation program for graduate students in the Fall of each year and also provides ongoing information and support through a variety of programs such as online professional development workshops and the Three Minute Thesis competition.
Locate current workshop schedule at: http://library.ryerson.ca/info/whats-new/workshops-and-events/, and workshops for graduate students at: http://library.ryerson.ca/services/grads/gworkshops/

Assistance with Funding/Grants

To assist candidates to fund their research through grants and scholarships, there are also presentations provided by YSGS and TRSM to explain the expectations of the various funding bodies.

It is understood that a strong PhD program must be supported by substantial resources in the form of funding, support services and skills development opportunities. We have made significant efforts in this regard since 2011. Financial support is provided to assist faculty members at various stages of the research process. An annual competition is held for up to 15 Internal Development Grants ($7,000) to launch new projects or lines of research. Research presentations at peer-reviewed conferences are facilitated by the SRC Travel Grant ($2,000), available to faculty members upon application. TRSM also has financial assistance programs for registration costs associated with attending a conference within the Greater Toronto Area ($250), graduate student conference attendance, and journal publication/submission fees to ensure that professors are able to publish their work in the most appropriate publications. Newly admitted PhD candidates will be eligible to apply for such resources directly or in collaboration with their supervisor.

Ryerson University offers world class training to our students through experiential learning and research opportunities. The Office of the Vice –President Research and Innovation are committed to building capacity in our students, imparting the skills necessary for them to become the next generation of highly qualified personnel.[47] The OVPRI website provides links to a large number of funding programs including OCE TalentEdge, Mitacs, and the Ryerson International Conference and research Support fund to name a few.

Government-funded programs such as MITACS are playing a key role in connecting student researchers with initiatives in business and industry through internships (Accelerate), and providing skills training (STEP and NTT) and postdoctoral opportunities (Elevate). We will promote these opportunities to PhD candidates and identify any barriers to their involvement.

Faculty Support

Many faculty members have been identified with the academic background and expertise to be able to provide the necessary guidance and leadership to make the proposed program a success. TRSM encourages a research culture where faculty members engage students in research by providing physical space for graduate students, supervision of graduate research, and by promoting faculty applications for funding that include support for hiring graduate research assistants.

Upon entry to the program, a supervisor will be assigned to each PhD in Management student. The supervisor will serve as a guide and mentor to the student, assisting them in navigating choice of courses, dissertation topic, research approach and method, and other research related activities. In consultation with the student, a Supervisory Committee will be formed. The committee will provide guidance to the student and assess their progress through the program, from the articulation of research intention to the completion of their thesis.

---

[47] https://www.ryerson.ca/research/students/

Committee members will provide feedback and guidance to the student to ensure they can be complete the program successfully.

Faculty in the program will ensure the intellectual quality of the student experience in the following ways:

- Foundation seminars modules will be taught by a range of faculty, ensuring their interaction with students and the transmission of a wide range of expertise
- A student's supervisor will support the student's progress through the program through regular meetings, including an annual committee meeting, meetings to discuss preparation for the candidacy exam and regular dissertation meetings
- Faculty in the program maintain impressive publication, performance and research-creation records, ensuring not only that students are taught by experts working at the leading edges of their fields but also that the problem-based approach of the program remains focused on current and emerging issues
- Faculty in the program will engage students as research assistants, co-publishers, co-researchers, and collaborators on a variety of projects according to their interests and expertise. This will ensure that junior scholars are provided with support and mentorship in learning the processes involved with preparing and disseminating intellectual and artistic work.

To further develop a culture of research, resources to support faculty are essential. We have made significant financial investments in workshops, seminars, and personnel to inform research practices, grant writing, and knowledge mobilization. In 2015, a Research Mentors program was initiated to offer expertise and support to researchers relevant to varying career stages. Research Mentors provide leadership in cultivating research skills by hosting seminars and workshops (e.g., writing retreats, methodology workshops, etc.) to foster research excellence.

Career Support Services

One of the changes facing doctoral students today is the change in career opportunities available to doctorate holders. Traditionally, the doctorate was seen as the entrance qualification for an academic career. Today, however, doctoral graduates are employed across all sectors, often in research and/or management roles. Despite this, both doctoral students' and supervisors' understanding of this new career landscape is often poor, and can lead to misinformed expectations, disappointment and loss of opportunities. [48]

Research Centres and Institutes

TRSM is home to 15 research centres/institutes. These centres provide important connections to industry and community partners and produce an extraordinary number of research contributions ranging from peer-reviewed publications and industry reports to international conferences with world renowned speakers. They contribute to the reputation of TRSM and the credibility of our work in industry and academic circles in several strategic areas important to TRSM's mission. These centres have collectively hosted over 1000 events in the past five years and are routinely open to undergraduate and graduate students. TRSM research institutes are critical for knowledge transfer, enhancing research skills of students and faculty, and networking

---

[48] https://www.universityaffairs.ca/career-advice/beyond-the-professoriate/does-a-phd-actually-make-a-difference-in-a-non-academic-work-environment/

locally and globally. TRSM must continue to broaden our international relations and deepen them to include comprehensive research and student education partnerships.

Centre for the Study of Commercial Activity (CSCA)

The Centre links the activities of a university-based research unit with the needs of a broad set of private and public sector members. The concept has been to build, maintain and develop extensive databases that enable CSCA researchers to establish a detailed understanding of the changing nature of the supply-side of the Canadian consumer service sector.

The research activity of the Centre has been supported by industry membership, the Eaton Chair endowment, grants from provincial and national funding agencies and University support. The underlying research model is based on a 'mutual fund' approach whereby the Centre seeks and benefits from the support of a range of stakeholders, and in turn, members of the CSCA benefit from the Centre's insights and data. Promoting partnerships between the private and public sector has been a key component of the success of the CSCA.

At Ryerson there are a number of departments with their teaching and research programs that link to the CSCA research mandate. The Centre works with various programs with regard to student training, career opportunities, thesis supervisions or partnership research activities.

Entrepreneurship Research Institute

The Entrepreneurship Research Institute was founded in 2008 with a mandate to encourage and support research that improves our understanding of the fundamental questions of entrepreneurship. Membership is open to any researcher at Ryerson University who is interested in the phenomenon of entrepreneurship and how it contributes to social well-being and national development.

The ERI is devoted to investigating the role that entrepreneurs play in modern economies. In keeping with the reputation of Ryerson University and the Ted Rogers School of Management, ERI focuses on research of high academic and intellectual value, with clear applicability to practitioners in the business community. ERI also delivers periodic seminars and symposia on topics of interest to scholars of entrepreneurship.

Institute of Innovation and Technology Management

The strategic mission of the Institute for Innovation and Technology Management (IITM) is to find innovative solutions to real-world technology management problems. We understand that these problems are interdisciplinary and, as such, any solution must go beyond traditional views of organization and technology.

Major research collaborations include:

- OSAP, Social Media and Perceptions of Postsecondary Education Affordability
- Accelerating Digital Technology Adoption in Canadian Companies (ADOPT-IT)
- Connected Workplace: The Transformation of Work in Canada
- Information Technology Management and Organizational Learning
- Dynamic Design Capabilities
- Information Technologies and Economic Growth

The Institute has cultivated national and international relationships with other post-secondary institutions and is proud of its extensive links with experts from a variety fields.

Social Media Lab

The Social Media Lab is an interdisciplinary research laboratory. The lab studies how social media is changing the ways in which people and organizations communicate, disseminate information, conduct business and form communities, and how these changes impact the social, economic and political structures of modern society.

Expertise lies in studying online communities and social networks and developing new methods for analyzing and visualizing social media data. The broad aim is to provide decision makers with insights into the behaviors of online network members, and to understand how these interpersonal connections influence our choices and actions.

The lab is comprised of international, multi- and interdisciplinary team of faculty and student research collaborators are spread across the globe. Our expertise lies in studying online communities and social networks and developing new tools and methods for analyzing and visualizing social media data. The research foci includes Online Communities, Social Media Data Stewardship, Online Social Networks, Social Networks Analysis, Information Visualization and Computer-Mediated Communication

Diversity Institute

The Diversity Institute uses an ecological systems approach to understand diversity and inclusion at the societal, organizational and individual levels. We also leverage technological and social innovation to address both long-standing and emerging societal challenges. We deploy policy and media analysis to examine nuanced aspects of workforce integration, and undertake advocacy to government for evidence-based public policy measures based on our research.

Using an ecological model of change, the Diversity Institute is driving innovation across sectors. Workplaces do not operate in a vacuum: broad social and cultural factors influence external perceptions of an organization and have a profound impact on procuring the talent necessary to succeed.

The ecological model provides a framework for organizations to consider the complex interactions and barriers among individual, organizational and societal factors. A thorough understanding of the linkages between the societal, organizational and individual levels ensures that organizations support practices that positively shape systemic processes.

Inclusive Media and Design Centre

Established in 1994, the Inclusive Media and Design Centre designs, creates, and evaluates inclusive media and technology. Projects focus on inclusivity in technologies for the blind and low-vision and deaf and hard of hearing individuals.

Teaching and Learning Support

Graduate students as TAs are key contributors to the learning environment at TRSM. For this Ryerson University provides appropriate training to develop the necessary teaching skills both for professional development and to maintain the quality of teaching. The Learning and Teaching Office (LTO) is a leader in learning and teaching at Ryerson. As the primary support for the teaching community at Ryerson, the LTO fosters a culture of excellence and innovation in teaching, working to continually enhance student learning across the university.

The LTO offers faculty-specific Teaching Assistants/Grading Assistants (TA/GA) orientations at the beginning of the Fall semester and a university-wide orientation at the beginning of the Winter semester. The orientations

are designed to help prepare new TAs and GAs for their first day of class. The university-wide option is open to all TA/GAs. Individuals working in TRSM register for a customized unique session.

True to our mission, TRSM focuses on student development and career ready education and that means emphasizing practical solutions to real-world problems and situations. In this regard, Teaching/Graduate Assistants (TA/GA) play a distinct role. At TRSM, TA/GA supplement, rather than replace faculty instruction. TA/GA lead tutorials, labs and discussion groups providing students with the opportunity to engage actively with the lecture material as they work alongside their peers. Ryerson's Learning and Teaching Office, in conjunction with TRSM, provides opportunities for TA/GA to become more effective in their work at TRSM and to mentor others through a comprehensive three-level certification program.

The LTO provides a collection of resources and programs for PhD students that assist in developing the skills and attributes necessary for a successful academic career. With specific topics in teaching, course design, engaging students, classroom management, professional development, writing, and public speaking and presenting, the resources available gives students the opportunity to learn and develop skills that will serve them in the course of their doctoral education as well as in their careers to follow.

Although most studies show a decline in the number of doctoral students desiring an academic career as their program progresses, there does not appear to be a corresponding increase in knowledge about the variety of alternatives available to them. This indicates a need, from registration onwards, for more robust and tailored careers advice and support for doctoral students to help them take advantage of exciting potential career paths.

Students at TRSM receive more individualized and extensive career services than most graduate programs. The TRSM Business Career Hub and Graduate Career Services Office are the vital links between the business community and TRSM in providing employability skills development and job opportunities for all students within the faculty; to deliver valuable career counselling; to enhance job search skills through career development services; and to provide employers with skilled workers well prepared to contribute to their organization. The services focus on providing students the tools for successful career self-management and enabling the development of the employability skills necessary to achieve career goals.

APPENDICES INCLUDED IN PROPOSAL

Appendix A.   *Comparator School Market Scan and SWOT*

Appendix B.   *Course Outlines*

Appendix C.   *Letters of Support and Authorization Letter*

Appendix D.   *Faculty Qualifications and CVs*

Appendix E.   *Library Report*

Appendix F.   *Graduate Degree Level Expectations Table and Curriculum Map*

Review of the PhD in Management Program at the Ted Rogers School of Management, Ryerson University

Jeffrey Parsons
Faculty of Business Administration
Memorial University of Newfoundland
St. John's, NL A1B 3X5

Giovani da Silveira
Haskayne School of Business
University of Calgary
Calgary, AB T2N 1N4

Mohamed Wahab Mohamed Ismail
Mechanical and Industrial Engineering
Ryerson University
350 Victoria Street, Toronto, ON M5B 2K3

1.   Outline of the Review

The site visit took place on May 22 and 23, 2019. During the visit, the peer review team met with various representatives from Ryerson University, including the Dean of the Yates School of Graduate Studies (YSGS), Dean of the Ted Rogers School of Management (TRSM), Associate Deans from the TRSM, the Director of Strategic Initiatives and Accreditations, members of the PhD Curriculum Development Committee, faculty members from the proposed specialization, current MScM students in the TRSM, staff from the Graduate Programs Office, faculty members who served as second readers of the PhD in Management proposal, and the Provost and Vice-President, Academic of Ryerson University. In addition, the review team toured the Student Learning Centre and the Library with staff from the TRSM and the Library. The review team was also provided with time to meet alone to discuss issues and begin drafting the report.

A copy of the agenda with further details of the meetings is provided as an Appendix.

2. Evaluation

2.1. Objectives

Ryerson's mission and academic plan is to create programs relevant to changing careers, professions, and scholarly disciplines. Since the proposed Ph.D. program is based on existing strengths of the faculty, it would enhance partnerships with industry, government, and professional practice through various research and innovation activities. Hence, the proposed program is aligned with the institution's mission and academic plans.

The learning outcomes are aligned with Ryerson University's Graduate Degree Level Expectations (GDLEs).

Based on the goal and objectives of the program, the proposed nomenclature is appropriate.

2.2 Admission requirements

Admission criteria listed in Section 2.b.ii of the proposal are generally aligned with the learning outcomes listed in Section 2.a.ii. However two items need further attention.

First, there is currently no specified minimum GMAT score. Requiring a minimum GMAT would: (i) provide assurance of the quality of the incoming students; and (ii) weed out weak applications. Potential target minimums are: (i) 550 - to be consistent with minimum requirements for the MBA; or (ii) 600 - to distinguish the PhD as requiring a clearly higher minimum than the MBA. Also, the exemptions from writing the GMAT should be clearly stated (e.g., considerable relevant work experience). This will also help communicate a high admission standard and help maintain or even enhance the quality of the program in the long run.

Second, in the statement of intent and interview, applicants must express interest in developing original knowledge and disseminating research results to advance scholarship and knowledge transfer (L05.c, p.39).

2.3 Structure

The program has four main components including graduate coursework, research seminars, candidacy examination, and dissertation.

This structure is consistent with the learning objectives of the program, and with other doctoral programs in management in Canada.

The timelines provided on Tables 1.2 (full-time) and 1.3 (part-time) are appropriate in light of the structure currently proposed for the program.

2.4 Program curriculum and content

The program includes four specializations that appear to be well aligned with the university strategic mandate agreement (SMA) and the research interests and expertise of the faculty.

However, we noted several limitations with the proposed curriculum. First, the program appears to be light on course requirements. The number of courses should be more consistent with existing programs in Canada, as indicated on Table 2.5, which includes the number of required rather than total courses in each regular program. Also, the three proposed research seminars do not appear to be equivalent to regular courses as considered in other institutions. Thus, we suggest increasing the total number of courses (which may include required and a minimum number of electives) in the curriculum. For

example, the first two years in the program (full-time format) could be mostly dedicated to work in 12 courses. Required and elective courses can be selected from the list "Methodological graduate courses at TRSM" rather than from the "Methodological graduate courses at Ryerson," as this would provide more control over what courses can be offered to the Ph.D. students at TRSM. If necessary, depending on the topic of the research and availability of the course from the list "Methodological graduate courses at Ryerson", a Ph.D. thesis supervisor can suggest a Ph.D. student to courses from specific courses from the list "Methodological graduate courses at Ryerson."

