SENATE MEETING AGENDA

Tuesday, November 6, 2018

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THE COMMONS - POD 250

4:30 p.m.   Light dinner is available

5:00 p.m.   Senate Meeting starts

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1. Call to Order/Establishment of Quorum

2. Approval of the Agenda
   Motion: *That Senate approve the agenda for the November 6, 2018 meeting*

3. Announcements

Pages 1-5   4. Minutes of the Previous Meeting
   Motion: *That Senate approve the minutes of the October 2, 2018 meeting*

5. Matters Arising from the Minutes

6. Correspondence

7. Reports
Pages 6-12   7.1 Report of the President
      7.1.1 President's Update

Pages 13-14   7.2 Communications Report

7.3 Report of the Secretary
      7.3.1 Update on Student Senator Elections

Pages 15-333   7.4 Committee Reports
      7.4.1 Report #F2018-1 of the Yeates School of Graduate Studies Council

Pages 17-128   7.4.1.1 Urban Health PhD Program – New Program proposal

      Motion: *That Senate approve the new program proposal for the Urban Health PhD Program as described in the Senate Agenda.*

Pages 353-361   7.4.2.5 School of Fashion's Major Curriculum Modifications

Motion: *That Senate approve the School of Fashion's Major Curriculum Modifications*

Pages 362-365   7.4.2.6 16 Course Proposals for Addition to the Liberal Studies Elective Table

Motion: *That Senate approve the 16 Course Proposals for Addition to the Liberal Studies Elective Tables.*

Pages 366-414   7.4.3 Report #F2018-2 of the Academic Governance and Policy Committee (AGPC): M. Benarroch

Pages 367-384   7.4.3.1 Chemistry and Biology Bylaws

Motion: *That Senate approve the Chemistry and Biology Bylaws as described in the agenda package*

Pages 385-412   7.4.3.2 Senate Bylaws Discussion and Q&A

Pages 413-414   7.4.3.3 Ryerson's Freedom of Expression Statement

Motion: *That Senate approve the Freedom of Expression Statement as described in the agenda package*

8. Old Business

9. New Business as Circulated

10. Members' Business

11. Consent Agenda
    11.1 Progress Indicators – November, 2018
    https://www.ryerson.ca/senate/agenda/2018/Progress_indicators_November_2018.pdf

    11.2 Course Changes from:
    https://www.ryerson.ca/senate/agenda/2018/Course_Change_Forms_November_2018.pdf

    - Faculty of Arts: Department of English; Department of History; Department of Politics and Public Administration
    - Faculty of Communication & Design: School of Image Arts

12. Adjournment

SENATE MINUTES OF MEETING
Tuesday, October 2, 2018

MEMBERS PRESENT:

EX-OFFICIO:	FACULTY:		STUDENTS:
I. Crookshank	R. Babin	V. Magness	N. Allou
C. Evans	A. Bailey	D. Mason	J. Circo
G. Craney	T. Burke	A. McWilliams	A. Jagayat
C. Hack	D. Checkland	A. Miransky	F. Khan
M. Lachemi	Y. Derbal	P. Moore	R. Kucheran
S. Liss	K. Dermody	S. Rakhmayil	A. Rahunathan
J. Mactavish	M. Dionne	S. Sabatinos	
M. Moshé	S. Dolgoy	N. Thomlinson	
D. O'Neil Green	A. El-Rabbany	J. Tiessen	
A. Saloojee	R. Hudyma	M. Tiessen	**EX-OFFICIO**
D. Taras	C. Kular	M. Vahabi	F. Abdulrahman
		A. Yazdani	S. Faruqi

SENATE ASSOCIATES:			ALUMNI:
A. M. Brinsmead			
M. Zouri			

REGRETS:		ABSENT:	
D. Androutsos	S. Mehmood	C. Antonescu	
M. Benarroch	R. Meldrum	S. Benda	
L. Barnoff	I. Mishkel	E. Ignagni	
M. Bountrogianni	R. Ravindran	J. Makuch	
D. Brown	P. Shannon	J. Marriott	
T. Duever	C. Shepstone	A. Nguyen	
C. Falzon	P. Sugiman	A. Sharma	
K. Kumar	N. Walton	C. Tam	
J. Makuch	S. Zolfaghari	J. Zboralski	

Committee of the Whole Discussion: The Learning & Teaching Office has partnered with Facilities Management & Development in a project to develop a new set of standards for renovating and building new classrooms on campus. These standards are part of a 10-year plan to improve learning environments at the university. The first step in this process is a set of community consultations. There will be a total of five town halls for students, staff, faculty, and instructors. An online survey was sent out to the entire Ryerson community along with notification of the town halls. The town halls and survey will gather feedback from the Ryerson community on the existing classrooms on campus, any gaps that exist, and thoughts on how they can be improved.

Overall Discussion

1. There are a lot of rooms in bad condition, and that sends a bad message - deferred maintenance doesn't make students feel welcome. A gradualist approach is needed to fix those things and make small upgrades rather than major renovations.
2. Inclusiveness - moveable furniture and walls, adaptable rooms, accommodate different learning and teaching styles. Thinking about how to balance that with large classes - how to scale flexible classrooms into larger units? This has potentially been done at the University of Toronto.
3. Classrooms beyond the four walls - how to create an urban classroom that can bring together different institutions and community organizations? Create a super course to bring together students from different programs. Everyone wants to be proud of spaces and people feel encouraged to contribute to maintenance. Different levels of seating for visibility and flexible space for TAs and instructors to meet students.
4. Flexibility in size, layout, technology, and structure. Accessible, checked for dead zones, future proofed. Set a protocol to add or retrofit based on emergent needs. Upgrades every 3-5 years. Gather information needed for all programs to build flexible space: SLS, Students, Media Services, etc.
5. Providing options - Flexible configuration in space, technology, time table. Flexibility played into all the other values. Faculty feel frustration in the lack of options and control.
6. Need for a standardized document listing what should go into classrooms. Prioritize fixing what we already have. Someone to be in charge of custodial like markers and chalk.

The Committee of the Whole Discussion ended at 5:45pm. The Senate Meeting followed.

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1. Call to Order/Establishment of Quorum

2. Approval of the Agenda
   Motion: *That Senate approve the agenda for the October 2, 2018 meeting*

   A. McWilliams moved; A. El-Rabbany seconded
   Motion Approved

3. Announcements - None

4. Minutes of the Previous Meeting
   Motion: *That Senate approve the minutes of the May 29, 2018 meeting*

A. McWilliams moved; D. Checkland seconded
Motion Approved

5. Matters Arising from the Minutes
    As a matter of follow-up, D. Bell stated that there was no meeting scheduled between J. Turtle and R. Rezaee regarding her concern that some of the issues she raised in the May 1, 2018 meeting were not included in the minutes. Based on this, there was insufficient information available to address the issue and move it forward.

    D. Bell also stated that, in regards to the member's business, R. Babin provided a notice of motion to occur at the next (being the present) Senate meeting. D. Bell, M. Moshé, and JP. Foxe met with R. Babin to discuss changes and he has agreed to withdraw his notice of motion.

6. Correspondence - None

7. Reports
7.1 Report of the President

7.1.1 President's Update
Highlights:
President Lachemi welcomed the new Secretary of Senate, Donna Bell. The new appointments of the Dean of TRSM, Daphne Taras; Interim Vice-Provost Students, Ian Crookshank; Interim Dean of FOS, Chris Evans. The recruitment of a new Dean of Record for the Law School will soon be underway. Until then Anver Saloojee holds this role. Ryerson has appointed a new Chancellor. She is the 5th Chancellor and Ryerson's 1st female Chancellor. Janice Fukakusa will begin her role as Chancellor on October 10th. The appointment of Mitch Frazer, Chair of the Board; and Tony Staffieri, new Vice Chair of the Board.