Several alternatives can be considered regarding the content of both existing and additional courses. We agree with "Respondent C" in the document "Authorization form and summary of responses" that the proposed quantitative methods course fails to include several tools and techniques that can be fundamental for research in many (if not all) of the program specializations. That includes content in econometrics, analytics, modeling, and simulation, among other quantitative tools. Should the school disregard the previous recommendation and maintain the current course load, this alternative can be implemented by requiring students to take a minimum of two elective methods courses in the first year rather than the currently proposed quantitative (statistics) and qualitative methods courses.

Curriculum expansion should also include a course on Philosophy of Science/Theory Development to enable students to explore ontological and epistemological foundations of research activity.

There should be an effort to offer specialization courses regularly (rather than as directed studies) according to demand. This can be accomplished by: (i) reducing the minimum number of student registrations to offer a regular course from five to three; and (ii) targeting admissions to admit at least three students in the same specialization each year.

PhD students are required to complete a dissertation consisting of independent research. This is a standard deliverable for PhD programs in management and is appropriate.

All courses taken by students in the PhD program must be graduate courses.

2.5 Mode of delivery

The course requirements of the program are to be delivered by a combination of traditional in-class courses and directed studies courses. This is appropriate as the in-class courses provide the opportunity for students to learn from others in a group setting, while the directed studies allow students to focus on specific topics relevant to their planned research. However, there should be careful attention to the appropriate balance between these two modes of delivery. Specifically, most courses should be delivered in a traditional in-class format to ensure consistency with other courses in the program and opportunities for student interaction and discussion.

Part-time students may come from industries and the focus of their research activities might be related to the problems they face in their industries. Such students' research must be

able to meet rigorous quality required to be publishable. In some cases, an industry may not want to publish the research, which uses real data. Such issues must be addressed to meet the "Graduate Degree Level Expectations".

2.6 Assessment of teaching and learning

The expectations for full-time and part-time students are identical ("based on the novelty, merit, and publishability of the work" (page 59)).

Final Ph.D. dissertation must also be evaluated by the internal (to Ryerson University) and external examiners. This is consistent with PhD programs in other Canadian universities.

2.7 Resources

Facilities at TRSM, including resources from Ryerson Library, are appropriate to support the proposed Ph.D. program. The Library has assessed the materials needed to support the proposed PhD program and indicated additional resources of approximately $130,000 per year that need to be acquired. It is unclear whether the University has committed to providing the additional budget for these acquisitions.

Program website must indicate that the part-time students are not funded.

2.8 Faculty

The TRSM has a large body of faculty with adequate expertise in all four proposed PhD specializations: (a) Digital Enterprise and Social Media; (b) Real Estate Studies; (c) Retail and Consumer Services; and (d) Strategy, Innovation and Entrepreneurship. As indicated in Section 2.g.iii of the proposal, there has been a significant increase in journal publications and research funding over the last decade.

The review team considered whether additional criteria (beyond the requirements for membership in YSGS) should be required to supervise PhD students. In particular, supervisory potential for the program can be assessed based on:
- Quality, quantity, and recency of publications;
- Success in obtaining external research grants; and
- Involvement in supervising/co-supervising Ph.D. students in other programs within Ryerson or outside of Ryerson.

2.9 Quality and other indicators

There are numerous faculty members in the areas of proposed specializations who have external research funding (Tri-Council, other sources). In addition, there are a number of research centres that provide evidence of high quality research activities that can support the PhD program.

3. Other Issues and Comments

Even though the subject was covered in at least two meetings, it was still not clear to the review committee how much and in what circumstances the planned financial support to students (about $25,000 per year, for four years) could be obtained. Faculty and staff indicated a range of available options, including scholarships, grants, and teaching. However, there is no clear indication in the proposal of the extent (i.e., budget) to which these items will be available, and the criteria for their award/disbursement. We strongly encourage TRSM to articulate the various funding sources, the amounts available per student and overall by the school, application and award criteria, and (in the case of grants) what expenses are allowed.

In addition, TRSM should establish and communicate clear requirements for PhD students to teach during their program. For example "students should teach at least two courses as part of their training in the PhD program."

4. Recommendations: Internal Action

1. Focus on one or two specializations for the initial intake to build a minimum-sized "cohort" of students in each specialization ($n \geq 3$) and allow the offering of the respective specialization courses.
2. Develop clearer admission criteria:
   - Require a GMAT/GRE minimum score (with limited and clearly specified exceptions).
   - During student interviews, search for explicit evidence of an applicant's interest to develop and publish research that is original, high in quality, and relevant for the specialization field.
   - Develop an "interview guide" to better coordinate with and support potential supervisors as they interview student candidates. The guide should indicate what minimum aspects and criteria should be explored in the interviews.
3. Revise course requirements
   - All students should be required to take an additional research methods course. The specific additional course can vary between specializations, depending on the need.
   - Consider offering a course on Philosophy of Science and/or Theory Development in the first year for all specializations.
4. Develop clear processes for managing student funding including scholarships, grants and other awards.Ensure the PhD program website makes clear that part-time students are not funded.
5. Develop a process to handle issues with PhD students (e.g., switching Ph.D. thesis supervisor).
6. Develop guidelines for writing two different types of PhD thesis (monograph versus manuscript-based).

Recommendations: External Action

1. Acquire additional library electronic resources and journal subscriptions as indicated in Appendices 3 and 4 of the "Library Response" document. In particular, we recommend subscribing to the *Business Source Complete* database and to the *Marketing Science* journal (if this is not included in the new database).
2. Develop a proposal to introduce a *Doctor of Business Administration* program for students looking at careers in business management rather than in public/private research or academia.
3. Offer Directed Reading courses in lieu of elective (or any other course) only when there are fewer than three (rather than five) students enrolled.

APPENDIX

<table>
<tr>
<td colspan="5">Peer Review Team Visit
PhD in Management
Ted Rogers School of Management – Ryerson University</td>
</tr>
<tr>
<td colspan="5">Wednesday, May 22, 2019 – Peer Review Visit Agenda – Day 1</td>
</tr>
<tr>
<td>Meeting Time</td>
<td>Meeting Topic</td>
<td>Meeting Purpose</td>
<td>Participants</td>
<td>Meeting Notes</td>
</tr>
<tr>
<td>8:45</td>
<td>Peer Review Team (PRT) Hotel Pick Up</td>
<td>Cindy Dunne will meet PRT in lobby of the Sheraton Hotel and accompany to first meeting at the Ted Rogers School of Management (TRSM).</td>
<td>· Dr. M.W. Mohamed Ismail, Professor and Associate Chair, Industrial Engineering Ryerson University
· Dr. Jeffrey Parsons University Research Professor, Information Systems Memorial University
· Dr. Giovani Caetano da Silveira, Professor and Chair, Operations Management University of Calgary
· Ms. Cindy Dunne</td>
<td>Sheraton Hotel
123 Queen Street West Toronto, ON
416-361-1000

Ted Rogers School of Management (TRSM)
55 Dundas Street West Toronto, ON, M5G 2C5
416-979-5000 ext 5119

Cindy Dunne Mobile: 289-442-7599</td>
</tr>
</table>

			Director, Strategic Initiatives and Accreditations (TRSM)	
9:00 – 10:00	Overview Meeting	Review of appraisal process and program brief.	· Peer Review Team · Dr. Cory Searcy Interim Vice-provost and Dean, Yeates School of Graduate Studies (YSGS) Ryerson University · Dr. Daphne Taras Dean, TRSM · Dr. Hong Yu Associate Dean, Graduate Programs (TRSM) · Dr. Ozgur Turetken Associate Dean, Research (TRSM) · Ms. Nicole Duccomun Director, Graduate Program Administration (TRSM) · Ms. Cindy Dunne Director, Strategic Initiatives and	Dr. Ozgur Turetken is a tentative participant. Location: Dean's Boardroom 3-006

			Accreditations (TRSM) · Mr. Ben Samms Decision Support Analyst (TRSM)	
10:15 – 10:45	Meeting with Associate Dean, Graduate Programs, Director, Graduate Program Administration and support staff.	Review of program and questions from documents provided.	· Peer Review Team · Dr. Hong Yu Associate Dean, Graduate Programs (TRSM) · Ms. Nicole Duccomun Director, Graduate Program Administration (TRSM) · Ms. Cindy Dunne Director, Strategic Initiatives and Accreditations (TRSM) · Mr. Ben Samms Decision Support Analyst (TRSM) · Mr. Nik Ashton Research Support Specialist	Location: Dean's Boardroom 3-006

11:00 – 11:30	Tour of Student Learning Centre		· Peer Review Team · Ms. Anna Shevchenko Graduate Program Administrator (TRSM) · Ms. Carol Shepstone Chief Librarian, Ryerson University · Ms. Nazia Sheikh Subject Librarian, Ryerson University	Anna Shevchenko to escort Peer Review Team to Student Learning Centre for tour. Location: Meet at SLC Information Desk
11:45 – 12:15	Library Visit		· Peer Review Team · Ms. Anna Shevchenko Graduate Program Administrator (TRSM) · Ms. Carol Shepstone Chief Librarian, Ryerson University · Ms. Nazia Sheikh Subject Librarian, Ryerson University	Anna Shevchenko to escort Peer Review Team to Library.

| 12:30 – 2:00 | Lunch with faculty representatives from proposed specializations. | This meeting is to be attended by representatives involved in the creation of proposals for the proposed specializations. | · Peer Review Team
· Dr. Daphne Taras
Dean, TRSM
· Dr. Hong Yu
Associate Dean, Graduate Programs (TRSM)
· Dr. Ken Grant
Professor, Entrepreneurship and Strategy (TRSM)
· Dr. Anatoliy Gruzd
Associate Professor and Canada Research Chair, Information Technology Management (TRSM)
· Dr. Murtaza Haider
Associate Professor, Real Estate Management (TRSM) | Anna Shevchenko to escort Peer Review Team to Joey's immediately following Library visit.

Location: Joey's Restaurant CF Toronto Eaton Centre Toronto, ON (647) 352-5639

Reservation under: Ted Rogers |

Time	Event	Description	Attendees	Location
2:15 -3:00	Meeting with Current TRSM, Master of Science in Management (MScM) Graduate Students	This meeting is to be attended by students and Peer Review Team only. Opportunity for Peer Review Team to ask questions of current students.	· Peer Review Team · Current MScM Students (TRSM)	Location: Four Season's Boardroom 3-164
3:00 – 5:00	Free time for Peer Review Team	Dean(s) and/or members of the Graduate Program will be available to meet with reviewers if requested. Peer Review Team members will be provided with a quiet space to meet.	· Peer Review Team	Location: Four Season's Boardroom 3-164
5:30 – 7:30	Dinner with TRSM Decanal team.		· Peer Review Team · Dr. Hong Yu Associate Dean Graduate Programs (TRSM) · Dr. Phil Walsh Interim Associate Dean Faculty and Academic (TRSM) · Dr. Al Goss	Location: Reds Wine Tavern 382 Yonge St #6 (416) 598-3535 Reservation under: Ted Rogers

			Associate Dean, Students (TRSM)	

Peer Review Team Visit
PhD in Management
Ted Rogers School of Management – Ryerson University

Thursday, May 23, 2019 – Peer Review Visit Agenda – Day 2

Meeting Time	Meeting Topic	Meeting Purpose	Participants	Meeting Notes

| 9:00 | Peer Review Team (PRT) Hotel Pick Up | Cindy Dunne will meet PRT in lobby of the Sheraton Hotel and accompany the Ted Rogers School of Management (TRSM). | ·   Dr. M.W. Mohamed Ismail, Professor and Associate Chair, Industrial Engineering Ryerson University
·   Dr. Jeffrey Parsons University Research Professor, Information Systems Memorial University
·   Dr. Giovani Caetano da Silveira, Professor and Chair Operations Management, University of Calgary
·   Ms. Cindy Dunne Director, Strategic Initiatives and Accreditations (TRSM) | Sheraton Hotel 123 Queen Street West Toronto, ON 416-361-1000

Ted Rogers School of Management (TRSM) 55 Dundas Street West Toronto, ON, M5G 2C5 416-979-5000 ext 5119

Cindy Dunne Mobile: 289-442-7599 |

| 9:15 – 10:15 | Discussion with PhD Curriculum Development Committee | Peer Review Team to meet with a wide cross section of faculty involved in the development of the program proposal. | ·   Peer Review Team
·   Dr. Hong Yu Associate Dean Graduate Programs (TRSM)
·   Dr. Ojelanki Ngwenyama Professor, Global Management and Director of the Institute of Innovation and Technology Management (TRSM)
·   Dr. Deb Fels Professor, Information Technology Management and Director, Inclusive Media & Design Centre (TRSM)
·   Dr. Hossein Zolfagharinia Assistant Professor, Operations Management (TRSM)
·   Dr. Murtaza Haider Associate Professor, Real Estate | Location: Dean's Boardroom 3-006 |

				Management (TRSM)
				· Dr. Sergiy Rakhmayil Associate Professor, Finance (TRSM)
				· Dr. Andre LaPlume Associate Professor Entrepreneurship and Strategy (TRSM)
				· Ms. Cindy Dunne Director, Strategic Initiatives and Accreditations (TRSM)
				· Mr. Ben Samms Decision Support Analyst (TRSM)
				· Mr. Nik Ashton Research Support Specialist

| 10:30 – 11:30 | Meeting with Graduate Programs Office (TRSM) | Opportunity for Peer Review Team to meet faculty and staff involved in graduate program administration. | ·   Peer Review Team
·   Dr. Hong Yu Associate Dean, Graduate Programs (TRSM)
·   Ms. Nicole Duccomun Director, Graduate Program Administration (TRSM)
·   Dr. Yuanshun Li Director, MScM Program (TRSM)
·   Ms. Gloria Fernandes Graduate Program Administrator (TRSM)
·   Ms. Anna Shevchenko Graduate Program Administrator (TRSM) | Location: Dean's Boardroom 3-006 |

| 12:00 – 1:30 | Lunch with faculty who served as second readers of PhD in Management proposal | Peer Review Team to meet with faculty who provided a critique of the proposed program. | · Peer Review Team
· Dr. Hong Yu Associate Dean, Graduate Programs (TRSM) Graduate Program Administrator (TRSM)
· Dr. Wendy Cukier Professor and Director, Diversity Institute (TRSM)
· Dr. Kelly MacKay Vice-provost, Academic Ryerson University
· Dr. James Tiessen, Associate Professor and Director, School of Health Services Management (TRSM) | Anna Shevchenko to escort Peer Review Team to restaurant.