President Lachemi stated that enrollment for the school is just over 43,000, including both full-time and part-time. For Graduate students, the student enrollment numbers are 2,700.

The President recognized the achievement of School of Image Arts professor, Robert Burley; along with Lorraine Janzen Kooistra and Ruth Panofsky, professors of English as named Fellows of the Royal Society of Canada's Academy of the Arts and Humanities.

Last month Ryerson hosted TIFF and presented 8 films directed by FCAD alumni, including a feature length film.

In August, with help from A. Saloojee, Ryerson hosted an international conference as part of the WC2 Network and there were over 300 participants from major cities in 6 continents.

In terms of faculty and staff engagement, last spring staff and faculty were invited to participate in the Ryerson Employee Survey in which there was a 66% participant rate, average level of engagement was 72%, and the average level of job engagement was 77%.

Upcoming convocation ceremonies - 2 Canadians will be awarded honorary doctorates. The first Maria Campbell and the second is Hassan Yussuff.

Two videos shown: 1) Highlights from Ryerson men's basketball game versus Duke University 2) New Ryerson residency (HOEM) which has 570 students.

7.2 Communications Report - None

7.3 Report of the Secretary
7.3.1 Vice Chair election results

D. Bell provided the Vice Chair election results. Congratulations given to A. McWilliams who officially began his position with this meeting by leading one of the two Committee of the Whole discussions.

7.3.2 Update on committee memberships

D. Bell stated that all standing committee positions for Graduate and Undergraduate students have been filled but there are two vacancies for student senator positions. Requests for nominations of these two roles will commence in the upcoming week. Updates will follow at the next Senate meeting.

7.4 Committee Reports
7.4.1 Report #F2018-1 of the Academic Governance and Policy
Committee (AGPC): M. Benarroch

7.4.1.1 Academic Policy Review Committee (APRC) – M. Moshé

Motion: *That Senate approve Policy #135, Final Examinations, as described in the agenda package.*

M. Moshé*; A. McWilliams seconded.*

M. Moshé stated that Policy #135 is one of five policies reviewed by the Academic Policy Review Committee. The review began about a year ago and the APRC asked a subcommittee to be struck, comprising stakeholders from across the university to provide feedback on areas of the policy that may require revision. The subcommittee also conducted an extensive environmental scan of similar policies at other universities. M. Moshé acknowledges the work of these subcommittee members, particularly the chair of the subcommittee, Michelle Green. The revisions made are included in the report and notably include conforming to the new Senate policy framework and the now clear definitions of an exam conflict versus an exam overload and the procedures to follow if either of those occur for a student. If Senate approves the policy, the proposed implementation would be December, 2018 exam period.

Motion Approved.

7.4.1.2 Update on Ryerson's Freedom of Speech Policy
President Lachemi clarified that a working group was implemented over a year ago to work on this statement.

A. McWilliams stated that the committee began its work last October with faculty, administration, and staff working together. An initial draft was brought to a Committee of the Whole the last winter term and a wide variety of feedback was received. The committee requested that a stronger

Ryerson identity be expressed. The version two draft sent to Senate incorporated these revisions but the whole committee has not yet met to finalize these revisions. The committee is to meet Thursday following the Senate meeting and A. McWilliams encouraged comments through the freedomofexpression@ryerson.ca email.

President Lachemi indicated that the statement regarding Ryerson's Freedom of Speech will be voted on by Senate at the next Senate meeting.

7.4.1.3 Update on the review of the Senate Bylaws

D. Checkland stated that last year a committee of seven people was established to review the Senate Bylaws. The impetus for that was the creation of the Faculty of Law which will have to be included in the bylaws and involves some changes to the membership of Senate. The committee also needed to review the Senate Bylaws since Senate is now ten years old. There are two outstanding issues for possible inclusion that still need to be resolved. In the meantime, the draft will be discussed at the AGPC meeting and the report will come to Senate in November for further discussion.

8.   Old Business – none

9.   New Business as Circulated – none

10.   Members' Business – none

11. Consent Agenda
11.1 Senate Learning and Teaching Committee Report 2017-2018

12.   Adjournment at 6:45 p.m.

Ryerson University
President's Update to Senate
November 6, 2018

APPOINTMENTS

Charles Finlay has been appointed interim executive director of Ryerson's new Cybersecure Catalyst – A National Centre for Cybersecurity. Charles, who was formerly chief of staff and director of policy for Ontario's Minister of Economic Development and Growth, and Senior Counsel and Vice-President at BMO Capital Markets, has extensive experience with business, public administration, and law. Under his guidance, the Catalyst will undertake a four-part mission: delivering training and certification programming to cybersecurity professionals, incubating and accelerating Canadian cybersecurity start-ups, collaborating on research and development with Canadian universities and the private sector, and promoting resilience through education and the development of public policy designed to mitigate cybersecurity risks.

Sanjay Ruparelia has been appointed Ryerson University's first Jarislowsky Democracy Chair effective January 2019. Sanjay joins us from Manhattan's New School for Social Research, where he is associate professor of politics; formerly, he was assistant director of the South Asia Institute at Columbia University, as well as a consultant for the United Nations. In his new role, which has been funded by a $2-million gift from the Jarislowsky Foundation, he will lead research into models of democracy and potential reforms, develop new curricula, and host public panels on citizen engagement in partnership with community groups. Sanjay holds a B.A. in Political Science from McGill, and earned his M.Phil in Sociology and Politics of Development and his Ph.D. in Politics from the University of Cambridge.

FALL CONVOCATION 2018 (*2017 figures*) – From October 10 to 11, four ceremonies celebrated the achievement of 2,189 (2,154) graduates eligible to cross the stage, awarding 982 (923) undergraduate degrees and certificates, 772 (771) graduate degrees and certificates, and 435 (460) continuing education certificates. Our new graduates join more than 194,000 Ryerson alumni worldwide.

CONGRATULATIONS

Robert Burley, Lorraine Janzen Kooistra, and *Ruth Panofsky* have been elected fellows of the Royal Society of Canada's Academy of the Arts and Humanities. Professor Burley, of the School of Image Arts, was cited for his photographs, exhibitions, and publications, and their "profound influence" on our understanding of the built environment and its relationship with nature. Professor Kooistra, of the Department of English, was recognized for the innovation, interdisciplinary collaboration, and commitment to open-access public scholarship showcased by her work on nineteenth-century print culture. Professor Panofsky, also of the Department of English, was cited for her "pioneering" studies of the history of Canadian publishing and of Jewish literature in Canada.

Frankie Stewart, Professor in the Department of Mechanical and Industrial Engineering, was named one of five recipients of the Ontario Confederation of University Faculty Association's 2017–18 Teaching and

Academic Librarianship Award. The award recognizes exceptional contributions to higher education, and Frankie, who in 2012 received a President's Teaching Award, was cited for being a role model for female engineers and for helping "countless students discover their voices" and make use of their university learning to create positive change.

Tatiana Estrina, a third-year student in the Department of Architectural Science, won first place in the open category in the Association of Collegiate Schools of Architecture (ACSA) Steel Design Student Competition. Her winning entry in this international competition, open to undergraduate and graduate students worldwide, was UPROOT: Once a Mine, Now a Garden—a design to redevelop open-pit mines as community farmland. Tatiana's project has a potential real-world application, as she was inspired by the imminent closure of several mines in Northern Ontario. Associate Professor of Architecture Vincent Hui sponsored her project.

Based in Dublin, and with Irish president Michael D. Higgins as their patron, the annual Undergraduate Awards are the largest international awards program for undergraduate university students in the world. In September, recent Ryerson graduate *Emily Morrison* (Public Health and Safety '18) won Ryerson's first-ever Global Award, placing first in the Undergraduate Awards' Nursing, Midwifery and Allied Healthcare category. Two other recent Ryerson alumnae—*Saliah Chaudhry* (Fashion Communication '18) and *Julia Martini* (Criminology '18)—had their work Highly Commended, and 22 other recent graduates were given commendations for being in the top 25% of their categories.