Location: Elm Tree Restaurant 43 Elm St (416) 901-7339

Reservation under: Ted Rogers |

| 2:00 – 3:00 | Exit Meeting | Receive preliminary feedback from Peer Review Team in order to improve aspects of the proposal. | · Peer Review Team
· Dr. Cory Searcy Associate Dean, Programs, Yeates School of Graduate Studies (YSGS)
· Dr. Daphne Taras Dean, TRSM
· Dr. Hong Yu Associate Dean, Graduate Programs (TRSM)
· Ms. Nicole Duccomun Director, Graduate Program Administration (TRSM)
· Ms. Cindy Dunne Director, Strategic Initiatives and Accreditations (TRSM)
· Mr. Ben Samms Decision Support Analyst (TRSM) | Location: Four Seasons Boardroom 3-164 |

Time	Activity	Purpose	Attendees	Location
3:00 – 3:45	Free time for Peer Review Team	Dean(s) and/or members of the Graduate Program will be available to meet with reviewers if requested. Peer Review Team members will be provided with a quiet space to meet.	· Peer Review Team	Location: Four Seasons Boardroom 3-164
4:00 – 4:30	Meeting with Provost and Vice-President, Academic	Receive preliminary feedback from Peer Review Team in order to improve aspects of the proposal.	· Peer Review Team · Dr. Michael Benarroch Provost and Vice-President, Academic Ryerson University	Cindy Dunne to escort Peer Review Team to meeting. Location: JOR 1300 350 Victoria Street

RESPONSE TO THE EXTERNAL PEER REVIEWERS RECOMMENDATIONS
Re: Proposed PhD In Management

Prepared by:
Dr. Hong Yu, Associate Dean, Graduate Programs - Ted Rogers School of Management
Dr. Daphne Taras, Dean – Ted Rogers School of Management

Contents

This document serves as the response to the report on the proposed PhD in Management, Ted Rogers School of Management (TRSM) submitted by the Peer Review Team (PRT). The PRT was comprised of a three-member panel of reviewers and included Dr. Jeffrey Parsons (Memorial University), Dr. Giovani da Silveira (University of Calgary) and Dr. Mohamed Wahab Mohamed Ismail (Ryerson University). The site visit took place on May 22nd and May 23rd, 2019.

We would like to thank the PRT team for their insight and contributions, along with all of the faculty, staff and students who participated in the site visit.

The PRT was positive about the overall alignment of the proposed PhD in Management program with the mission and objectives of Ryerson University. The PRT produced a report that provides a useful assessment of the proposed program, an appraisal of the challenges it might face, and actionable recommendations. In the next section, we address the recommendations and issues made by the PRT, in the order that they appear in the PRT Report.

Internal Action

1. Specializations

The PRT noted:

There should be an effort to offer specialization courses regularly (rather than as directed studies) according to demand. This can be accomplished by: (i) reducing the minimum number of student registrations to offer a regular course from five to three; and (ii) targeting admissions to admit at least three students in the same specialization each year.

PRT Recommendation:

- Focus on one or two specializations for the initial intake to build a minimum-sized "cohort" of students in each specialization (n ≥ 3) and allow the offering of the respective specialization courses.

TRSM Response:

We understand that Ryerson has unfilled spaces in its PhD allocation, and the simplest response is to admit more students. This would help Ryerson, and provide a solution to the PRT's concern about too few students in any specialization.   Initially, an enrolment of approximately six students (full-time equivalent or FTE) per year was anticipated, however, the Dean has recently been informed by the Provost that additional spaces will be made available to TRSM.

We would have a more robust PhD program if we admitted more students. If Ryerson is willing to double our size to 12 students, we definitely have interest from qualified supervisors. Our sizeable MScM could be a feeder into our PhD program.

As stated in the proposal, students will be recruited for the PhD in Management program from within TRSM, nationally, and internationally. We anticipate that TRSM PhD students will come from a variety of backgrounds, with many returning to school for further education after spending time as professionals. There also may be strong interest from among our MScM students.

Increasing graduate student admissions is a high priority at Ryerson University and TRSM. The competition for domestic graduate students is particularly high among Ontario universities because of targeted funding provided by the provincial government. Ontario universities were allocated access to graduate funding on a competitive basis; like many of the large Ontario universities, Ryerson continues to work toward using this allocation.

The ability to attract PhD students, ensure adequate support and training, and achieve excellent placement will have an enormous impact in TRSM's future as a leader in research and innovation and the reputation across the world. TRSM sees many opportunities for strategic improvement in recruitment, support, and placement. Recognizing that PhD-level recruitment will rely more on individual faculty member's professional network and connections, proper administrative support will be provided to ensure smooth and efficient experiences for the applicants. In addition, substantial effort and resources will be dedicated to growing the number and quality of inquiries entering the admissions funnel. This is an area where TRSM's graduate marketing and recruiting will prove helpful. As well, in 2019, we have encouraged the MScM students to form an association and seek the types of services that meet their unique needs as researchers. We want them to be cooperating with, though functioning independent of the MBA student association.

Central to this effort to increase our PhD student intake are (1) funding for PhD student scholarships and research support, (2) promotion of the PhD program, and (3) a dedicated staff member who, with the guidance of the Dean and Program Director, will design and implement a master plan of coordinated recruiting for all specializations. Much of the funding to attract prospective students will initially come from the Ontario allocation of $25,000 per student, plus the cultivation of senior students as course instructors. Many prospective supervisors have agreed to provide funds from research grants to support PhD students. The recruiting plan will feature strategies tailored to regions (domestic or international), disciplines, and cultural backgrounds. The staff member will coordinate and assist efforts of individual faculty, maintain communication channels with schools and student populations, and track the efficacy of various recruiting methods. Much of the activity of recruitment will take place in the digital space, with program and faculty-member websites, social media presence, and digital advertising all playing a growing role.

2. Admission Criteria

The PRT noted:

Admission criteria listed in Section 2.b.ii of the proposal are generally aligned with the learning outcomes listed in Section 2.a.ii. However two items need further attention. First, there is currently no specified minimum GMAT score. Requiring a minimum GMAT would: (i) provide assurance of the quality of the incoming students; and (ii) weed out weak applications. Potential target minimums are: (i) 550 - to be consistent with minimum requirements for the MBA; or (ii) 600 - to distinguish the PhD as requiring a clearly higher minimum than the MBA. Also, the exemptions from writing the GMAT should be clearly stated (e.g., considerable relevant work experience). This will also help communicate a high admission standard and help maintain or even enhance the quality of the program in the long run.

Second, in the statement of intent and interview, applicants must express interest in developing original knowledge and disseminating research results to advance scholarship and knowledge transfer (L05.c, p.39).

PRT Recommendation(s):

Develop clearer admission criteria:

- Require a GMAT/GRE minimum score (with limited and clearly specified exceptions)

TRSM Response:

To gain admission to proposed PhD in Management, applicants are expected to take a Graduate Management Admission Test (GMAT) and/or a Graduate Record Examinations (GRE).

Upon reviewing the admission requirements of 22 PhD in Management programs across Canada, 18 institutions require a GMAT/GRE; 6 of which do not explicitly state a minimum score.

Although the proposed PhD in Management will have no established minimum score for the GMAT and/or GRE, test results will be an important part of applicants' profile. The Admission Committee will assess each applicant holistically and a low GMAT score will not disqualify a candidate from entering the program just as a high GMAT score does not guarantee entry.

When reviewing applicants' files, a broad range of entry requirements have been proposed and include:

- Master's degree from a recognized university
- GPA = 3.33/4.33 (B+ or equivalent) in a master's program
- Demonstrated graduate level research capability and/or potential (e.g., Thesis, MRP, Peer Review Journal article)
- Knowledge of research methods prior to application as evidenced in their transcripts. (If this knowledge is not evident, applicants must successfully complete a research methods coursework equivalent to MT8103 and MT8104
- Two reference letters at least one of which is from a former professor familiar with the applicant's research abilities and/or potential
- A statement of intent (research interest)
- Interview: An online or in-person interview may be required
- Identification of a confirmed supervisor

Waiver of the GMAT and/or GRE may be considered for applicants who meet at least one of the following conditions:

- Holds a terminal degree (e.g. PhD, MD, JD) from an acceptable institution.
- Holds a MScM degree from TRSM.
- Holds a master's degree from an acceptable institution, with a cumulative GPA of 3.0, and holds a professional certification (e.g., CPA, CFA, CHRM) and a minimum of 5 years of professional work experience.
- Individuals with disabilities who were eligible to receive necessary testing accommodations.

Consideration of a waiver is at the discretion of the Program Director and only if the applicant can provide sufficient evidence of academic ability. Satisfying any of the above criteria does not constitute and automatic waiver and is determined in joint consideration with the rest of the applicants' submission.

PRT Recommendation(s):

- During student interviews, search for explicit evidence of an applicant's interest to develop and publish research that is original, high in quality, and relevant for the specialization field.
- Develop an "interview guide" to better coordinate with and support potential supervisors as they interview student candidates. The guide should indicate what minimum aspects and criteria should be explored in the interviews.

TRSM Response

Once a candidate has been deemed academically capable of doing a PhD, the next step will be an interview. The interview is an important stage in making a match between the potential PhD candidate, and the desired competencies for program success. This next step will allow both candidates, and admission committee members, to determine if the program is a good fit. We appreciate the PRT recommendation and suggestions related to assessing applicant eligibility during the interview process. There are no hard-and-fast rules for selecting the right candidate, but there are some general competences that an 'ideal' candidate will have as suggested by the PRT and include:

- Be prepared to talk about their research interests in detail
- Be prepared to discuss motivation for pursuing a PhD
- Show evidence that they have reviewed potential supervisor's work
- Demonstrated familiarity with current scholarship in the field

A selection guide will be developed for admission committee members and will provide potential supervisors a resource from which to select questions that will help identify the candidate who will be most successful in the program.

An interview guide will provide lists of questions or issues that are to be explored in the course of an interview. An interview guide is important in ensuring that the same basic lines of inquiry are pursued with each applicant interviewed. Admission committee members will maintain the flexibility to build a conversation within a particular subject area, to word questions spontaneously, and to establish a conversational style. The interview guide will also serve as a checklist during the interview to make sure that all relevant questions are covered.

3. Course Requirements

The PRT noted:

However, we noted several limitations with the proposed curriculum. First, the program appears to be light on course requirements. The number of courses should be more consistent with existing programs in Canada, as indicated on Table 2.5, which includes the number of required rather than total courses in each regular program.

Also, the three proposed research seminars do not appear to be equivalent to regular courses as considered in other institutions. Thus, we suggest increasing the total number of courses (which may include required and a minimum number of electives) in the curriculum.

We agree with "Respondent C" in the document "Authorization form and summary of responses" that the proposed quantitative methods course fails to include several tools and techniques that can be

fundamental for research in many (if not all) of the program specializations. That includes content in econometrics, analytics, modeling, and simulation, among other quantitative tools. Should the school disregard the previous recommendation and maintain the current course load, this alternative can be implemented by requiring students to take a minimum of two elective methods courses in the first year rather than the currently proposed quantitative (statistics) and qualitative methods courses.

PRT Recommendation:

- All students should be required to take an additional research methods course. The specific additional course can vary between specializations, depending on the need.

TRSM Response:

Students will be required to take nine courses, and the number of additional required courses will be determined by the Supervisory Committee. Following admission to the PhD in Management, the Supervisor/Supervisory Committee will determine (based upon students' academic background and interests) if additional coursework is required.

Each student will be expected to develop conceptual and analytical skills appropriate for the evaluation of theories and the analysis of quantitative and/or qualitative data pertaining to their area of research. This may require students to complete additional courses in a major area directed towards the dissertation research. Students will master a specific set of methods appropriate to their dissertation, with the depth needed to produce methodologically rigorous research.

Applicants must have demonstrated knowledge of research methods prior to applying, as evidenced in their transcripts. If this knowledge is not evident, applicants must successfully complete a research methods coursework equivalent to SM8103 and SM8104 (Research Methods courses in the Master of Science in Management program). Some candidates may be expected to exceed the minimum two courses of advanced methods. Specific courses appropriate for the methods requirement will be selected in consultation with the Supervisor.

Registration requirements in doctoral level courses vary across institutions and specializations within the respective PhD programs. In reviewing the 22 programs in Canada we observed the following:

Research Methods Course Requirements:

- 11 institutions require two research methods courses
- two institutions require two or three research methods courses depending on specialization
- one institution requires four research methods courses
- six institutions require three research methods courses
- in two cases it was unclear

Other Course Requirements

- seven institutions require a statistics course for all students
- five institutions require a statistics course depending on specialization
- seven institutions require an econometrics course for all students
- two institutions require an econometrics course depending on specialization

Following the PRT visit, and at the request of the PRT, a comprehensive listing of Research Methods courses available via TRSM and Ryerson University was supplied. Students have access to advanced doctoral methods and theory courses that are offered across the University. TRSM will work with other faculties to cross-list courses and avoid duplication. See Appendix A: Research Methods Courses Available at TRSM and Ryerson University.

The PRT noted:

Curriculum expansion should also include a course on Philosophy of Science/Theory Development to enable students to explore ontological and epistemological foundations of research activity.

PRT Recommendation:

- Consider offering a course on Philosophy of Science and/or Theory Development in the first year for all specializations.

TRSM Response:

The number of courses may vary according to the student's particular program and background. Students work closely with their research-active supervisors who help guide them to the appropriate courses within and outside the School. If the Supervisor/Supervisory Committee deems it necessary for the student to take a Philosophy of Science and/or Theory Development in the first year, with the Graduate Program Director's approval, the student may take it from a program internal or external to Ryerson University.

4. Student Funding

The PRT Noted:

 Even though the subject was covered in at least two meetings, it was still not clear to the review committee how much and in what circumstances the planned financial support to students (about $25,000 per year, for four years) could be obtained. Faculty and staff indicated a range of available options, including scholarships, grants, and teaching. However, there is no clear indication in the proposal of the extent (i.e., budget) to which these items will be available, and the criteria for their award/disbursement. We strongly encourage TRSM to articulate the various funding sources, the amounts available per student and overall by the school, application and award criteria, and (in the case of grants) what expenses are allowed. In addition, TRSM should establish and communicate clear requirements for PhD students to teach during their program. For example "students should teach at least two courses as part of their training in the PhD program."

PRT Recommendation:

Develop clear processes for managing student funding including scholarships, grants and other awards. Ensure the PhD program website makes clear that part-time students are not funded.

TRSM Response:

As referenced on the Ryerson University website, the University provides financial support in the form of scholarships, awards or assistantships for as many full-time students as possible. Scholarships and awards are offered on a competitive basis.

Adequate funding for all PhD students is a key priority of the program and as stated in the proposal student funding support would be a multi-pronged approach that includes: internal and external fellowships and scholarships, teaching assistantships, graduate assistantships, and research stipends and assistantships. Eligible domestic students admitted to study full time would receive a minimum of $25,000 a year for up to four years composed of a combination of these sources. Incoming full-time PhD students are the top hiring priority for TA/GAs. Competitive scholarship opportunities include tri-council (Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council (SSHRC), among others (e.g., Vanier, OGS). There are a number of funding packages – internal and external – available to Ted Rogers graduate students. Thanks to a generous donation from Ted and Loretta Rogers, each year the Ted Rogers School of Management issues a total of Graduate Entrance Scholarships and Awards of more than $450,000. Augmenting these is a priority of TRSM Development staff. TRSM endowments have grown by 14% between 2011 and 2015, standing at $39.2M.

Additionally, the federal government has allocated funds to support graduate student scholarships. Over five years starting in 2019, the budget earmarks $114 million, with $26.5 million per year ongoing, to the federal granting councils to create 500 new master's level scholarships awards and 167 more three-year doctoral scholarships awards annually through the Canada Graduate Scholarship program.

As per Ryerson University Senate Policy 139 "However, the offer of admission will not necessarily provide a guarantee of financial support to prospective graduate students. Students will be expected to have sufficient means of financial support (e.g., support offered by Ryerson and elsewhere) for the length of time normally required to complete the graduate program in which they intend to enroll."

The internal funding for doctoral students at Ryerson typically comes from three sources: YSGS provides a pool of funds to be distributed, TA/GA opportunities and in some cases, there are RA and stipend research funds available from individual faculty members' SRC work. TRSM offers 15 internal SRC Development Grant of $7,000 each annually and they would be available to the PhD students to apply with their supervisors.

Working with the Program Director and directing students to YSGS website resources, PhD candidates will be encouraged to apply for external funding and awards, including support from the Government of Canada, national foundations, and the Province of Ontario. Our graduate students are highly competitive in these scholarship. Information sessions and workshops hosted within TRSM and by YSGS will be offered throughout the academic year. Given that the students have the potential to propose research that is fundable from the three grant councils it is important that the School identify, early after approval, faculty members who can serve as mentors.

5. Handling Issues with PhD students

PRT Recommendation:

- Develop a process to handle issues with PhD students (e.g., switching Ph.D. thesis supervisor).

TRSM Response:

The University provides guidelines on the roles of the supervisor and the graduate student. Students accepted to the proposed PhD in Management will require a supervisor. TRSM recognizes that it is incumbent on the Faculty and University to do everything possible to provide guidance in how to

maximize the likelihood of excellent supervision. The Yeates School of Graduate Studies (YSGS) is charged with the responsibility of providing that guidance for the University graduate community.

YSGS provides policies and general guidelines that inform "best practices," that are likely to help make the dissertation experience a rewarding one for students and supervisors as well as ensure successful completion. These Guidelines provide direction on choosing a supervisor, establishing a supervisory committee, and maintaining a productive working relationship among all three. They point to the respective responsibilities of students, supervisors, and graduate units (departments, centres, and institutes). They also provide advice on reducing and solving problems that may arise. A "Student-supervisor discussion checklist" and "Graduate Supervision Guidelines" documents can be found on the YSGS website at https://www.ryerson.ca/graduate/faculty-staff/graduate-supervision/.

TRSM will develop its internal operation manual to articulate and concretize the processes of addressing various issues, including students, under the policy framework of the Yeates School of Graduate Studies (YSGS) and the University.

6. Guidelines for Writing Different Types of PhD Thesis

PRT Recommendation:

- Develop guidelines for writing two different types of PhD thesis (monograph versus manuscript-based).

TRSM Response:

We appreciate the recommendation. There is no prescribed format for a thesis at Ryerson University, most take the form of a "traditional" thesis, a "manuscript-based" thesis, or hybrid of the two. Whether a candidate chooses a manuscript-based thesis or a traditional thesis, it's important that the document is consistent in both form and style.

As an alternative to the traditional thesis format, a manuscript-style thesis consists of a collection of papers of which the student is an author or co-author. These papers must be presented in a cohesive manner and with a coherent theme. The decision to proceed with a manuscript-type thesis is decided in consultation with the student's supervisor(s) or supervisory committee, who must ensure that all the criteria listed below are met, and will ensure the thesis conforms to the format outlined by the Yeates School of Graduate Studies (YSGS). The "Guidelines for Manuscript-Style Master's or Doctoral Theses" document can be found on the YSGS website at https://www.ryerson.ca/content/dam/graduate/current-students/policies/manuscript_style_thesis.pdf.

At the suggestion of the PRT to develop guidelines for the writing of different types of PhD thesis, TRSM reviewed a number of websites from Canadian Universities. Common themes describe the submission of the thesis as the following:

- doctoral thesis must demonstrate original scholarship that makes a significant contribution to knowledge in the candidate's field of study
- the thesis describes research completed during the student's academic program
- demonstrate an ability to carry out research and to organize results

- students should strive to write in a style that is clear, concise and interesting as well as informative
- thesis should demonstrate a mastery of the literature relevant to the subject
- thesis must meet the standards and requirements established by the Theses Canada at Library and Archives Canada

We note that PRT member institutions have excellent guides for formatting and distinguishing between differing thesis types. In addition to the formatting guidance offered internally by YSGS, we are prepared to create an expanded internal document for supporting faculty and students.

A student's dissertation must be prepared and submitted in strict accordance with procedures outlined by the Yeates School of Graduate Studies (YSGS) and for dissertations, with the current regulations of the Library and Archives Canada. Students will be made aware that the responsibility for formatting and submitting the correct format rests with the author.

To help students prepare and submit their dissertation in accordance with proper procedures, YSGS has developed a guide for graduate student use. This guide can be found on the YSGS website at https://www.ryerson.ca/graduate/student-guide/academic-matters/dissertation-thesis-exams/

External Action

1. Library Resources

The PRT Noted:

Facilities at TRSM, including resources from Ryerson Library, are appropriate to support the proposed Ph.D. program. The Library has assessed the materials needed to support the proposed PhD program and indicated additional resources of approximately $130,000 per year that need to be acquired. It is unclear whether the University has committed to providing the additional budget for these acquisitions. Program website must indicate that the part-time students are not funded.

PRT Recommendation:

Acquire additional library electronic resources and journal subscriptions as indicated in Appendices 3 and 4 of the "Library Response" document. In particular, we recommend subscribing to the Business Source Complete database and to the Marketing Science journal (if this is not included in the new database).

TRSM Response:

We strongly support the acquisition of electronic resources and journals to support the proposed program (value: $130,000 per year). We are committed to working with the Chief Librarian, Content Librarian, TRSM Dean, and YSGS, during the early years of the program implementation, to continuing to enhance the library collection to support the PhD in Management.

2. Develop a DBA Program

The PRT noted:

Part-time students may come from industries and the focus of their research activities might be related to the problems they face in their industries. Such students' research must be able to meet rigorous quality required to be publishable. In some cases, an industry may not want to publish the research, which uses real data. Such issues must be addressed to meet the "Graduate Degree Level Expectations".

PRT Recommendation:

Develop a proposal to introduce a Doctor of Business Administration program for students looking at careers in business management rather than in public/private research or academia.

TRSM Response:

Taking its direction from TRSM Faculty Council, the Ad hoc Committee on Doctoral Program Feasibility presented an analysis of the merits of both a PhD and DBA program at the February 8, 2017 meeting of Faculty Council. The presentation looked at the PhD landscape in Canada, the objectives of having a doctoral program, the type/model of a proposed doctoral program and next steps. TRSM Schools/Departments were asked at the time to provide feedback on this topic.

Based upon feedback solicited, it was suggested that the DBA is a lesser known credential in Canada and that a DBA must be applied in nature where as a PhD could be both. The committee presented that a PhD would best serve the needs of the Faculty, provide the most flexibility for entering either academic or professional research careers and be most recognized.

Additional concerns expressed over the nomenclature of a DBA included the need for a more established brand in executive education, the typically high tuition model that would be counter to Ryerson's accessibility goals, low likelihood of hiring to an academic position and lack of DBAs in Canada.

The PhD was endorsed at the September 27, 2017 meeting of Faculty Council:

The proposed PhD in Management is an intensive research focused training program and ideally academic opportunities would be tenure-track. The PhD in Management program is designed to prepare individuals for teaching and research careers in universities or for applied research positions in either the private or public sector.

3. Directed Reading Courses

PRT Recommendation:

- Offer Directed Reading courses in lieu of elective (or any other course) only when there are fewer than three (rather than five) students enrolled.

TRSM Response:

We agree with the recommendation. Although the School recognizes that some specialization electives may attract fewer students, the goal is to minimize the number of very small courses without damaging

the scope and variety of the program. When pre-term registration data shows that a class is unlikely to make the approved minimum, the class may either be cancelled or written requests for the continuation (with reasons stated) will be sent to the to the Dean prior to the beginning of the term in which the course is to be offered. The minimum of five students was established in consultation with the Dean, however, further to the PRT visit and news that TRSM will be allocated additional spaces for PhD students, the Dean is prepared to revisit the enrolment threshold if necessary.

Summary of Peer Review Team (PRT) "Internal' Recommendations and Ted Rogers School of Management (TRSM) Responses

Peer Review Team Recommendation	TRSM Graduate Program Response
1. Focus on one or two specializations for the initial intake to build a minimum-sized "cohort" of students in each specialization (n ≥ 3) and allow the offering of the respective specialization courses.	- Approve a larger TRSM cohort within the Ryerson allocation - Students will be recruited for the PhD in Management program from within TRSM, nationally, and internationally. There also may be strong interest from among TRSM MScM students. - Increasing graduate student admissions is a high priority at Ryerson University and TRSM. - Initially, an enrolment of approximately six students (full-time equivalent or FTE) per year was anticipated, however, the Dean has recently been informed that additional spaces will be made available to TRSM. - TRSM sees many opportunities for strategic improvement in recruitment, support, and placement. Recognizing that PhD-level recruitment will rely more on individual faculty member's professional network and connections, proper administrative support will be provided to ensure smooth and efficient experiences for the applicants. - Substantial effort and resources will be dedicated to growing the number and quality of inquiries entering the admissions funnel. Support and resources will include: 1) funding for PhD student scholarships and research support, (2) promotion of the PhD program, and (3) a dedicated staff member who, with the guidance of the Dean and Program Director, will design and implement a master plan of coordinated recruiting for all specializations. - Much of the funding to attract prospective students will initially come from the Ontario allocation of $25,000 per student, plus the cultivation of senior students as course instructors. - Many prospective supervisors have agreed to provide funds from research grants to support PhD students.
2. Develop clearer admission criteria:	To gain admission to proposed PhD in Management, applicants are expected to take a Graduate Management

2a. Require a GMAT/GRE minimum score (with limited and clearly specified exceptions).	Admission Test (GMAT) and/or a Graduate Record Examinations (GRE). ● Although the proposed PhD in Management will have no established minimum score for the GMAT and/or GRE, test results will be an important part of applicants' profile. The Admission Committee will assess each applicant holistically. ● When reviewing applicants' files, a broad range of entry requirements have been proposed and are consistent with YSGS graduate program admission criteria at Ryerson University. ● Waiver of the GMAT and/or GRE may be considered for applicants who meet conditions that are now clearly articulated. ● Consideration of a waiver is at the discretion of the Program Director and only if the applicant can provide sufficient evidence of academic ability.

2b. During student interviews, search for explicit evidence of an applicant's interest to develop and publish research that is original, high in quality, and relevant for the specialization field.	● Once a candidate has been deemed academically capable of doing a PhD, the next step will be an interview.
	 ● There are no hard-and-fast rules for selecting the right candidate, but there are some general competences that an 'ideal' candidate will have as suggested by the PRT and include:
	     ○ Be prepared to talk about their research interests in detail
	     ○ Be prepared to discuss motivation for pursuing a PhD
	     ○ Show evidence that they have reviewed potential supervisor's work
	     ○ Demonstrated familiarity with current scholarship in the field
	 ● A selection guide will be developed for admission committee members and will provide potential supervisors a resource from which to select questions that will help identify the candidate who will be most successful in the program.

2c. Develop an "interview guide" to better coordinate with and support potential supervisors as they interview student candidates. The guide should indicate what minimum aspects and criteria should be explored in the interviews.	● An interview guide will be developed and provide lists of questions or issues that are to be explored in the course of an interview. ● Admission committee members will maintain the flexibility to build a conversation within a particular subject area, to word questions spontaneously, and to establish a conversational style.

	- The interview guide will also serve as a checklist during the interview to make sure that all relevant questions are covered.
3. Revise course requirements: 3a. All students should be required to take an additional research methods course. The specific additional course can vary between specializations, depending on the need.	- Students will be required to take nine courses, and the number of additional required courses will be determined by the Supervisory Committee. - Following admission to the PhD in Management, the Supervisor/Supervisory Committee will determine (based upon students' academic background and interests) if additional coursework is required. - Students will master a specific set of methods appropriate to their dissertation, with the depth needed to produce methodologically rigorous research. - Applicants must have demonstrated knowledge of research methods prior to applying, as evidenced in their transcripts. If this knowledge is not evident, applicants must successfully complete a research methods coursework equivalent to SM8103 and SM8104 (Research Methods courses in the Master of Science in Management program). - Specific courses appropriate for the methods requirement will be selected in consultation with the Supervisor. - Following the PRT visit, and at the request of the PRT, a comprehensive listing of Research Methods courses available via TRSM and Ryerson University was supplied.
3b. Consider offering a course on Philosophy of Science and/or Theory Development in the first year for all specializations.	- The number of courses may vary according to the student's particular program and background. - If the Supervisor/Supervisory Committee deems it necessary for the student to take a Philosophy of Science and/or Theory Development in the first year, with the Graduate Program Director's approval the student may take it from a program internal or external to Ryerson University.
4. Develop clear processes for managing student funding including scholarships, grants and other awards. Ensure the PhD program website makes clear that part-time students are not funded.	- Funding support would be a multi-pronged approach that includes: internal and external fellowships and scholarships, teaching assistantships, graduate assistantships, and research stipends and assistantships. - Eligible domestic students admitted to study full time would receive a minimum of $25,000 a year for up to four years composed of a combination of these sources. - Incoming full-time PhD students are the top hiring priority for TA/GAs. - TRSM issues more than $450,000 in Graduate Entrance Scholarships and Awards annually.

	• Starting in 2019, the federal government budget earmarked $114 million, with $26.5 million per year ongoing, to the federal granting councils to create 500 new master's level scholarships awards and 167 more three-year doctoral scholarships awards annually through the Canada Graduate Scholarship program.
	• Internal funding for doctoral students at Ryerson typically comes from three sources:
	  ○ YSGS provides a pool of funds to be distributed
	  ○ TA/GA opportunities
	  ○ RA and stipend research funds available from individual faculty members' SRC work
	• TRSM offers 15 internal SRC Development Grant of $7,000 each annually and they would be available to the PhD students to apply with their supervisors.
	• PhD candidates will be encouraged to apply for external funding and awards, including support from the Government of Canada, national foundations, and the Province of Ontario.
	• Information sessions and workshops to support applications for funding will be hosted within TRSM and by YSGS throughout the academic year.
	• Students will be encouraged to seek out competitive scholarship opportunities such as tri-council (Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council (SSHRC), among others (e.g., Vanier, OGS).