PARTNERSHIPS

MUSIC START-UPS – The Music Den at FCAD is the first Canadian member of Universal Music Group's Accelerator Engagement Network, which fosters music-related start-ups. Founded last year to assist in evaluating, developing, and eventually mentoring innovative music start-ups, the network lets entrepreneurs tap into the resources of the world's largest record label. Other members of the network include Plug and Play in Berlin, LeanSquare in Liège, Sparklabs in Seoul, China Accelerator in Shanghai, and NYC Media Lab, a public-private consortium involving universities in New York City.

VOICE ACTING AND AUDIO BOOKS – On September 26, FCAD announced a partnership with Audible Inc., the world's largest producer of audio books. It will substantially renovate existing studios to create the Audible Sound Studio (which will make possible professional-quality audio recordings of voice actors) and the 1400-foot Audible Acting Studio. It will also result in a revised curriculum including a course on spoken-word performance and production. Audible will endow an annual award for a student who excels at voice-acting.

FIRST NATIONS HOUSING – Nishnawbe Aski Nation (NAN), which represents 49 First Nations communities in Ontario, has partnered with Ryerson's Together Design Lab, led by Dr. Shelagh McCartney, to create the NAN Housing Strategy. The strategy arose from SSHRC-funded research led by Dr. McCartney and her team, and it received a further $200,000 in SSHRC funding for a pilot study in certain First Nations communities. From there, NAN Chiefs-in-Assembly passed a resolution to develop a full strategy, as a three-year project that will develop housing systems for First Nations, on- and off-reserve. It aims to alleviate the current housing crisis and lack of infrastructure by creating a housing

accord between NAN, Ontario, and Canada, and devising long-term housing plans that are inclusive, occupant-based, and responsive to the needs of individual communities and First Nations.

FUTURE OF SPORT – On September 11, Ryerson and Maple Leaf Sports Entertainment announced a collaborative venture called the Future of Sport Lab (FSL), the first lab for sport innovation and research in North America. The lab's incubator, run by Dr. Cheri L. Bradish, Loretta Rogers Research Chair in Sport Marketing at TRSM, will have a particular interest in innovation related to fan behaviour and experiences; it began accepting applications from entrepreneurs across Canada in October. The FSL will also foster the development of undergraduate and MBA-level sport-business programming at Ryerson.

PARTNERSHIP IN GREECE - In June, Ryerson's DMZ and the Greek bank Eurobank signed a five-year Memorandum of Understanding to collaborate on assisting young entrepreneurs. Dr. Marie Bountrogianni, dean of the Chang School, travelled to Athens to activate the partnership, which will give start-up founders at Eurobank's incubator, "the egg," opportunities to benefit from DMZ training and mentoring. It will also open up access to Chang School e-learning programs for these young entrepreneurs and for Eurobank executives.

EVENTS

ORANGE SHIRT DAY – On September 28, the Ryerson community participated in the second annual Orange Shirt Day, a nationwide initiative memorializing the devastating impact of the residential school experience. Students, faculty, and staff wore orange shirts, symbolic of the shirt that was taken from survivor Phyllis Webstad on her first day of residential school in Williams Lake, B.C. There were opportunities for education and reflection, including a button-making session, a potluck feast, and a talk by residential school survivor Andrew Reuben, who was separated from his family at age seven as part of the Sixties Scoop. Ryerson's Orange Shirt Day event enacted a recommended initiative from Ryerson's truth and reconciliation community consultation summary report. It was organized by Aboriginal Student Services.

POW WOW – Early in the morning on September 21, a sunrise ceremony kicked off Ryerson's first Pow Wow in 17 years. Hosted by FCAD's Saagajiwe centre for Indigenous research and creation, the Pow Wow featured Indigenous dancing, music, and crafts in the Kerr Hall gymnasium and concluded with a community feast. Back in 1998, Ryerson was the first Toronto university to host a traditional pow wow. The 2018 revival was organized by Communication and Culture graduate students Riley Kucheran (the newly appointed Indigenous Advisor to Ryerson Graduate Studies) and Laura Heidenheim, and it was supported by the Provost's Office, in response to a recommendation listed in *Truth and Reconciliation at Ryerson.*

PHOTOGRAPHY EXHIBITION – Ryerson Image Centre's ongoing exhibition *Gordon Parks: The Flávio Story* has garnered international attention for its provocative updating and recontextualizing of one of the most controversial stories in 20th-century journalism. Photographer Parks' photo essay "Freedom's Fearful Foe: Poverty," published in *Life* magazine in June 1961, focused on a severely asthmatic boy living in abject poverty in a Rio de Janeiro favela. *Life*'s readers donated money for Flávio to be treated in the U.S. and for his family to be relocated, albeit with mixed results. As Murray Whyte of the *Toronto*

Star notes, the exhibition's presentation of the Flávio story "calls [into] question the rift between documentation and manipulation." The exhibition, which is accompanied by a book of the same name, was organized in collaboration with the J. Paul Getty Museum in Los Angeles and The Gordon Parks Foundation in New York City, and in partnership with Instituto Moreira Salles, Rio de Janeiro, Brazil.

RYERSON DEMOCRACY FORUM – On September 26 and October 2, the Faculty of Arts hosted two political panels to dissect and follow up on the recent Ontario election. The first was the Ryerson Democracy Forum event "How the Ontario Election Was Won," which brought together top strategists from the four major political parties for a post-mortem, in a discussion moderated by the *Toronto Star*'s Martin Regg Cohn. Kory Teneycke from the Progressive Conservatives, Michael Balagus from the NDP, David Herle from the Liberals, and Becky Smit from the Green Party discussed lessons they had learned from the provincial election in June, focusing on the rise of "digital democracy," whereby political parties communicate to voters predominantly online, and the low turnout among young voters. A spirited discussion proved that Ryerson can buck the trend. The second event was "Ford's First Few Months," which was co-hosted by Regg Cohn and TVO's Steve Paikin. MPPs from Ontario's four major political parties, including Environment Minister Rod Phillips, debated the impact of the new provincial government.

RAMS CARE – On October 7, the Toronto Raptors held an open practice and an intra-squad game at the Mattamy Athletic Centre. Ryerson students and the public got a sneak preview of the 2018–19 squad, including new signings Kawhi Leonard and Danny Green. Last season's NBA Eastern Conference semi-finalists showcased their offensive prowess, as well as two rarities: a technical foul in a scrimmage (assessed to centre Jonas Valanciunas for arguing a travel call) and a game that lasted five quarters. Ryerson hosted approximately 800 spectators, and the event raised $9,000 for the Ryerson Rams Care - Send Kids to Camp campaign.

ONTARIO UNIVERSITIES' FAIR – The annual event held September 28 to 30 at the Metro Toronto Convention Centre attracted 118,357 visitors. The Ryerson booth distributed 30,000 handbooks and 20,000 lanyards, and more than 2,700 visitors attended the presentations given by Ryerson recruitment officers, which were also streamed on Facebook Live. Representatives from each faculty, zone learning, and student affairs were on hand to answer questions about academic programs, student life, and experiential learning opportunities. We had 522 views on Facebook Live and more than 21,500 Instagram story impressions. Also, 12,504 OUF passports were scanned so prospective students could access more information about Ryerson—an increase of 50% over last year. Special thanks to the Office of the Registrar for continuing leadership in preparation, coordination, and follow-up; and to the team of 883 faculty, staff, and student volunteers who gave every prospective student the feeling that Ryerson could be their home.

CLASSROOM IMPROVEMENTS INITIATIVE – From September 11 to October 15, the Learning & Teaching Office (LTO) and Facilities Management & Development (FMD) held a consultation with the Ryerson community to gather input for the Classroom Improvements Initiative. The Initiative has as its mandate "the creation of classroom standards that define minimum requirements for learning spaces on campus." An online survey and a series of town halls generated ideas and responses from 440 community members, including faculty, graduate and undergraduate students, and staff. Further input

is forthcoming from Academic Accommodation Support and the Aboriginal Education Council. The standards that the Initiative will derive with the aid of these responses will direct updates and renovations of learning spaces.