5. Develop a process to handle issues with PhD students (e.g., switching Ph.D. thesis supervisor).	• The University provides guidelines on the roles of the supervisor and the graduate student. • A "Student-supervisor discussion checklist" and "Graduate Supervision Guidelines" documents can be found on the YSGS website at https://www.ryerson.ca/graduate/faculty-staff/graduate-supervision/. • TRSM will develop its internal operation manual to articulate and concretize the processes of addressing various issues, including students, under the policy framework of the Yeates School of Graduate Studies (YSGS) and the University. • YSGS provides policies and general guidelines that inform "best practices," that are likely to help make the dissertation experience a rewarding one for students and supervisors as well as ensure successful completion.

| 6. Develop guidelines for writing two different types of PhD thesis (monograph versus manuscript-based). | • There is no prescribed format for a thesis at Ryerson University, most take the form of a "traditional" thesis, a "manuscript-based" thesis, or hybrid of the two.
• Whether a candidate chooses a manuscript-based thesis or a traditional thesis, it's important that the document is consistent in both form and style.
• A manuscript-style thesis must be presented in a cohesive manner and with a coherent theme.
• The decision to proceed with a manuscript-type thesis is decided in consultation with the student's supervisor(s) or supervisory committee
• The supervisor will ensure the thesis conforms to the format outlined by the Yeates School of Graduate Studies (YSGS). The "Guidelines for Manuscript-Style Master's or Doctoral Theses" document can be found on the YSGS website at https://www.ryerson.ca/content/dam/graduate/current-students/policies/manuscript_style_thesis.pdf.
• We note that PRT member institutions have excellent guides for formatting and distinguishing between differing thesis types.
• A student's dissertation must be prepared and submitted in strict accordance with procedures outlined by YSGS and with the current regulations of the Library and Archives Canada.
• YSGS has developed a guide for graduate student use. This guide can be found on the YSGS website at https://www.ryerson.ca/graduate/student-guide/academic-matters/dissertation-thesis-exams/ |

Summary of Peer Review Team (PRT) "External" Recommendations and Ted Rogers School of Management (TRSM) Responses

Peer Review Team Recommendation	TRSM Graduate Program Response
1. Acquire additional library electronic resources and journal subscriptions as indicated in Appendices 3 and 4 of the "Library Response" document. In particular, we recommend subscribing to the Business Source Complete database and to the Marketing Science journal (if this is not included in the new database).	• We strongly support the acquisition of electronic resources and journals to support the proposed program (value: $130,000 per year). • We are committed to working with the Chief Librarian, Content Librarian, TRSM Dean, and YSGS, during the early years of the program implementation, to continuing to enhance the library collection to support the PhD in Management.

2. Develop a proposal to introduce a Doctor of Business Administration program for students looking at careers in business management rather than in public/private research or academia.	• Taking its direction from TRSM Faculty Council, the Ad hoc Committee on Doctoral Program Feasibility presented an analysis of the merits of both a PhD and DBA program at the February 8, 2017 meeting of Faculty Council.
	• Based upon feedback solicited, it was suggested that the DBA is a lesser known credential in Canada and that a DBA must be applied in nature where as a PhD could be both.
	• The committee presented that a PhD would best serve the needs of the Faculty, provide most flexibility for entering either academic or professional research careers and be most recognized.
	• The proposed PhD in Management is an intensive research focused training program and ideally academic opportunities would be tenure-track.
	• Concerns expressed over the nomenclature of a DBA included:
	    o the need for a more established brand in executive education
	    o the typically high tuition model
	    o low likelihood of hiring to an academic position
	    o lack of DBAs in Canada.

3. Offer Directed Reading courses in lieu of elective (or any other course) only when there are fewer than three (rather than five) students enrolled.	● We agree with the recommendation.

Methodological Graduate Courses at TRSM

Business Administration

Course Code	Course Type	Graduate Level	Course Title	Course Description
MB8206	Elective	Master's	Internatztn of Retailing	This course examines the challenges and opportunities that exist in worldwide retailing. Using spatial analysis, students examine the growth of retail concentration and the reach of worldwide retailers and compare retailing across international borders. Students are exposed to fast turnaround global supply chain and logistics systems. Topics include geographic, global, city and company perspectives, and necessary approaches to logistics including accessing, assessing and interpretation of market data.
MB8403	Elective	Master's	Competitive and Mrkt Analysis	This course provides a comprehensive framework, for analyzing the competitive scope of an industry, the industry itself, and the market space that a company occupies within an industry. The course provides students with the necessary analytical tools to evaluate the environment within which a company operates, and an opportunity to apply these analytical skills in a practical situation. The course centres on developing the platform on which a company builds a marketing strategy.
MB8501	Elective	Master's	Geo-demographics	This course examines the conceptual, methodological and practical issues associated with the application of multivariate spatial techniques to market area analysis and geo-segmentation. Topics include data sources; geo-demographic market segmentation in theory and practice; marketing projects and future directions in data, technology and applications.
MB8503	Elective	Master's	Business Geomatics	This course provides a working knowledge of GIS (Geographic Information Systems); the use of spatially referenced information, and applications of various geo-visualization methodologies to both the planning and management of major retail/commercial developments. The student is trained in the use of GIS software programs (MapInfo; ArcGIS); and given

				access to the relational databases and spatial information available from the Centre for the Study of Commercial Activity.
MB8504	Elective	Master's	Rtl Location and Dev Strats	This course examines retail and commercial development from a variety of perspectives. Topics include the principles of store location research; understanding the drivers of the retail economy; creating a retail location database; developing sales forecasting models for the corporation; measuring market saturation and store cannibalization; selecting the appropriate location strategy; closing the deal and portfolio management.
MB8506	Elective	Master's	Real Estate Finance	This course explores the foundations of real estate mathematics, capitalization rates; property appraisal process and issues related to real property assessment. It also focuses on specific types of real estate development, understanding the pro forma, the effect of leases on value, the role of pension funds and real estate investment trusts and private equity markets in the Canadian real estate industry, and the relation between land value and land use.
MB8602	Required	Master's	Investments and Portfolio Analysis	This course covers analyses of equity, fixed income, derivative and alternative investments. The second half of the course focuses on portfolio management. This course is appropriate for students who want to write the CFA exam. Prerequisite: MB8104 and MT8215.
MB8703	Elective	Master's	Corporate Financial Analysis	This course looks at the question of how a financial institution controls and hedges itself against all of the various risks that it faces. The course looks at liquidity management, deposit insurance, capital adequacy, credit risk management, loan securitization, interest rate forwards, futures, swaps, caps, floors and collars and how banks use these derivative products to manipulate its exposure to various types of risk. Antirequisite: FIN801.
MB8712	Elective	Master's	Industry Analysis	This course presents a comprehensive framework for analyzing a company's industry. It provides analytical techniques to forecast industry trends, to understand the markets and competitive environment, and to understand the forces that will impact on its future success. An industry analysis is the underpinning for developing a successful strategy, and it provides clarity for the company's position within an industry. Antirequisite: MKT731.
MB8714	Elective	Master's	Bus Forecasting Techniques	This course deals with the application, usefulness and limitations of some of the more important and widely used time series forecasting techniques, including Box-Jenkins. A forecasting project will provide the student with

Course Code	Course Type	Graduate Level	Course Title	Course Description
				insight into the practical problems of forecasting such as data acquisition, model selection and the analysis and interpretation of results. Analysis will be completed using the appropriate software and platforms. Antirequisite: QMS703.
MB8715	Elective	Master's	Decision Models for Managers	This is a practical course dealing with the application of Management Science to business decision problems. Emphasis is placed on the study of mathematical models of common business situations and the related mathematical solutions. Topics include Queuing Theory, Markov chains, and Simulation. Practical application of these topics in the areas of marketing, production and finance are stressed. Analysis will be done using appropriate software and platforms. Antirequisite: QMS751.

Master of Science in Management (MScM)

Course Code	Course Type	Graduate Level	Course Title	Course Description
MT8312	Elective	Master's	Business Analytics for Managers	This course provides an overview of the development and usage of decision support systems (DSS), data mining and collaboration technologies. Students will learn how database technologies support managerial decision making, and will understand the role of the data warehouse in supporting DSS and data mining applications. Antirequisite: MT8301.
MT8313	Elective	Master's	Social Media Analytics	This course covers the basic principles and practices of knowledge management, the technology to support knowledge sharing and the issues in designing and implementing a value-based knowledge management system in an organization. Topics include: understanding today's knowledge economy and knowledge workers; enabling knowledge creation; knowledge maintenance: accuracy, currency, accessibility; developing a knowledge management strategy; information policies, measuring value, change management and human factors in implementing a knowledge management system. Antirequisite: MT8302, MT8303.
MT8317	Elective	Master's	Info Arch Theory	This is an advanced foundational course in information architecture theory, focusing on application of theories to systems design projects

				involving database or knowledge management systems. This course explores theoretical perspectives on information architecture principles by demonstrating the application and development of an information architecture required to support an overall IT and Business Strategy. This course utilizes an experiential learning design and will provide students the opportunity design an information architecture model for a complex system. Antirequisite: ITM613.
MT8322	Elective	Master's	Data Warehousing Methods	This course explores fundamental principles that underlie the wide spectrum of activities and processes associated with discovering useful knowledge from aggregate data in a business setting. The course structure is based upon three major technologies that enable the transformation of data into knowledge: data warehousing, OLAP, and data mining. The emphasis of the course will be on the application, implementation and integration of the technologies with the business process and strategic goals of the enterprise. Antirequisite: ITM729.
MT8327	Elective	Master's	Data Management and Visualization	This course focuses on three areas data science relevant to business analytics: (1) data discovery; (2) data preparation; and (3) data visualization. The objective of the course is to help students develop competence in acquiring data from different sources, cleaning and preparing the data for analysis and developing visualizations of the results for managerial decision making. The course will be problem oriented following the outcomes based action learning approach in order to provide hands-on training in the use of common data management and business analytics applications and tools. Students will be expected to construct evidence based arguments from the results of their data analyses, develop and present business case reports in a manner appropriate for managerial decision making.
MT8328	Elective	Master's	Supply Chain Analytics	This course emphasizes systemic modeling of management problems and application of well-established quantitative techniques for their solutions. The supply chain area is naturally abundant with problems of this kind, but the skills obtained in the course will be applicable in a variety of management contexts. Both optimization and satisficing approaches with deterministic as well as stochastic components are covered. The course equally emphasizes modeling as well as solutions; where for the latter MS

				Excel is the main platform with various add-ins such as the (premium) Solver, Lingo, Crystal Ball, and TreePlan. Students will be expected to construct evidence based arguments from the results of their data analyses, develop and present business case reports in a manner appropriate for managerial decision making.
MT8426	Elective	Master's	Sport Media and Mktg. Bus. Analytics	This course will examine a broad range of sport media and marketing analysis – in both theory and practice – through the lens of the sport and entertainment industry. Topics will include an overview of data-drive decision making in sport, sport media marketing analysis and insights, consumer behavior of the changing Canadian sport fandom, advances in sport technology and innovation, measurement and evaluation (including community).
MT8511	Elective	Master's	Operations Mgmt and Process Improvement	Successful operations management requires a broad understanding of operational strategy, business processes, enterprise systems technologies, and process improvement techniques. Students will gain experience analyzing business processes and designing improved workflows using a variety of enterprise systems (e.g. ERP and CRM), business performance management, project management, and Lean Six Sigma tools and techniques.
MT8512	Elective	Master's	Logistics and Inventory Mgmt	The course will address advanced supply chain management issues including the following topics: facility location, design of distribution networks, demand forecasting, inventory management, aggregate planning, transportation decision-making, use of IT, sourcing, and pricing. The course will emphasize the use of analytical methods and will also incorporate risk management in business logistics.
MT8513	Elective	Master's	Intro to Operations Research	This course provides an overview of the basic principles of Operations Research with special emphasis on the paradigms associated with linear programming and queuing theory. These include generic modelling; mathematical modelling; the 'max', 'min', and 'mixed case' simplex algorithms; sensitivity analysis; duality; 'assignment', 'transportation' and 'transhipment' models; and basic principles and models associated with queuing or 'waiting-line' problems. These subjects will be studied from both theoretical and practical perspectives. The class requires background

				in probability theory and linear algebra as well as some skills in computer programming.
MT8519	Elective	Master's	Logistics Management I	The goals of this course are to develop an understanding of the logistics process, and to acquire analytical skills in monitoring the ability to provide end customer satisfaction and financial effectiveness. The core competencies in this course start with study of decision strategies in warehousing and inventory management. The course continues with a study of order processing and decision support systems. The course concludes with a look at global logistics and the strategic logistics plan. Antirequisite: RMG903.
MT8520	Elective	Master's	Logistics and Transportation Management	This course explores the application of analytical diagnostic tools to the logistics sphere with a view to optimizing end customer satisfaction and financial effectiveness through optimal use of the supply chain system. Topics include: activity based costing, productivity, total quality management (TQM) and JIT systems, utilization, and performance measures to improve effectiveness and efficiency. The core competencies in this course start with a study of channels of distribution and transportation. Prerequisite MT8519, Antirequisite: RMG904.

Methodological Graduate Courses at Ryerson

Chemical Engineering

Course Code	Course Type	Graduate Level	Course Title	Course Description
CE8139	Elective	Master's, PhD	Prob, Stat and Stochastic Proc	This course is an introduction to stochastic processes and probabilistic models. Statistical interference techniques are also discussed. Topics covered include: probability and random variables, Bernoulli, Binomial, Markov, Poisson, Wiener and Gaussian models, stationarity and cyclostationarity, spectra of various signals, linear mean-square estimation, representation of random signals and Karhunen-Loeve expansion, Markov chains and processes, parameter estimation, mean variance, confidence intervals, Bayesian models, hypothesis testing. Antirequisite EN8910, ME8139.
CE8202	Elective	Master's, PhD	Advanced Process Control	System identification. Review of linear control systems and state space. Design methods of multivariable control systems. Model Predictive Control: Internal Model Control (IMC) and Dynamic Matrix Control. Applications to chemical processes.
CE8210	Elective	Master's, PhD	Process & Engineering Optimization	The use of optimization methods is pervasive throughout the process industries. Thus, these techniques are an important part of a chemical engineer's tool set. This course will provide a blend of important theoretical concepts and practical implementation issues. The development of a student's ability to formulate optimization problems, select solution techniques and interpret results will be emphasized. Finally, through a series of industrially relevant problem sets, the students will gain exposure to popular optimization software. Extra project/assignments are required, weighing no less than 20-30% of the final grade. Antirequisite CHE425
CE8213	Elective	Master's, PhD	Advanced Numerical Methods	Review of numerical analysis. Includes: solution of systems of linear and nonlinear algebraic equations, interpolation, least squares fitting, integral and derivative evaluations, and solution of ordinary and partial differential equations. Introduction to the numerical solution of systems of linear and nonlinear partial differential equations using finite difference and finite element methods. Includes: error analysis, non-uniqueness and stability in

				nonlinear systems, continuation, isoparametric mapping, time integration techniques, time step controller, and mesh refinement strategies. Includes practical applications to science and engineering. Programming is required throughout the course. Antirequisite EN8913.

Civil Engineering

Course Code	Course Type	Graduate Level	Course Title	Course Description
CV8501	Elective	Master's, PhD	Adv Geospatial Info Systems	This course covers such advanced topics as data models, structures and indexing; database management; geospatial analysis and modeling; geographic visualization; macro language programming and GIS software customization; distributed geospatial processing; standards and implementation issues.
CV8504	Elective	Master's PhD	Estimation and Data Series Analysis	Overview of linearization and probability distributions. Least-squares estimation, batch and sequential estimation methods, constraints. Linear and nonlinear regression. Trend analysis. Concept and classification of stochastic processes, auto- and crosscorrelation functions, and spectral density function. Some common stochastic models. Kalman filtering.

Computer Networks

Course Code	Course Type	Graduate Level	Course Title	Course Description
CN8810	Required	Master's	Introduction to Computer Networks	This course offers a general introduction to computer networks. It explores goals, services and problems with computer networks. Computer communication is examined using the seven-layer OSI model. The purpose of each layer is discussed both from conceptual and practical aspects. Topics include: OSI model, layered architecture, data link protocols, LAN protocols, WAN protocols and details of Internet protocol. There will be several lab projects to reinforce the topics discussed in the lectures.

CN8811	Required	Master's	Multimedia Processing and Digital Communication	The course first covers the basic concepts in source and channel coding techniques. It subsequently introduces various aspects of multimedia processing. Topics include: sampling, quantization, PCM, DPCM, delta modulation, line coding, digital modulation, information theory on entropy, Huffman coding, Lempel Ziv coding, model-based coding, information theory on channel capacity, linear block codes, cyclic codes, convolutional codes, trellis code modulation, multimedia data compression standards, and multimedia information retrieval. Theoretical concepts will be re-enforced through some real-time experiments in the laboratory using Matlab and C.
CN8813	Required	Master's	IP Protocols	The course provides an in-depth coverage of the Internet protocols. It has two main focuses. First, it studies various interior gateway protocols: RIP, IGRP, Enhanced IGRP, and OSPF. It then concentrates on the protocols related to the Internet operations and management, such as ICMP, DHCP, DNS, and SNMP. Other topics include multicasting and IPv6. Prerequisite: CN 8810.
CN8814	Required	Master's	Network Math and Simulations	This course provides foundations in probability and random processes, and develops the understanding of Markov processes and the simulation of Markov Chains. The course also covers queuing systems and Monte Carlo simulation. Basic simulation and modeling techniques are then discussed, followed by output data analysis. The course concludes with various Computer Networks Simulation projects using OPNET. Prerequisite: CN8810.
CN8816	Elective	Master's	Network Security	This course covers the cryptographic algorithms and secure protocols, and their applications in security mechanisms for computer networks. The course introduces conventional encryption algorithms and Public Key Algorithm with integrity mechanism. Authentication mechanisms for OSI protocols and TCP/IP are also discussed, and their applications in Firewall and IDS (Intrusion Detection System) are studied using actual industrial (for example CISCO's) products. Prerequisite: CN8813.

Computer Science

Course Code	Course Type	Graduate Level	Course Title	Course Description
CP8201	Elective	Master's, PhD	Algorithms and Computability	The concepts of algorithms and computability together with techniques for analysis of the efficiency and complexity of algorithms are studied. Logical formalisms and their application in computing environments and the use of logical reasoning in establishing the correctness of implementations of algorithms are discussed. Abstract models are discussed with respect to advanced computational models.
CP8202	Elective	Master's, PhD	Advanced Software Engineering	Modern approaches to software development are studied including requirements analysis, system design techniques, formal description techniques, implementation, testing, debugging, metrics, human factors, quality assurance, cost estimation, maintenance, and tools.
CP8203	Elective	Master's, PhD	Advanced Database Systems	Object-Oriented and Object-Relational Database Systems; Distributed and Multi-database Systems; Advanced Database Applications: Web-Based Database Access, Data Warehouses.
CP8204	Elective	Master's, PhD	Advanced Programming Languages	A study of the principles, concepts, and mechanisms of computer programming languages - their syntax, semantics, and pragmatics; the processing and interpretation of computer programs; programming paradigms; and language design. Additional topics will include language design principles and models of language implementation.
CP8205	Elective	Master's, PhD	Advanced Human-Computer Interaction	Current trends in user interface technology; topics include alternative interaction devices, user interface tools, and interface modeling techniques. Usability testing and human factors.
CP8210	Elective	Master's, PhD	Topics in Data Science	This course presents concepts related to data science research activities including data management and analytics, data modeling, structured and unstructured data, regression models, social data analysis, web and data mining, information retrieval, text analysis and natural language processing.
CP8305	Elective	Master's, PhD	Knowledge Discovery	Steps in the process of knowledge discovery: data preprocessing, data mining, post-processing and knowledge utilization. Preprocessing: data

				cleaning, integration, transformation and reduction. Data mining methods: association rules, classification and clustering. Post-processing: knowledge evaluation, interpretation, presentation and visualization. Knowledge discovery and data management. Possibly other selected topics in knowledge discovery.
CP8308	Elective	Master's, PhD	Visualization	Use of computer graphics to understand patterns, relationships and trends in scientific and information systems data. Topics include: historical overview, fundamental concepts, scientific visualization techniques for scalar and vector data, visualization systems, interaction with 2D/3D graphical interfaces, web-based visualization and collaborative visualization over the internet, software visualization, information visualization.
CP8314	Elective	Master's, PhD	Advanced Artificial Intelligence	The course will focus on the theory and implementation of dynamical systems from the perspective of artificial intelligence. The emphasis will be on the compromises involved in providing useful logical representations that allow reasoning about actions to remain tractable. The course will show how these research issues are relevant for many applications beyond the traditional area of artificial intelligence.
CP8317	Elective	Master's, PhD	Performance Evaluation	Probability Theory; Transforms of probability distributions; Branching processes; Discrete time Markov Chains; Continuous time Markov Chains; Birth-Death processes; Intermediate queuing theory, M/G/1 queues; Renewal theory; Gated and limited systems; Hidden Markov model.
CP8318	Elective	Master's, PhD	Machine Learning	Machine learning is the study of algorithms that learn to perform a task from prior experience. Machine learning has a broad range of applicability, including computer vision, robotics, medical diagnosis, bioinformatics and natural language processing. This course will cover the underlying theory and practical applications of machine learning.
CP8319	Elective	Master's, PhD	Reinforcement Learning	This course focuses on topics related to reinforcement learning. The course will cover making multiple-stage decisions under uncertainty, heuristic search in planning, Markov decision processes, dynamic programming, temporal-difference learning including Q-learning, Monte Carlo reinforcement learning methods, function approximation methods, and the integration of learning and planning.

Data Science and Analytics

Course Code	Course Type	Graduate Level	Course Title	Course Description
DS8001	Required	Master's	Design of Algorithms and Programming for Massive Data	NP-completeness, approximation algorithms and parallel algorithms. Study of algorithmic techniques and To introduce students to the theory and design of algorithms to acquire and process large dimensional data. Advanced data structures, graph algorithms, and algebraic algorithms. Complexity analysis, complexity classes, and modeling frameworks that facilitate the analysis of massively large amounts of data. Introduction to information retrieval, streaming algorithms and analysis of web searches and crawls.
DS8002	Required	Master's	Machine Learning	Overview of artificial learning systems. Supervised and unsupervised learning. Statistical models. Decision trees. Clustering. Feature extraction. Artificial neural networks. Reinforcement learning. Applications to pattern recognition and data mining.
DS8003	Required	Master's	Management of Big Data and Big Data Tools	The course will discuss data management techniques for storing and analyzing very large amounts of data. The emphasis will be on columnar databases and on Map Reduce as a tool for creating parallel algorithms that can process very large amounts of data. Big Data applications, Columnar stores, distributed databases, Hadoop, Locality Sensitive Hashing (LSH), Dimensionality reduction, Data streams, unstructured data processing, NoSQL, and NewSQL.
DS8004	Required	Master's	Data Mining and Prescriptive Analytics	The course teaches to use data to recommend optimum course of action to achieve the optimum outcome and to formulate new products and services in a data driven manner. The course will cover all these issues and will illustrate the whole process by examples. Special emphasis will be given to data mining and computational techniques as well as optimization and stochastic optimization techniques. Prerequisite: DS8002

DS8006	Elective	Master's	Social Media Analytics	The course will cover fundamental concepts and tools in Social Network Analysis by showing how AI, math, and statistical methods are used to study them. The topics include: weblog analysis, centrality in social networks, influence, sentiment analysis and opinion mining, information cascades, multimedia analysis, reasoning and prediction with social media and modeling behaviour. The lab component of the class will use R or Python to develop and analyze network models. Prerequisite: DS8002
DS8007	Elective	Master's	Advanced Data Visualization	Overview of data visualization. Basic visualization design and evaluation principles. Learn to acquire, parse, and analyze large datasets. Techniques for visualizing multivariate, temporal, text-based, geospatial, hierarchical, and network/ graph data using tools such as ggplot2, R, D3, etc.
DS8008	Elective	Master's	NLP (Text Mining)	The course covers important topics in text mining including: basic natural language processing techniques, document representation, text categorization and clustering, document summarization, sentiment analysis, social network and social media analysis, probabilistic topic models and text visualization. Prerequisites: DS8002 and DS8003
DS8010	Elective	Master's	Interactive Learning in Decision Process	This course focuses on topics related to reinforcement learning. The course will cover making multiple-stage decisions under uncertainty, heuristic search in planning, Markov decision processes, dynamic programming, temporal-difference learning including Q-learning, Monte Carlo reinforcement learning methods, function approximation methods, and the integration of learning and planning. Other topics can be included as well. Prerequisites: DS 8002
DS8011	Elective	Master's	Bayesian Statistics and Machine Learning	This course will cover modern machine learning techniques from a Bayesian probabilistic perspective. Bayesian probability allows us to model and reason about all types of uncertainty. The result is a powerful, consistent framework for approaching many problems that arise in machine learning, including parameter estimation, model comparison, and decision making. We will begin with a high-level introduction to Bayesian inference, then proceed to cover more-advanced topics. Prerequisites: DS 8002

Economics

Course Code	Course Type	Graduate Level	Course Title	Course Description
EF8903	Required	Master's	Applied Econometrics	This is an introduction to estimation and inference in econometrics, in the context of the linear regression model. Estimation methods include Ordinary Least Squares (OLS), Generalized Least Squares (GLS), Instrumental Variables (IV) and Maximum Likelihood (ML). Inference will be based on test statistics from unrestricted and restricted parameter estimates. Theoretical and applied aspects of the course will be considered. Required knowledge: econometrics software packages such as TSP, EVIEWS, SAS, or STATA. 3 lecture hours + 1 tutorial hour/week.
EF8914	Elective	Master's, PhD	Financial Econometrics	The purpose of this course is an introduction to the theory and econometric techniques that are necessary to undertake empirical analysis of financial time series. Topics include univariate linear and nonlinear stochastic models such as ARMA processes, ARIMA processes, ARCH-GARCH processes, martingales and random walks. Multivariate stationary and non-stationary processes will also be examined in the context of Vector Autoregressive (VAR) models and Vector Error Correction Models (VECM) for integrated processes. Empirical application of these techniques will be done using data from the Canadian and/or international financial markets. Students of this course are expected to have a solid background in econometrics and have working knowledge of an econometrics package such as EVIEWS, TSP, Stata or SAS. Prerequisite: EF8903 or equivalent, or instructor permission.
EF8939	Elective	Master's, PhD	Topics in Econometrics	This course provides an introduction to nonparametric methods used in econometrics. Nonparametric methods are statistical techniques which do not require the researchers to specify a functional form for the function being estimated (e.g. probability density function, regression function, etc.). The primary goal of the course is to enable students to intelligently apply these methods in analyzing real-world economic issues. Prerequisite EF8903 or equivalent or instructor permission.
EF8944	Elective	Master's, PhD	Panel Data and NL Model Analysis	The first part of this course covers panel data models: static panel data models and dynamic panel data models. The second part deals with

				limited-dependent variable models in the cross-sectional setting such as discrete choice models, censored and truncated regression models and sample selection models.
EF8945	Elective	Master's, PhD	Nonparametric Data Analysis	This course provides an introduction to nonparametric methods used in econometrics. Nonparametric methods are statistical techniques which do not require the researcher to specify a particular form for the function being estimated (e.g., probability density function, regression function, etc.). The primary goal of the course is to enable students to intelligently apply these methods in analyzing real-world economic data.
EF9903	Required	PhD	Advanced Econometrics I	This course is composed of two parts. The first half of this class is to be an introduction to probability and statistical theory. The second half of this class is to be an introduction to the econometrics at graduate level. Prerequisite: EF9904 3 lecture hours + 1 tutorial hour/week. 1
EF9904	Required	PhD	Mathematical Economics	The field of economics has become more technical over the years. Macroeconomic models often involve the solution of complex dynamic optimization problems. In microeconomics, the relaxation of the assumptions of perfect information and complete markets requires the use of advanced mathematical tools that are usually not familiar to students entering the field. The objective of this course is to provide the students with the technical tools and concepts that they will use in their graduate economic courses. Topics include: linear algebra, set and measure theory, convex analysis, and optimization and fixed point theory. A significant part of the course is devoted to economic applications that illustrate how the concepts and techniques are used in the different areas of economics. These applications are designed for the students to recognize the link between mathematical and economic theory. 3 lecture hours + 1 tutorial hour/week.
EF9923	Required	PhD	Advanced Econometrics II	This course is intending for PhD students in Economics and extends the material covered in EF 8903: Econometrics I. Topics covered include instrumental variable estimation, generalized method of moments, binary response models, panel data models, time series models and quantile regression. Prerequisite: EF9903. 3 lecture hours + 1 tutorial hour/week.
EF9907	Elective	PhD	Game Theory	This course offers students a rigorous introduction to game theory, together with some of its applications to various strategic aspects in

				economics. Important concepts covered in this course include: strategic-form and extensive-form games, refinements of Nash equilibrium, epistemic foundations, repeated games, bargaining, voting, auctions and mechanism design. We also illustrate how programming. The MATLAB software package will be used to illustrate the various techniques and for completing the assignments in the course. Prerequisite: EF9904 Mathematical Economics.
EF9909	Elective	PhD	Numerical Methods in Economics	Economic models have become increasingly sophisticated in order to better capture the inherent complexities of real-world behaviour. The majority of these models however cannot be solved analytically using the standard mathematical tools of calculus and algebra. For this reason economists frequently need to resort to numerical methods. The objective of this course is to introduce students to various computational techniques and their application to economic analysis. Topics to be covered include solution of linear and nonlinear systems of equations, optimization, numerical integration and differentiation, and numerical dynamic programming. The MATLAB software package will be used to illustrate the various techniques and for completing the assignments in the course. Prerequisite: EF9904 Mathematical Economics.

Electrical and Computer Engineering

Course Code	Course Type	Graduate Level	Course Title	Course Description
EE8107	Elective	Master's, PhD	Digital Communications	The class is intended to introduce the student to the concepts and theory of digital communications. The concepts of information, channel capacity, error probability, intersymbol interference, pulse shaping and spectrum shaping and optimum filtering are discussed. Digital multiplexing and bit stuffing, encoding, scrambling, equalization and synchronization problems are studied. Regenerative repeaters, M-ary signaling systems, basic modulation techniques - ASK, PSK and FSK; and performance characteristics of digital transmission systems are considered.