PHOTOGRAPHING THE LAKESHORE – A 250-foot photograph by Michael Awad, instructor in Urban and Regional Planning at Ryerson, is on display until November 30 at the Bentway, a new public space under a stretch of the Gardiner Expressway. Awad documented the entire 18 kilometres of the Gardiner by camera while on foot, by bicycle, and by car for his composite photograph, entitled *The Gardiner Expressway, Lakeshore Boulevard, and the Bentway, 2018*.

from the **President's Calendar**

August 31, 2018: I led a team from Ryerson to present a proposal for the Future Skills Centre to the Honourable Patricia Hadju, federal Minister of Employment, Workforce Development and Labour.

September 4, 2018: Along with vice-president, administration and operations Deborah Brown, assistant vice-president, University Relations Jennifer Grass, and executive director, community safety and security Denise Campbell, I met with representatives of Toronto Public Health (medical officer Eileen de Villa and director, finance and administration Althea Hutchinson) about the safe injection site near Ryerson's campus.

September 4, 2018: I attended a board of governors social hosted by board vice-chair Tony Staffieri at the Rogers Centre, where we watched the Toronto Blue Jays take on the Tampa Bay Devil Rays.

September 5, 2018: As a member, I attended a meeting of the National Research Council.

September 6, 2018: I met with Sriram Raman, policy advisor to the Minister of Infrastructure and Communities to discuss infrastructure.

September 7, 2018: I attended a meeting with the executive committee of the Council of Ontario Universities.

September 10, 2018: I met with Chris Whitaker, president and CEO of Humber College, about The United Way campaign.

September 11, 2018: I met with Razor Suleman, CEO of Elevate, Toronto's annual technology and innovation week, to explore the potential for partnership with Ryerson.

September 12, 2018: I met with Paola Saad, the new Brazilian Chamber of Commerce chair (who is also a Ryerson grad with a postgraduate diploma in Public Relations), to explore possibilities for collaboration with Ryerson.

September 12, 2018: I spoke at the opening reception for *Gordon Parks: The Flávio Story,* the provocative photography exhibition at the Ryerson Image Centre.

September 13, 2018: I attended the orientation meeting for new board members, at which we discussed the core business of the university.

September 13, 2018: We hosted a farewell dinner for chancellor emeritus Lawrence S. Bloomberg.

September 17, 2018: I attended a meeting of the Universities Canada International Committee in Ottawa.

September 17, 2018: Charles Finlay, interim executive director of Cybersecure Catalyst, and I met in Ottawa with the Canadian Security Establishment's Renaud Levesque, director general of core systems, and Francis Castonguay, director general, partnerships and risk mitigation to discuss cybersecurity collaboration.

September 17, 2018: In Ottawa, Charles Finlay and I met with the office of John Knubley, Minister of Innovation, Science and Economic Development, to discuss cybersecurity.

September 19, 2018: Along with Dr. Shelagh McCartney of Ryerson's Together Design Lab, I met with Nishnawbe Aski Nation Grand Chief Alvin Fiddler to discuss the housing strategy partnership between NAN and the lab as an opportunity for relationship building.

September 20, 2018: I attended a celebration of the 40th anniversary of Mattamy Homes. We presented CEO and founder Peter Gilgan with framed photographs of the Mattamy Athletic Centre before and after construction.

September 21, 2018: I gave opening remarks at a breakfast with a delegation from Baden-Württemberg, Germany, including Theresia Bauer, German Minister of Science, Research and the Arts. Ryerson signed a Double Degree Amending Agreement with Karlsruhe University of Applied Sciences.

September 21, 2018: I was honoured to deliver opening remarks at the first Ryerson pow wow in 17 years, organized by FCAD's Saagajiwe centre for Indigenous research and creation.

September 21, 2018: I attended a farewell celebration for Art Slutsky, outgoing vice-president of research at St. Michael's Hospital.

September 24, 2018: I delivered remarks about the need for thoughtful innovation to open a discussion at the Ted Rogers Leadership Centre on A.I., Privacy, and Ethics. Keynote speeches at this public event were delivered by distinguished expert-in-residence Ann Cavoukian and ARCompany CEO Hessie Jones.

September 25, 2018: I visited Stephenson Engineering to speak about possibilities for partnership with Ryerson.

September 25, 2018: I was pleased to deliver opening remarks at a reception with TRSM advisory council members to welcome Daphne Taras, the new dean of TRSM.

September 26, 2018: I attended the Ryerson Democracy Forum event "How the Ontario Election was Won," a post-mortem hosted by the Toronto Star's Martin Regg Cohn and featuring top strategists from the four major political parties.

September 27, 2018: At a Council of Ontario Universities retreat, I and other executive heads discussed the transition to the new provincial government, and positioning and advocating for the post-secondary sector.

September 28, 2018: I had the privilege of addressing members of the Ryerson community who were participating in Orange Shirt Day, an annual nationwide initiative memorializing the devastating impact of the residential school experience.

September 28, 2018: To follow up on the Ottawa meeting with representatives from the Communications Security Establishment on Sep. 17, I and a delegation from Ryerson had lunch with CSE senior learning advisor Randy Purse.

September 28, 2018: I met with representatives of the Toronto District School Board (TDSB) about the United Way Campaign.

September 29, 2018: Along with Ontario Institute of Technology president and vice-chancellor Steven Murphy and OCAD University president Sara Diamond, I sat on a "Presidents Unplugged" panel at the Canadian Association of University Solicitors Conference. We discussed issues such as digital disruption, advancing diversity and the participation of Indigenous peoples in universities, teaching responsible citizenship, and the role of legal advisors in university decisions.

September 29, 2018: I attended the Ontario Universities' Fair to greet prospective applicants to Ryerson and to thank some of our 883 faculty, staff, and student volunteers.

October 1, 2018: I spoke with Nancy Mudrinic, provincial Assistant Deputy Minister, Postsecondary Education Division, to welcome her to her new role and discuss Ryerson's priorities.

October 1, 2018: I was honoured to be recognized as a changemaker at the 2018 TDSB Islamic Heritage Month launch event, held at the Aga Khan Museum.

October 2, 2018: I greeted Mayor Tory at the DMZ, where he announced plans to digitize city services such as bill payments and service requests with the help of local technology start-ups.

October 2, 2018: I attended the Faculty of Arts' political panel "Ford's First Few Months," which was co-hosted by TVO's Steve Paikin and the *Toronto Star*'s Martin Regg Cohn. MPPs from Ontario's four major political parties, including Environment Minister Rod Phillips, discussed the impact of the new provincial government.

October 3, 2018: I attended the third annual Thanksgiving Lunch, at which we served 1,500 students at the SLC Amphitheatre.

October 3, 2018: I spoke with Edward Rogers, board chair of Rogers Communications Inc. and Tony Staffieri, Ryerson board vice-chair and Rogers CFO, about the Ryerson Master Plan.

October 3, 2018: I was pleased to drop the ceremonial first puck at the Ryerson men's hockey home opener against the Waterloo Warriors. The Rams won convincingly, 10–1.

October 4, 2018: I met with senior staff in the office of the premier about Ryerson's priorities and how we can align them with the priorities of the government.

October 5, 2018: I attended a lunch with the German Consul General in honour of a visit by Ms. Anja Karliczek, the German Federal Minister of Education and Research, to Toronto.

October 5, 2018: I met with Michael Diamond, who runs the Upstream consulting group, about understanding the new Ontario government's priorities.

October 6, 2018: At the Muslim Awards for Excellence Gala at the Ritz Carlton Hotel, I was honoured to be recognized with the Community Excellence Award.