EE8109	Elective	Master's, PhD	Wireless Communications I	This class provides an overview of wireless communications systems and fundamental analysis and design techniques. The class introduces cellular system, channel characterization for propagation losses, fading, and interference. Coding, modulation, and advanced transceiver design issues are examined. Modern mobile wireless communication system applications are reviewed.
EE8120	Elective	Master's, PhD	Applied Optimization Techniques	This course covers the following topics: Linear and nonlinear programming, unconstrained optimization techniques such as gradient techniques (steepest descent, conjugate gradient, Newton-Raphson) and constrained optimization techniques such as Lagrange multiplier, quadratic and dynamic programming, least square techniques, integer and mixed-integer programming. NP-complete problems: branch-and-bound as well as heuristic algorithms, graph colouring, partitioning, and maximum matching. Bounds, variable priorities, special ordered sets and search algorithms (random search, binary search, genetic algorithms, and tabu search). Optimization algorithms in Electrical and Computer Engineering areas will be discussed in depth.
EE8209	Elective	Master's, PhD	Intelligent Systems	This course introduces the fundamental practice and underlying principles involved in the study of intelligent systems. The emphasis of the course is on a practical approach to problem solving and learning processes in the context of neural networks. In addition to theoretical, mathematical, and implementation of such systems students will get exposure to some of the popular intelligent systems tools. Applications in signal processing, pattern recognition and vision will be considered. Antirequisite: ELE888
EE8204	Elective	Master's, PhD	Neural Networks	The class deals with preliminaries of artificial neural systems including fundamental concepts and models. Single layer perception classifiers and multi-layer feed forward networks, single-layer feedback networks, and associative memories are covered.
EE8214	Elective	Master's, PhD	Computer Systems Modeling	The objectives of this course are to study the characteristics of various analytical models of computer systems and to learn how to apply those models to analyze system performance and dependability. The modeling techniques to be covered include Poisson, renewal, Markov processes, fault trees, Petri nets and queuing networks. Examples include models of computer systems, computer networks, and wireless systems.

Course Code	Course Type	Graduate Level	Course Title	Course Description
EE8301	Elective	Master's, PhD	Linear System Theory	The main thrust of the class is to introduce an algebraic unification of finite-dimensional linear systems with emphasis on continuous and discrete dynamic systems, using an operator theoretic approach. Topics covered include transition matrices, functions of matrices, adjoint systems, weighing patterns, realizability; canonical forms; stability, minimal realization; minimum norm, and approximation problems
ES9002	Required	Master's	Research Methods: Env App Sc and Mgt	This seminar course involves study and application of methods appropriate to research in the environmental sciences and environmental management studies. It focuses on the challenges of engaging in research in a multi-disciplinary environment where students examine the conventions of research in their study areas. The purpose is to enable students to identify valid questions open to research and to introduce the methods needed to answer the question in ways that are unambiguous and supportable. 1 Cred

Mathematics

Course Code	Course Type	Graduate Level	Course Title	Course Description
AM8001	Foundation Course	Master's, PhD	Analysis and Probability	Topics to be covered will be taken from the following list: metric spaces, Banach and Hilbert Spaces, measure spaces, integration, functional spaces and operators, random variables and conditional expectation; modes of convergence, discrete time martingales and filtrations; Brownian motion, continuous time stochastic processes and martingales; stochastic calculus
AM8002	Foundation Course	Master's, PhD	Discrete Mathematics and its Applications	Selected topics from discrete mathematics: graph isomorphisms and homomorphisms; Ramsey theory, random graphs; infinite graphs; automorphism groups; graph searching games (such as Cops and Robbers); Steiner triple systems; graph decompositions; Latin squares; finite fields; polynomial rings; finite projective and affine planes.
AM8101	Required	Master's	Principles and Techniques in Applied Math	Asymptotic Expansions; Perturbation Methods; Eigenfunction Expansions; Integral Transforms; Discrete Fourier Transforms.

AM8102	Required	Master's	Advanced Numerical Analysis	Numerical methods; numerical linear algebra; numerical methods for ODEs; numerical methods for PDEs.
AM8201	Elective	Master's, PhD	Financial Mathematics	This course covers the fundamentals of mathematical methods in finance. After providing a background in Stochastic Calculus, it considers the study of financial derivatives. Fixed income instruments, derivative pricing in discrete and continuous time, including Black-Scholes formulation, American and Exotic options are considered. Elements of Portfolio Management and Capital Asset Pricing Model are also taken into account.
AM8204	Elective	Master's, PhD	Topics in Discrete Mathematics	Selected advanced topics from discrete mathematics: random graphs; models of complex networks; homomorphisms and constraint satisfaction; adjacency properties; Ramsey theory; graph searching games; Latin squares; designs, coverings, arrays, and their applications.
AM8205	Elective	Master's, PhD	Applied Statistical Methods	This course covers a wide variety of statistical methods with application in medicine, engineering, and economics. Exploratory data analysis. Parametric probability distributions. Sampling and experimental designs. Estimation, confidence intervals and tests of hypothesis. Analysis of variance. Multiple regression analysis, tests for normality. Nonparametric statistics. Statistical analysis of time series; ARMA and GARCH processes. Practical techniques for the analysis of multivariate data; principal components, factor analysis.
AM8206	Elective	Master's, PhD	Partial Differential Equations	Topics to be covered will be taken from the following list: Derivation of equations from conservation laws; First-order Equations and the Method of Characteristics; Weak Solutions; Hyperbolic Systems; Diffusion and Reaction-Diffusion Equations; Traveling Wave Solutions; Elliptic Equations.
AM8211	Elective	Master's, PhD	Operations Research	Nonlinear Programming, Decision Making, Inventory Models, Markov Chains, Queuing Theory, Dynamic Programming, Simulation. Antirequisite: MTH603
AM8213	Elective	Master's, PhD	Financial Mathematics II	The course covers fixed income derivatives and the quantitative aspects of risk and portfolio management in modern finance. It introduces single factor interest rate models and pricing and covers analysis of risk measures and their properties, market, credit risk and an overview of other types of risks. The course also develops portfolio optimization techniques. Case studies and preparation for financial certification programs (FRM and PRM) are also included. Antirequisite: MTH800

Course Code	Course Type	Graduate Level	Course Title	Course Description
AM8214	Elective	Master's, PhD	Computational Complexity	Order of Growth notation, time and space complexities of DTMs and NDTMs, intractability, basic complexity classes, P=NP?, reducibility and completeness, NP-completeness, Cook's theorem, hierarchy results, circuit complexity, probabilistic algorithms, models for parallel computation. Antirequisite: MTH814
AM9001	Elective	Master's, PhD	Advanced Topics in Discrete Mathematics	A selection of topics from Discrete Mathematics: probabilistic method, random graph models such as binomial random graphs and random regular graphs; models of complex networks such as preferential attachment, ranking, geometric, and copying models; graph searching problems such as Cops and Robbers games, graph cleaning, and firefighting; designs, coverings, arrays, and their applications; homomorphisms and constraint satisfaction problems; combinatorial optimization problems on graphs and approximation algorithms.
AM9002	Elective	Master's, PhD	Advanced Topics in Financial Mathematics	A selection of topics from the following topics in Financial Mathematics: Arbitrage pricing. Completeness and Hedging. The Martingale Approach to Arbitrage. Incomplete Markets. Exotic Derivatives. Interest Rate Models. Stochastic calculus for general semi-martingales. Levy processes. Advanced portfolio risk management. Dynamic risk measures. Advanced Credit Risk Models.

Mechanical and Industrial Engineering

Course Code	Course Type	Graduate Level	Course Title	Course Description
ME8118	Elective	Master's, PhD	Information Systems Analysis and Design	The foundations that underlie the development of information systems are presented. The concepts, strategies, techniques, and tools for identifying and specifying information systems requirements and for developing designs are covered. A major analysis and design project is required.
ME8120	Elective	Master's, PhD	Introduction to Operations Research	This class is a graduate level introduction to the fundamental ideas of operations research. The class focuses on mathematical modelling in deterministic and non-deterministic settings. The class covers topics in the theory and application of mathematical optimization, network analysis, decision theory, inventory theory, and stochastic processes including

				queuing processes. The class requires background in probability theory and linear algebra as well as some skills in computer programming.
ME8127	Elective	Master's, PhD	Optimization Models	This course is intended to give a broad treatment of the subject of practical optimization. Emphasis will be given to understanding the motivations and scope of various optimization techniques for constrained and unconstrained problems. Linear, nonlinear and combinatorial optimization problems with roughly equal emphasis on model formulation and solution techniques. Modelling emphasis is primarily on deterministic formulation of real world applications. Selected solution techniques for each type of problem will be discussed.
ME8128	Elective	Master's, PhD	Prob. Models in Operations Research	This course presents the formulation and analysis of probabilistic models in operations research. Topics to be covered include Poisson processes, renewal processes, Markov chains, queuing theory, Markovian decision processes, and time series analysis. Application areas include reliability, traffic flows, production, and inventory.
ME8137	Elective	Master's, PhD	Advanced Systems Control	Overview of classical controls and introduction to modern control theory. Control system modeling and analysis in state space. System controllability and observability. Pole placement control design. State observers. Introduction to nonlinear control systems. Fundamentals of Lyapunov theory. Lyapunov's direct method. System linearization. Adaptive control. Antirequisite: AE8137.
ME8140	Elective	Master's, PhD	Simulation Theory & Methodology	This course introduces simulation as a problem solving tool. Mathematical foundations: random variate generation, parameter estimation, confidence interval, simulation algorithm, Monte-Carlo simulation techniques and simulation languages. Examples: computers and protocols, urban traffic, harbours and airport capacity planning, manufacturing capacity planning, inventory systems. Antirequisite: EN8912
ME8144	Elective	Master's, PhD	Advanced Reliability Modelling	This course is designed to provide graduate students with a complete overview of reliability programs, including the surveillance and control program, the design and evaluation program, and the development and production reliability test. The course presents evaluation techniques and optimal reliability system design for many system structures. It also includes recent results and comprehensive fuzzy and stochastic algorithms,

					cause analysis, risk analysis, asset management, and application of artificial intelligence in reliability, maintainability, and availability.
ME8201	Elective	Master's, PhD		Design of Algorithms and Programming for Massive Data	NP-completeness, approximation algorithms and parallel algorithms. Study of algorithmic techniques and to introduce students to the theory and design of algorithms to acquire and process large dimensional data. Advanced data structures, graph algorithms, and algebraic algorithms. Complexity analysis, complexity classes, and modeling frameworks that facilitate the analysis of massively large amounts of data. Introduction to information retrieval, streaming algorithms and analysis of web searches and crawls. Antirequisite: DS8001.
ME8202	Elective	Master's, PhD		Machine Learning	Overview of artificial learning systems. Supervised and unsupervised learning. Statistical models. Decision trees. Clustering. Feature extraction. Artificial neural networks. Reinforcement learning. Applications to pattern recognition and data mining. Antirequisite: DS8002.
ME8203	Elective	Master's, PhD		Management of Big Data and Big Data Tools	The course will discuss data management techniques for storing and analyzing very large amounts of data. The emphasis will be on columnar databases and on Map Reduce as a tool for creating parallel algorithms that can process very large amounts of data. Big Data applications, Columnar stores, distributed databases, Hadoop, Locality Sensitive Hashing (LSH), Dimensionality reduction, Data streams, unstructured data processing, NoSQL, and NewSQL. Antirequisite: DS8003.
ME8204	Elective	Master's, PhD		Data Mining and Prescriptive Analytics	The course teaches to use data to recommend optimum course of action to achieve the optimum outcome and to formulate new products and services in a data driven manner. The course will cover all these issues and will illustrate the whole process by examples. Special emphasis will be given to data mining and computational techniques as well as optimization and stochastic optimization techniques. Prerequisite: ME8202. Antirequisite: DS8004.

Philosophy

Course Code	Course Type	Graduate Level	Course Title	Course Description
PH8101	Elective	Master's	Epistemology	This course is a study of what canonical and contemporary philosophers have said about several central problems in the theory of knowledge. Topics may include: theories of justification; skepticism; the limits of belief and knowledge; perception, intuition and other sources of evidence; the social construction of knowledge; science and pseudo-science; a priori and a posteriori knowledge; knowledge of mathematical truths.

Policy Studies

Course Code	Course Type	Graduate Level	Course Title	Course Description
PD9000	Elective	PhD	Policy Analysis	This course is designed to provide students with a foundational understanding of the state and societal processes, institutions, actors, ideas and relations which coalesce in the development and understanding of public policy. The course covers how and where policy is made, as well as, how and where policy is analyzed. It introduces the disciplinary and interdisciplinary foundations of policy analysis.

Psychology

Course Code	Course Type	Graduate Level	Course Title	Course Description
PS8517	Elective	Master's, PhD	Psychometric Theory and Research	This course focuses on measurement theory, scale construction, item response theory, and the interpretation of related issues. Topics covered include psychometric scaling methods, exploratory and confirmatory factor analysis, reliability analysis, test interpretation, measurement of change, and issues pertaining to the analysis of quantitative experimental and nonexperimental data.

Course Code	Course Type	Graduate Level	Course Title	Course Description
PS8527	Elective	Master's, PhD	Computational Methods in Psychology	This course introduces students to computational methods in use within perceptual, cognitive and brain sciences. Topics include signal processing, stimulus control, psychophysiology (GSR, EMG, HR, RR, EEG/ERP), data filtering, and data reduction. Each topic will be introduced using examples from the literature and will be explored using a combination of theory and application. The course is designed to be of use for students with or without prior programming experience.
PS8528	Elective	Master's, PhD	Systematic Meta-Analytic Reviews	Empirical evidence in psychology and related disciplines is burgeoning at a rate that threatens our ability to assimilate it. For this reason, there is a growing emphasis on literature syntheses that integrate available information comprehensively, critically, and without bias. In this course, students will learn two such methods, systematic review and meta-analysis. Students will learn to identify, appraise, and synthesize research evidence both qualitatively and quantitatively. Prerequisite: PS8101 and PS8102.
PS8533	Elective	Master's, PhD	Program Evaluation	The course will provide knowledge and practice in the current methods for evaluating programs and services. Topics include: logic models; ethical issues; measurement of processes and outcomes; instrument development and selection; budgeting; data collection; analysis; and reporting and dissemination. Students will gain hands-on skills in needs assessment, process evaluation and outcome evaluation through service learning projects conducted in collaboration with local community organizations.

Spatial Analysis

Course Code	Course Type	Graduate Level	Course Title	Course Description
SA8901	Elective	Master's	Geospatial Data Analytics	Spatial analysis is characterized by large data volumes and an increasing number of data sources, as most government and business databases include geographic references. This course provides an introduction to geospatial data representation and integration in Geographic Information Systems (GIS). Students gain hands-on experience mapping and analysing real-world datasets, from open government data and the Census to environmental measurements and geolocated social media.