October 12, 2018: I met with Sam Blyth, CEO and founder of Blyth Academy, to explore opportunities for partnership with Ryerson.

University Relations
Monthly Metrics & Reach

UR Highlights: September

- In collaboration with UAR, designed the 2019 Admissions Handbook which was distributed at the Ontario Universities Fair to more than 30,000 potential students.
- As a sponsor of WE Day 2018, Ryerson's 90-second branded segment on the Scotiabank Arena stage showcased the collaborative work being done by FCS' Together Design Lab and the Nishnawbe Aski Nations. More than 20,000 elementary and high school students were in attendance.
- Created the visual identity for the new Cybersecure Catalyst and began working on the development of marketing materials.
- Supported communications efforts for the return of the Ryerson Pow Wow.

Media Relations

- In collaboration with MLSE, Ryerson announced the launch of the Future of Sport Lab - this was covered by The Globe and Mail, Sportsnet 590, 680 News, CityNews, BetaKit and Academica.
- FCS' Together Design Lab partnership with Nishnawbe Aski First Nations to address housing crisis was covered by Toronto Star, Metro News, CBC News, University Affairs, Academica, Vice and Urban Toronto.
- FCAD partnership with audio entertainment company Audible covered by The Financial Post and Academica.

Marketing

- Developed more than 63 print projects during September.
- Captured new photos of the Ryerson Pow Wow event in September..
- Added more female and Indigenous photographers to our vendor list.
- Completed the Cybersecure logo identity
- 105 new photos uploaded to the DAM
- Over 550 downloads from the DAM

Publications

- Produced 11 editions of Ryerson Today (RT)
- Open rate for special Back to School edition of RT was 40.5%, second-highest open rate for September was "New professor brings an Indigenous approach to his teaching" (39%)
- Also featured Law Practice Program and Royal Society Fellows

Website

- Comparing September 2018 to September 2017, saw a 7.42% increase in pages viewed on ryerson.ca, while the bounce rate improved by 4.01%.
- This means more people came to the website and it was higher quality traffic.
  - September 2017: 3.9 million pages viewed
  - September 2018: 4.2 million pages viewed

Ryerson University

ryerson.ca/university-relations

Digital Marketing

- Summer is a less active time for digital campaigns, as it is not a key decision-making period for prospective undergraduate and graduate students, apart from MBA students which continued with Google search and display ads.

Social Media

- **Instagram**: Over 80% percent of posts had engagement above 1K and reach surpassing 8K (a new benchmark); overall engagement was 26K, which represents a 16% increase over August (previously our best month); set new benchmark of 6K for reach on Instagram Stories; follower account increased by 1.1K in September
- **Facebook**: Follower count increased by 576; first month with multiple posts exceeding 11K in reach, set new benchmark for engagement at 3.1K
- **Twitter**: Followers up by 354 since August 1
- **LinkedIn**: Followers up by 1.9K; 1.3K social engagements (likes, comments, shares); our content had 357K impressions
- **Giphy**: 225K views

Awards

- Three International Association of Business Communicators (Canada) Silver Leaf Awards for:
    - Brand Refresh - Award of Excellence
    - CUE Annual Report - Award of Excellence
    - 70/25 Double Anniversary - Award of Merit

- International Design award of Merit for brand evolution swag including buttons, stickers and other wearables.

YSGS report to Senate

October 16, 2018

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

New Graduate Program Proposal

Urban Health PhD

The Urban Health PhD will be housed in and administered by the Daphne Cockwell School of Nursing. The proposal was reviewed by a Peer Review Team with a site visit on June 12 and 14, 2018 and was determined to be well positioned and unique with the focus on urban health in the Canadian Context.

On October 1, 2018 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 October 15, 2018 the YSGS Council voted in favour of moving the proposal to Senate.

Motion: That Senate approve the new program proposal for the Urban Health PhD Program as described in the Senate Agenda.

Building Science PhD

The Building Science PhD program will be a small addition to the existing Master's of Building Science program. The proposal was reviewed by a Peer Review Team with a site visit on June 6 and 7, 2018. The PRT felt that moving forward with this a PhD offering was an obvious decision and had great potential for success at Ryerson.

On October 1, 2018 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 October 15, 2018 the YSGS Council voted in favour of moving the proposal to Senate.

Motion: That Senate approve the new program proposal for the Building Science PhD Program as described in the Senate Agenda.

Periodic Program Review FAR

Literatures of Modernity

The Literatures of Modernity self-study report was reviewed thoroughly by the Program and Planning committee on February 28, 2018 and following that the PRT team was decided upon and scheduled to visit on May 28 and 29, 2018.

On October 1, 2018 the Program and Planning Committee reviewed the YSGS response to the Peer Review Team. The documents were voted on and have been recommended for approval as sufficiently addressing the comments and recommendations of the Peer Review Team.

On October 15, 2018 the YSGS Council voted in favour of moving the FAR to Senate.

Motion: *That Senate approve the Periodic Program Review for the Literatures of Modernity Graduate Program.*

Mechanical and Industrial Engineering

The Mechanical and Industrial Engineering self-study report was reviewed thoroughly by the Program and Planning committee on September 28, 2017 and following that the PRT team was decided upon and scheduled to visit on February 1 and 2, 2018.

On October 1, 2018 the Program and Planning Committee reviewed the YSGS response to the Peer Review Team. The documents were voted on and have been recommended for approval as sufficiently addressing the comments and recommendations of the Peer Review Team.

On October 15, 2018 the YSGS Council voted in favour of moving the FAR to Senate.

Motion: That Senate approve the Periodic Program Review for the Mechanical and Industrial Engineering graduate programs.

FULL PROPOSAL

PhD in Urban Health

Submitted by:

Dr. Suzanne Fredericks, Graduate Program Director
Chair, Graduate Curriculum Committee

January 29, 2018
Last Updated: September 13, 2018

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Introduction

The 2014 United Nations report on global urbanization estimates 70% of the world's population will reside in large cities by the year 2050 (WHO 2016). The growth in the development of urban areas has been shown to produce economies that are characterized by an increase in foreign trade, complex market structures, and technological innovations (Bloom, Canning, Fink, 2008; Rydin et al, 2012). In spite of the positive aspects of urbanization, the rapid development of urban centres has resulted in the rise of complex social and economic challenges such as increased homelessness, inadequate housing, food insecurity, fuel consumption and pollution, reduced walkways and bike lanes, and increased demand for health and social care for individuals living with functional and intellectual disabilities, with no concomitant expansion and customization of services to meet the needs of diverse populations (Zoomers et al., 2017). As well, rates of suicide and addiction have increased within the Canadian Indigenous population residing in urban centres over the last 5 years (Mazereeuw et al., 2017; Wilk et al., 2017). These challenges have restricted engagement in healthy behaviours (e.g. eating habits, physically active lifestyle) and have significantly affected the health and well-being of populations, as evidenced by increases in the onset of various chronic diseases (e.g., cardiovascular, cancer, diabetes, and mental health disorders) (Coburn, 2009, Seto & Ramankutty, 2016; Srivastava, 2009). From a global perspective, urbanization has also been associated with the spread of HIV/AIDS, tuberculosis, and malaria; the re-emergence of old diseases; less than optimal maternal, newborn, and child health outcomes; the onset of infectious diseases (i.e. pneumonia, diarrheal disease); and an escalation in rates of violence and oppressive behaviours (Beall, Guha-Khasnobis, Kanbur, 2010; Muggah, 2012).

The significant health concerns related to urbanization require urgent attention and there is a pressing need to prepare qualified professionals across a variety of disciplines (e.g., nursing, social work, urban development, early childhood studies, occupational and public health, disability studies, midwifery, youth and child care, nutrition, geography, medicine, pharmacy, and dentistry) to critically examine the impact of urbanization and to collaboratively generate and evaluate the effectiveness of comprehensive solutions to improve the health of people living in urban centres (Galea & Vlahov, 2008; Kirst et al., 2014).

Theoretical structure of the PhD in Urban Health Program

Urbanization, which began with industrialization, has intensified over the past few decades under the complex social, economic and political forces associated with globalization, neoliberalism and advanced capitalism. Neoliberal market-oriented policies, adopted by many nations around the world, have contributed to increased environmental degradation, economic inequities, social vulnerabilities and health disparities. Thus, to effectively define the evidence and research direction for urban health priorities, a theoretical frame of reference is needed to explain how the urban context may affect health; and to identify strategies for addressing health related issues (Galea & Vlahov, 2005).

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Urban health is the health and disease of a population that is a result of exposure to populations living in highly dense settings (Galea & Vlahov, 2005). The PhD in Urban Health program is situated within a theoretical framework that supports students across disciplines in innovatively exploring questions, issues, challenges and opportunities which individuals and/or communities experience within the context of urban settings. Informed by program values, this theoretical frame of reference considers the intersections between: a) individual, social, and environmental determinants and b) substantive domains which reflect key issues of concern in urban settings.

Values are the fundamental guides and stimuli for action. They underpin the curriculum and are the standards, principles, and judgements in which the curriculum is rooted. The values that underpin the PhD in Urban Health program include: *equity, resilience, collaboration, and sustainability*. Equity is the absence of systematic disparities in health between social groups who have different levels of underlying social advantage/disadvantage (Braveman & Gruskin, 2003). Resilience refers to a process of adapting to adversity, trauma, and significant stress (Barasa, Cloete, Gilson, 2017). Collaboration is the working together, sharing of responsibility for problem-solving, and making decisions to formulate and carry out plans for maintaining and/or promoting health, as well as equitable partnerships and includes the notion of multidisciplinary (Elwyn et al., 2012); while sustainability is the need to promote and maintain health without exhausting natural resources or causing severe ecological damage (Waltner-Toews, 2004). Equity, resilience, collaboration, and sustainability encompass all components and elements related to the PhD in Urban Health program.

A major conceptual perspective essential to understanding Urban Health are determinants which are the factors, characteristics, and/or indicators that definitively affect health and wellbeing; and can be classified as individual, social, or environmental (Bircher & Kuruvilla, 2014).

Individual determinants refers to the potentials of individuals (biological, personally acquired) in meeting the demands of life (physiological, psychological, environmental) (Bircher & Kuruvilla, 2014), while *social determinants* are the social factors (e.g., social engagement, collective efficacy, trust) that can positively or negatively affect an individual's health. *Environmental determinants* relate to the living, ecological, and the work environment (Bircher & Kuruvilla, 2014). Examples of determinants include, but are not limited to: income, social status, education (e.g. effect of lower levels of education on health, stress, and self-confidence), physical environment (e.g. effect of safe water and clean air, healthy workplaces, safe houses, communities and roads on health), employment, working conditions, social support networks, culture (e.g. influence of customs, traditions, and beliefs on health), genetics (e.g. genetic makeup influences lifespan, healthiness and the likelihood of developing illnesses), personal behaviours (e.g. balanced eating, keeping active, smoking, drinking), mental capacity and coping skills (e.g. adaptation to stresses and challenges), health services (e.g. access and use of services), gender (e.g. men and women experience diseases differently), globalization, and healthy child development (http://www.who.int/hia/evidence/doh/en/index1.html).

The values related to equity, resilience, collaboration, and sustainability influence the determinants as they shape and provide the stimuli for actions.

Domains are the **SUBSTANTIVE FOCI** of the Urban Health program; and can be viewed as the areas of specialization that emerge from the determinants, which are influenced by the program values.

The three main domains associated with this program are:

 # 1 - *HEALTH AND WELLBEING* -   Defined as a "*state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity*" (https://www.aohc.org/model-health-and-wellbeing). Within an urban environment, many potential hazards related to urban living exist which impact on an individual's overall health and wellbeing. These include but are not limited to: genetics; lifestyle; substandard housing; urban, environmental, and health geography; contaminated food and water; nutrition; air pollution; and congested traffic (Bai, Nath, Capon, Hasan, Jaron, 2012).

 # 2 - *SAFETY AND SECURITY* – Relates to "protecting people from critical (severe) and pervasive (widespread) threats and situations that can include, but are not limited to: crime and violence, access to education, chemical exposure, employment status, sanitation, adequate shelter, and participation in social and cultural life (UN-Habitat, 2012)

 # 3- *MIGRATION, IMMIGRATION, AND SETTLEMENT* – The effect of migration, immigration, and settlement processes on the health and wellbeing of individuals can result in significant challenges that include but are not limited to: immigrant and refugee health; injuries and violence that stem from migration, immigration, and settlement; unsafe living conditions; precarious employment and labor market integration; racism, colonialism, and undocumented status (Lee, Helke, Laczko, 2015).

The values related to equity, resilience, collaboration, and sustainability serve as a lens for studying the individual, social, and environmental determinants of health by addressing issues related to health and wellbeing; safety and security; and migration, immigration, and settlement. The examples identified can be transferred between domains, which are intentionally kept broad to encompass a variety of topics.

1 Basic Information

1.a. Program General Information

The **PhD Program in Urban Health** will provide innovative learning opportunities aimed at empowering graduates to work collaboratively across a range of disciplines to generate high

quality evidence related to the concerns of individuals and communities and to generate solutions to improve the health and well-being of diverse populations living in urban centres.

The PhD in *Urban Health* program will be **housed in and administered by the Daphne Cockwell School of Nursing (DCSN), with the support of the Faculty of Community Services (FCS).** The proposed program will be **governed** under the DSCN Graduate Program Council and the Yeates School of Graduate Studies Council. Faculty members from the DCSN, FCS, and other affiliated faculties will facilitate the course offerings through a variety of educational approaches including but not limited to: co-supervision, dissertation committee membership, and team teaching. The DCSN and FCS facilities, resources, and infrastructure will be used to support this program.

The DCSN Graduate Curriculum Committee (GCC) that includes: Dr. Suzanne Fredericks (Graduate Program Director and Chair of the GCC), Dr. Heather Beanlands, Dr. Sepali Guruge, Dr. Elizabeth McCay, Dr. Souraya Sidani, Dr. Janice Waddell, and Dr. Josephine Wong; are the **principal faculty members** responsible for the development of this program.

1.b. Program Overview

Within health care and related sectors such as education and public policy, a doctoral education is necessary for competitive pursuit of careers in top leadership and advisory positions. A PhD program in *Urban Health* is, as stated in Ryerson University's Academic Plan, necessary for "attracting the brightest and most ambitious innovators from around the world" that can complement our existing faculty.

1.b.i. Learning Outcomes

Upon completion of this program, graduates will be able to:
1. Work collaboratively with team members from a variety of disciplines and professions to develop innovative, sustainable strategies and solutions to challenges pertaining to urban populations that can relate to health and well-being; safety and security; and/or migration, immigration, and settlement.

2. Engage in clear, effective, and respectful collaborative interpersonal communication with professionals and other members of diverse and equity seeking teams and communities in urban health settings.

3. Verbally present, discuss and defend information, reasoned arguments, sustainable strategies and solutions, as well as research findings; clearly and concisely for an audience from diverse disciplines and professions.

4. Write clearly, concisely, and effectively for research, policies, and urban community audiences on issues pertaining to equity, resilience, collaboration, and sustainability within *Urban Health*.

5. Plan, design, and implement innovative and advanced research studies in response to complex challenges and issues relating to *Urban Health*.

6. Reflect discuss, and apply critical reasoning to the generation, selection, and application of theories, methodologies, and empirical knowledge to address fundamental *Urban Health* questions in primary area of study that can relate to health and well-being; safety and security; and/or migration, immigration, and settlement.

7. Lead research that is ethically sound, and demonstrates initiative, as well as personal and professional responsibility.