SA8902	Required	Master's	Database Management and Spatial Technologies	This course focuses on the core principles of Relational Database Management Systems (RDBMS) and the incorporation of spatial data storage and analytic tools. The course takes an applied approach with extensive use of RDBMS software and business intelligence tools with advanced spatial functionality. Students create entity-relationship models and convert them into GIS-ready spatial databases that make use of techniques such as spatial SQL and spatial indexes.
SA8903	Required	Master's	Applied Spatial Statistics	This course explores the use of various types of spatial statistical analysis. It involves the application and critical assessment of the use of selected univariate and multivariate modeling approaches in the analysis of geospatial data. Specific topics include spatial autocorrelation, the modifiable areal unit problem, spatial interaction modeling, spatial regression, and identification and interpretation of spatial clusters.
SA8905	Required	Master's	Cartography and Geovisualizatn	The course introduces cartographic principles and their application to the design of thematic maps using Geographic Information Systems (GIS). Textbooks and lectures introduce the fundamental elements of artographic design, different approaches to data representation, and novel map types. The role of maps at different stages of spatial analysis is examined. Students will gain hands-on experience with GIS and statistical software through lab assignments that involve data exploration, analysis, and cartographic presentation.
SA8911	Elective	Master's	Geodemographics	This course surveys practical, conceptual, and methodological issues associated with the application of spatial techniques to marketing and segmentation. Stress is given to the use of a range of socioeconomic and demographic variables. Methods include multivariate techniques for market definition and segmentation, focusing on applications of cluster analysis. The course also addresses the management issues in the use of geodemographics and related spatial analysis within public and private sector decision-making.
SA8912	Elective	Master's	Spatial Technology in Strategic Planning	The course examines the application of spatial technologies, particularly GIS, to strategic planning issues that affect the commercial sector of the economy. The focus is on analysis of retail and service activities from the perspective of both the private and public sector policy makers. Specific issues include: spatial impact analyses, use of GIS as a corporate

				management system, retail and services network planning, and location-allocation modeling. The course will adopt a variety of presentation formats including lectures, seminars and laboratory sessions.
SS8000	Elective	Master's	Stat Analysis in Social Science Research	This course introduces students to advanced quantitative methods for generating and analyzing large social science data sets such as those produced by Statistics Canada and other national and international statistics bureaus. Following a review of basic statistics and probability, the course will cover topics such as the linear probability model, logistic regression, models for categorical and count data and factor analysis. The substantive questions and particular data sets to which these tools will be applied will be driven by student interests. While students will gain knowledge of statistical theory, special attention will be paid to the practice of carrying out analysis of complex data. For example, issues related to coding, missing data and the reporting and presentation of quantitative results will be covered.
SS8001	Elective	Master's	SS8001 Advanced Qualitative Methods	This course is specifically targeted at students who want to learn advanced qualitative research methods related to their MRPs, theses or dissertation projects. It will provide advanced understanding and analysis of qualitative research and methods. This course offers an opportunity to customize learning on various qualitative research methods directly related to graduate research projects.

Urban Development

Course Code	Course Type	Graduate Level	Course Title	Course Description
PL8309	Elective	Master's	Urban Investments	The course examines urban investment strategies that integrate market-based solutions into the urban development process to promote local and regional planning objectives. Real estate investment terminology, data, financial analysis techniques and spreadsheet-sheet based applications are covered to learn about the feasibility analysis process associated with income-property investments. Case studies, in-class exercises, lectures and guest speakers provide the opportunity to address contemporary urban development issues. Antirequisite: PLE635

■ Yeates School of Graduate Studies

Response from YSGS on the Peer Review Report for the Proposed Graduate Program: Management (PhD)

Dr. Cory Searcy, Interim Vice-Provost & Dean, YSGS
August 22, 2019

The Peer Review Team (PRT) for the proposed PhD in Management consisted of Dr. Jeffrey Parsons (Memorial University of Newfoundland), Dr. Giovani da Silveira (University of Calgary), and Dr. Mohamed Wahab Mohamed Ismail (Ryerson University).

The PRT site visit was conducted on May 22 and 23, 2019. The PRT report was communicated to the Interim Vice-Provost and Dean, YSGS on June 13, 2019, and the response to the report from the Ted Rogers School of Management (TRSM) was communicated on August 7, 2019.

The PRT cited several strengths of the proposed PhD in their report, including the program's alignment with the institutional mission and academic plans, alignment of the proposed specializations with the University strategic mandate agreement, and the expertise of faculty and research areas. The PRT report includes several recommendations, which are discussed below.

As mandated by Ryerson Senate Policy 112, what follows is the YSGS-level response to both the PRT report, and the TRSM responses to the report. Note that this proposal is for a Faculty-wide PhD program; there is, therefore, no separation between the response from the program and the Faculty. We summarize below the recommendations and responses. We divide recommendations into two broad categories: academic and administrative/financial.

The role of YSGS is to provide direct commentary on academic matters, while making suggestions for administrative or financial matters. For simplicity, we supply our responses (as well as a recap of the PRT recommendations and program responses) in the form of tables.

Recommendation	Program and TRSM Faculty Response	YSGS Response
1. Revise course requirements.		
• All students should be required to take an additional research methods course. The specific additional course can vary between specializations, depending on the need.	Students will be required to take nine courses, and the number of additional required courses will be determined by the Supervisory Committee. Following admission to the PhD in Management, the Supervisor/Supervisory Committee will determine (based upon students' academic background and interests) if additional coursework is required. Applicants must have demonstrated knowledge of research methods prior to applying, as evidenced in their transcripts. If this knowledge is not evident, applicants must successfully complete a research methods coursework equivalent to SM8103 and SM8104 (Research Methods courses in the Master of Science in Management program). Students have access to advanced doctoral methods and theory courses that are offered across the University. TRSM will work with other faculties to cross-list courses and avoid duplication.	YSGS supports the program response. YSGS further notes that if the program decides to make changes to its curriculum in the future, those changes must be made in accordance with Ryerson University Policy 127. If the program contemplates curriculum changes in the future, YSGS encourages the program to consult with the Associate Dean, Graduate Programs in TRSM and the Associate Dean, Programs in YSGS on any potential curriculum changes.
• Consider offering a course on Philosophy of Science and/or Theory Development in the first year for all specializations.	The number of courses may vary according to the student's particular program and background. Students work closely with their research-active supervisors who help guide them to the appropriate courses within and outside the School. If the Supervisor/Supervisory Committee deems it necessary for the student to take a Philosophy of Science and/or Theory Development in the first year, with the Graduate Program Director's approval, the student may take it from a program internal or external to Ryerson University. Further details on TRSM's response are available on pages 4-6 of the program's response to the PRT.	

Recommendation	Program and TRSM Faculty Response	YSGS Response
2. Develop a proposal to introduce a Doctor of Business Administration program for students looking at careers in business management rather than in public/private research or academia.	Taking its direction from TRSM Faculty Council, the Ad hoc Committee on Doctoral Program Feasibility presented an analysis of the merits of both a PhD and DBA program at the February 8, 2017 meeting of Faculty Council. Based upon feedback solicited, it was suggested that the DBA is a lesser known credential in Canada and that a DBA must be applied in nature where as a PhD could be both. The committee presented that a PhD would best serve the needs of the Faculty, provide the most flexibility for entering either academic or professional research careers and be most recognized. Further details on TRSM's response are available on page 10 of the program's response to the PRT.	YSGS supports the program response. YSGS agrees that a PhD best serves the needs of the Faculty and students.
3. Offer Directed Reading courses in lieu of elective (or any other course) only when there are fewer than three (rather than five) students enrolled.	We agree with the recommendation. Although the School recognizes that some specialization electives may attract fewer students, the goal is to minimize the number of very small courses without damaging the scope and variety of the program. When pre-term registration data shows that a class is unlikely to make the approved minimum, the class may either be cancelled or written requests for the continuation (with reasons stated) will be sent to the to the Dean prior to the beginning of the term in which the course is to be offered. The minimum of five students was established in consultation with the Dean and the Dean is prepared to revisit the enrolment threshold if necessary. Further details on TRSM's response are available on pages 10 and 11 of the program's response to the PRT.	YSGS supports the program response. YSGS agrees that courses with very low enrolments should not be regularly offered and should only be considered on a case-by-case basis.

ADMINISTRATIVE AND FINANCIAL RECOMMENDATIONS

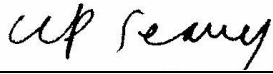| Recommendation	Program and TRSM Faculty Response	YSGS Response
4. Focus on one or two specializations for the initial intake to build a minimum-sized "cohort" of students in	Will look at ways to admit more students.	YSGS notes that additional spaces are subject to discussion between the program, YSGS, the University Planning Office, and the Provost. YSGS supports the program's advocacy for

each specialization (n ≥ 3) and allow the offering of the respective specialization courses.	Initially, an enrolment of approximately six students (full-time equivalent or FTE) per year was anticipated, TRSM will advocate for additional spaces. Our sizeable MScM could also be a feeder into the PhD program. Central to this effort to increase our PhD student intake are (1) funding for PhD student scholarships and research support, (2) promotion of the PhD program, and (3) a dedicated staff member who, with the guidance of the Dean and Program Director, will design and implement a master plan of coordinated recruiting for all specializations. Further details on TRSM's response are available on pages 1 and 2 of the program's response to the PRT.	additional spaces, but notes that the allocation of additional spaces is not in its purview alone. YSGS supports the program's efforts with respect to funding, promotion of the program, and a dedicated staff member. YSGS notes that funding for the dedicated staff member will need to come from TRSM.
5. Develop clearer admission criteria: • Require a GMAT/GRE minimum score (with limited and clearly specified exceptions).	To gain admission to proposed PhD in Management, applicants are expected to take a Graduate Management Admission Test (GMAT) and/or a Graduate Record Examinations (GRE). Upon reviewing the admission requirements of 22 PhD in Management programs across Canada, 18 institutions require a GMAT/GRE; 6 of which do not explicitly state a minimum score. Although the proposed PhD in Management will have no established minimum score for the GMAT and/or GRE, test results will be an important part of applicants' profile. Consideration of a GMAT and/or GRE waiver is also an option for applicants but is at the discretion of the Program Director and only if the applicant can provide sufficient evidence of academic ability.	YSGS supports the program response. YSGS agrees there may be reasonable circumstances under which the requirement for a GMAT and/or GRE is waived. This will require the support of the program. YSGS notes, however, that final approval for all exemptions is at the discretion of the Vice-Provost and Dean of YSGS. YSGS supports the program's decision to use interviews, supported by an interview guide, as a part of the admissions process.

	• During student interviews, search for explicit evidence of an applicant's interest to develop and publish research that is original, high in quality, and relevant for the specialization field.	Once a candidate has been deemed academically capable of doing a PhD, the next step will be an interview. We appreciate the PRT recommendation and suggestions related to assessing applicant eligibility during the interview process. There are no hard-and-fast rules for selecting the right candidate, but there are some general competences that an 'ideal' candidate will have as suggested by the PRT and include: • Be prepared to talk about their research interests in detail • Be prepared to discuss motivation for pursuing a PhD • Show evidence that they have reviewed potential supervisor's work • Demonstrated familiarity with current scholarship in the field	
	• Develop an "interview guide" to better coordinate with and support potential supervisors as they interview student candidates. The guide should indicate what minimum aspects and criteria should be explored in the interviews.	A selection guide will be developed for admission committee members and will provide potential supervisors a resource from which to select questions that will help identify the candidate who will be most successful in the program. An interview guide will provide lists of questions or issues that are to be explored in the course of an interview. The interview guide will also serve as a checklist during the interview to make sure that all relevant questions are covered. Further details on TRSM's response are available on pages 2 - 4 of the program's response to the PRT.	
6.	Develop clear processes for managing student funding including scholarships, grants and other awards. Ensure the PhD program website makes clear that part-time students are not funded.	As referenced on the Ryerson University website, the University provides financial support in the form of scholarships, awards or assistantships for as many full-time students as possible. Scholarships and awards are offered on a competitive basis. Working with the Program Director and directing students to YSGS website resources, PhD candidates will be encouraged to apply for external funding and awards, including support from the Government of Canada, national foundations, and the Province of Ontario. Information sessions and workshops hosted within TRSM and by YSGS will be offered throughout the academic year. Given that the students have the potential to propose research that is fundable from the three grant councils it is important that the School	YSGS supports the program's response. YSGS agrees that it is essential that clear processes for managing student funding are established. The fact that part-time students will not be funded must be made clear to all applicants. YSGS also stresses the importance of a competitive funding package for all full-time students. Strong support from TRSM, as well as through faculty stipends, will be essential.

	identify, early after approval, faculty members who can serve as mentors. Funding support would be a multi-pronged approach that includes: internal and external fellowships and scholarships, teaching assistantships, graduate assistantships, and research stipends and assistantships. Eligible domestic students admitted to study full time would receive a minimum of $25,000 a year for up to four years composed of a combination of these sources. Further details on TRSM's response are available on pages 6 - 7 of the program's response to the PRT.	
7. Develop a process to handle issues with PhD students (e.g., switching Ph.D. thesis supervisor).	The University provides guidelines on the roles of the supervisor and the graduate student. TRSM recognizes that it is incumbent on the Faculty and University to do everything possible to provide guidance in how to maximize the likelihood of excellent supervision. The Yeates School of Graduate Studies (YSGS) is charged with the responsibility of providing that guidance for the University graduate community. YSGS provides policies and general guidelines that inform "best practices," for students and supervisors. These Guidelines provide direction on choosing a supervisor, establishing a supervisory committee, and maintaining a productive working relationship among all three. They point to the respective responsibilities of students, supervisors, and graduate units (departments, centres, and institutes). They also provide advice on reducing and solving problems that may arise. A "Student-supervisor discussion checklist" and "Graduate Supervision Guidelines" documents can be found on the YSGS website. TRSM will develop its internal operation manual to articulate and concretize the processes of addressing various issues, including students, under the policy framework of the Yeates School of Graduate Studies (YSGS) and the University. Further details on TRSM's response are available on pages 7-8 of the program's response to the PRT.	YSGS supports the program response. YSGS further notes that requirements for supervisors and supervisory committees are specified in Ryerson University Policy 164.

8.	Develop guidelines for writing two different types of PhD thesis (monograph versus manuscript-based).	We appreciate the recommendation. Whether a candidate chooses a manuscript-based thesis or a traditional thesis, it's important that the document is consistent in both form and style. As an alternative to the traditional thesis format, a manuscript-style thesis consists of a collection of papers of which the student is an author or co-author.

At the suggestion of the PRT to develop guidelines for the writing of different types of PhD thesis, TRSM reviewed a number of websites from Canadian Universities. In addition to the formatting guidance offered internally by YSGS, we are prepared to create an expanded internal document for supporting faculty and students.

A student's dissertation must be prepared and submitted in strict accordance with procedures outlined by the Yeates School of Graduate Studies (YSGS) and for dissertations, with the current regulations of the Library and Archives Canada. Students will be made aware that the responsibility for formatting and submitting the correct format rests with the author.

To help students prepare and submit their dissertation in accordance with proper procedures, YSGS has developed a guide for graduate student use. This guide can be found on the YSGS website.

Further details on TRSM's response are available on pages 8-9 of the program's response to the PRT. | YSGS supports the program response.

YSGS notes that programs are permitted to develop program-specific guidelines for traditional and manuscript-based theses, provided those guidelines do not conflict with the YSGS guidelines and are in accordance with Ryerson University Policy 164. |
| 9. | Acquire additional library electronic resources and journal subscriptions as indicated (see Appendices 3 and 4 of the Proposal "Library Response"). In particular, we recommend subscribing to the Business Source Complete database and to the Marketing Science journal (if this is not included in the new database). | We strongly support the acquisition of electronic resources and journals to support the proposed program (value: $130,000 per year).

We are committed to working with the Chief Librarian, Content Librarian, TRSM Dean, and YSGS, during the early years of the program implementation, to continuing to enhance the library collection to support the PhD in Management.

Further details on TRSM's response are available on page 9 of the program's response to the PRT. | YSGS supports the program response and supports its advocacy for additional library resources.

YSGS notes, however, that decisions related to library support and acquisitions are beyond its purview.

YSGS encourages that program to work with the Dean of TRSM and the Chief Librarian to ensure adequate library resources are available to support the program. |

In conclusion, we thank the external reviewers and colleagues in TRSM for a very thorough assessment of the strengths and challenges of the proposed PhD in Management. The PRT recommendations and the TRSM responses raise important points regarding the program, and the discussion of these will only have a positive development in the evolution of the program.

Dr. Cory Searcy
Interim Vice Provost & Dean
Yeates School of Graduate Studies