1.b.ii. Rationale and Societal Need

Over 80 per cent of Canadians live in urban centres, with the three largest cities being Toronto, Vancouver and Montréal (United Nations 2014). According to the 2014 United Nations report on global urbanization, Canada has been identified as being more urbanized than the United States, Norway, France, and Germany (United Nations 2014). This growth in urban centers has significantly impacted the health of populations as it has led to an increased spread in communicable and non-communicable diseases and an exacerbation of existing illness conditions; all contributing to a significant decline in the overall well-being of populations and rise in health care resource utilization.

On an international scale, the rapid rate of urbanization has been identified as a global disruptive force that has and continues to significantly impact global health and well-being, resulting in an urgent, imperative need "to adjust to this new reality" (Cohen, 2006). Advanced training to prepare individuals to engage in analytic problem solving, leadership, research and information management, entrepreneurship, and communication is needed to be able to begin to negotiate this changing and complex landscape. A PhD in *Urban Health* will provide graduates with these skills making them highly employable across a variety of sectors within the city of Toronto, across Canada and globally.

At the local, national, and international levels there is a continuing demand for new and replacement doctorally prepared faculty within universities that house health related programs (Jones, 2013). Faculty who have postponed retirement, are now set to retire within the next 10-15 years (Fisher et al., 2009). Consequently, it is anticipated that there will be a significant shortfall of faculty within health-related disciplines in the very near future. Obtaining a PhD in *Urban Health* will position graduates to obtain employment in tenure track teaching positions within academia potentially across a number of disciplines in the very near future. The Conference Board of Canada (Gill & MacDonald, 2013) estimated that as of 2015, approximately 40% of health professionals with a doctoral degree were employed in academia, while the remaining 60% worked outside of the post-secondary education sector in clinical, administrative, and research roles, within diverse institutions that included: private companies, health care institutions, and government agencies. A PhD program in *Urban Health* will help to address the projected faculty gap by preparing students from a variety of health and other disciplines.

Furthermore, there is an urgent need to prepare health professionals at the doctoral level who can respond to the pressing needs of the changing Canadian population characterized by an aging workforce, complex health conditions, and decreased access to timely health care resources

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(Jones, 2013). Doctorally prepared health professionals, such as the graduates from our PhD program in *Urban Health*, who are cognizant of the changing urban health landscape and who have the skills to identify problems; develop and implement interventions in response to these issues; and evaluate the effectiveness of these interventions are needed throughout health care, educational and political sectors. Our graduates will contribute to the improving quality and responsiveness of health and social services to address the needs of diverse populations in urban centres.

1.b.iii. Program Alignment with Academic Plan(s)

A PhD in *Urban Health* will contribute to **Ryerson University's Mission** and the "advancement of applied knowledge and research to address societal needs," by addressing societal and health challenges created through the process of urbanization. This doctoral program will "provide a balance between theory and application" as stated in the university's Mission. Students will be exposed to theories and frameworks that elucidate the impact of urbanization on all domains of health (e.g., physical, psychological, social) and these theoretical perspectives will provide a solid ground to guide inquiry and practice in urban health. In turn, students will be expected to engage broader communities in identifying and prioritizing problems and to conduct research that meets both the requirements of the program and addresses needs of an identified community. In terms of congruence with **Ryerson University's Academic Plan** (*Our Time to Lead 2014-2019)*, students within this program will have the opportunity to learn from and engage with one another within diverse communities. This proposed program will enable students to "collaborate across disciplines and with external partners, take smart, calculated risks to turn promising ideas into tangible solutions that make a positive and meaningful impact on the health of society" (Ryerson University's Academic Plan, p. 23). Furthermore, the completion of a doctoral dissertation will provide students with experiential learning opportunities to facilitate critical thinking and clear communication, to help students to both gain confidence and create knowledge that will enhance SRC excellence, intensity, and impact. All this will be achieved while also addressing complex urban health challenges.

In the **Faculty of Community Services' Academic Plan**, *Leading Social Change through Thought and Action (2014-2019)*, the core notion of graduate education underpins the four strategic goals: 1) Teaching, learning and student experience, 2) Strengthening scholarly, research and creative activities, 3) Advancing social innovation, and 4) Civic engagement and city building. As well, the idea of advanced graduate level education is embedded in the **DCSN's Vision** that encompasses delivering transformative programs to meet student and societal needs through distinctive and innovative scholarly, research and creative activities and community engagement. The PhD in *Urban Health* program will prepare students to work collaboratively across disciplinary boundaries by engaging them in learning opportunities alongside students from other programs to view complex urban health challenges through a variety of disciplinary lenses and in collaborative initiatives to generate solutions to these challenges. As identified within FCS' Academic Plan, "when students learn about the scope of practice of other health care and community services professionals, as well as focus on team-functioning, person-

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centered care, leadership and communication, they are better prepared to form collaborative teams once they graduate, leading to improved client care."

1.b.iv. Anticipated Student Demand

To determine the anticipated student demand for the program, 120 students enrolled in the Master of Nursing program at Ryerson University were surveyed. One hundred and nineteen (99.1 %) returned completed surveys. Of those who responded, all (100%) were Registered Nurses, with the majority (n = 99; 83.2%) identifying their place of employment as being within an Urban Centre. A large number (n = 87; 73.1%) of respondents were in positions that required advanced skills in the design and implementation of quality improvement initiatives; however, 60.5% (n = 72) of respondents felt they were **not well prepared** to engage in quality improvement initiatives. The majority of respondents (80.8%, n = 97) stated their current occupation required advanced skills in the design and conduct of research, while 67.5% (n = 81) believed they were **not well prepared** to engage in research. Furthermore, 95.8% (n = 115) and 91.7% (n = 110) respondents reported their current role required them to work with diverse populations; and were required to have advanced skills to engage in teamwork across the healthcare sector, respectively. Overall, 66.4% (n = 79) reported they would enroll in a PhD Program to acquire advanced skills in quality improvement, research, clinical management or collaboration with diverse populations residing in urban centres for generating innovative solutions to health and social challenges.

In addition, surveys were sent to partner organizations, in which psychologists, occupational therapists, clinical care managers, physicians, speech therapists, public health case coordinators, and nutritionists responded to the following two questions: **1)** Do you think there is a need for a PhD program that will prepare graduates with advanced research skills to engage in quality improvement initiatives?, and **2)** Do you foresee opportunities for PhD graduates in your field? Seventeen surveys were completed by various partner organizations that included: Centre for Addiction and Mental Health (CAMH), St. Joseph's Healthcare, Brampton Civic Hospital, Grand River Hospital, Waterloo Public Health, Brantford General Hospital, St. Michael's Hospital, and SickKids.

The following are major themes from the qualitative responses received:

> **Question 1:**
> Do you think there is a need for a PhD program that will prepare graduates with advanced research skills to engage in quality improvement initiatives?
>
> **Responses:**
> *Yes, a PhD program focused on teaching advanced research skills could set the foundation for intersectoral collaboration (i.e. between primary care and public health) or multisectoral collaboration (i.e. public health and social services) thereby gradually contributing to advances in the health care sector, as a whole.*
>
> *Yes, cross-training by disciplines is important for allowing for more real-work experience. Experts are expected to work in incubator style systems, where they bring*

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their expertise and learn from others. Skills in being able to do this in areas where QI initiatives are not in only one domain would be helpful in the (healthcare) setting.

It would be beneficial to healthcare organization to have more individuals with PhDs, particularly acting in a collaborative role with Public Health Planners (officially titled: Health Promotion Research Analysts at the Region of Waterloo Public Health).

Yes, to develop, grow, enhance, and support advanced research skills geared towards improving all areas of healthcare.

Yes, there is a need to have leaders in innovative quality improvement initiatives with an advanced knowledge of both research methodology and healthcare.

I believe graduate of this program would be invaluable in developing future quality improvement initiatives. These graduates would typically have been involved in hands on patient care and can therefore bring forth this knowledge and experience to develop more pertinent research to aid enhanced patient outcomes in regards to an array of different areas.

Yes, there is a need for this type of program. Many hospital units operate under policies and procedures that are outdated. Some of the policies have simply been obtained from similar units at other facilities. The type of care and quality of practice can be drastically improved with advanced research.

I think there is definitely a need for professionals with these skills considering the ever-changing nature of healthcare.

Yes, I think that there needs to be another alternative to going to the University of Toronto, and there is currently a shortage of nursing leaders and leaders in healthcare with this type of advanced training. I would like to see a program that would allow for a focus on topics that address: Mental health/addictions, public health, health equity, and diversity. This would make it exciting for learners to want to come from other provinces or internationally as well to pursue a health related PhD program.

I believe there is a need to continue to advance evidence based practice through research. PhD prepared health care providers will be better prepared to influence healthcare through their knowledge of systems and complex organizational processes.

Yes, I believe a PhD Program is needed for quality improvement initiative because patient dynamics (demographics, comorbidities, finances in health care, etc…) and public policies are always changing. There we need advanced research to engage in quality improvement initiatives.

Question 2:
Do you foresee opportunities for PhD graduates in your field?

Responses:

I foresee opportunities for PhD graduates to be employed in research organizations with global health emphasis in North America (e.g. PATH, Bill and Melinda Gates Foundation, Universities with Global Health programs) as these organizations require individuals who are leaders and competent in advanced research methods.

My organization (CAMH) has recently demonstrated that it is very supportive of PhD graduates and students. A colleague who graduated from her PhD recently received a position as a Project Scientist. Three PhD students are currently hired as either Managers or as Advanced Practice Clinical Leaders assigned to specific projects that may coincide with their PhD work. This is very reassuring to see that the organization sees the value in supporting these academics.

Yes, my organization needs leaders with a PhD and by obtaining a PhD you can consider many different career options.

Yes, I can foresee PhD graduates being hired as independent consultants for research and advise on institution specific issues. Also, larger hospitals or health care centres or Public Health departments would definitely be more likely to employ PhD graduates.

Yes, individuals with a PhD would most likely be employable at organizations such as the Ontario Renal Network, where governing bodies dictate the current provincial practice.

Absolutely, at CAMH, there are several PhD graduates working as senior scientists or in professional practice roles.

Yes, at SickKids there are definitely opportunities for employment of PhD Graduates (clinical, research, administration, management)

The Centre for Urban Health Initiative (CUHI) (see details on page 13) provided the structure for collaboration among researchers and students in addressing urban health challenges. Although the centre was not a formal degree granting institute, its effectiveness in attracting many scholars attests to the interest in and need for an advanced degree in Urban Health within the City of Toronto.

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

The Program Learning Outcomes outlined below in Table 1, are aligned with the GDLEs associated with the PhD in *Urban Health* program. Each GDLE is mapped directly to the learning outcomes and evidence confirming that each GDLE has been achieved is presented.

Table 1: Mapping of Graduate Degree Level Expectations to Learning Outcomes

This degree is awarded to students who have demonstrated:

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GDLEs	Doctoral Degree This degree extends the skills associated with the master's degree and is awarded to students who have demonstrated the following:	Program Learning Outcomes addressing each GDLEs	Evidence confirming the expectation has been achieved
1. Depth and breadth of knowledge	A **thorough** understanding of substantial knowledge that is at the forefront of urban health challenges	3, 4, 5, 6	*Examples of assignments:* i) course-based papers that focus on review and critical analysis of urban health concepts and theories to inform their understanding of health and/or social challenges ii) systematic review of literature (theoretical, empirical) about the health and/or social challenges, and possible solutions to the challenges, to inform the statement of the research problem and the interpretation of the findings (dissertation study) iii) papers reporting on results of systematic review submitted for publication iv) oral exam *Specific Course*: i) theory in urban health ii) research course iii) seminar course iv) data analysis course v) elective course (s) *Program Activities:* i) dissertation
2. Research and	a) The ability to **conceptualize, design,**	a) 1, 5, 6	*Examples of assignments:* i) presentation at

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GDLEs	Doctoral Degree This degree extends the skills associated with the master's degree and is awarded to students who have demonstrated the following:	Program Learning Outcomes addressing each GDLEs	Evidence confirming the expectation has been achieved
scholarship	**and implement research** for the generation of new knowledge, application, or understanding at the forefront of the discipline, and to adjust the research design or methodology in the light of unforeseen problems;		group/team seminar to identify an urban health challenge, synthesize relevant literature, and explore possible solutions ii) written assignments and/or oral presentations focusing on critical analysis of methodological approaches for addressing urban health issues *Specific Course*: i) theory in urban health ii) research course iii) seminar course *Program activities:* i) conduct of dissertation study
	b) The ability to **make informed judgments on complex issues in specialist fields**, sometimes requiring new methods; and	b) 5, 6, 7	*Examples of assignments:* i) papers focused on challenges in using conventional methods in urban health research; describing innovative research methods applied in their dissertation research project ii) synthesis and critical evaluation of empirical and/or theoretical literature with recommendations for future directions in the field of urban health theory or research *Specific Course*: i) course focusing on data

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GDLEs	Doctoral Degree This degree extends the skills associated with the master's degree and is awarded to students who have demonstrated the following:	Program Learning Outcomes addressing each GDLEs	Evidence confirming the expectation has been achieved
			analysis ii) course focusing on theory in urban health iii) elective course (s) *Program activities:* i) conduct of dissertation study
	c) The ability to **produce original research**, **or other advanced scholarship**, of a quality to satisfy peer review, and **to merit publication**.	c) 1, 5, 6, 7	*Examples of assignments:* i) preparing and submitting papers for publication ii) critically reviewing papers and research proposals *Specific Course:* i) seminar course *Program activities:* i) conduct of dissertation study
3. Level of Application of knowledge	The capacity to: a) undertake pure and/or applied research at an advanced level	a) 5, 6, 7	*Examples of assignments:* i) report (written and oral) on a literature review ii) candidacy dissertation exam iii) final dissertation exam *Program activities:* i) conduct of dissertation study

GDLEs	Doctoral Degree This degree extends the skills associated with the master's degree and is awarded to students who have demonstrated the following:	Program Learning Outcomes addressing each GDLEs	Evidence confirming the expectation has been achieved
	b) contribute to the development of academic or professional skills, techniques, tools, practices, ideas, theories, approaches, and/or materials.	b) 4, 6	*Examples of assignments:* i) submit papers for peer review publication ii) submit dissertation proposal for funding iii) seminar facilitation for faculty and peers iv) presentation at local or national conferences *Program activities:* i) complete dissertation in a timely manner ii) conduct dissertation in an ethical manner
4. Professional Capacity /Autonomy	a) The qualities and transferable skills necessary for employment requiring the exercise of **personal responsibility** and l**argely autonomous initiativ**e in complex situations;	a) 1, 2, 7	*Program activities:* i) complete dissertation in a timely manner ii) conduct dissertation in an ethical manner

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GDLEs	Doctoral Degree This degree extends the skills associated with the master's degree and is awarded to students who have demonstrated the following:	Program Learning Outcomes addressing each GDLEs	Evidence confirming the expectation has been achieved
	b) The i**ntellectual independence** to be academically and professionally engaged and current;	b) 5, 6, 7	*Program activities:* i) Leading the planning, design, and implementation of the dissertation study that is ethically sound ii) active leadership and the application of critical reasoning during supervisory meetings and supervisory committee meetings *Specific Course***:** i) theory in urban health ii) research course iii) seminar course iv) data analysis course v) elective course (s)
	c) The ethical behaviour consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and	c) 1, 4, 7	*Program activities:* i) Leading the planning, design, and implementation of the dissertation study that is ethically sound ii) active leadership and the application of critical reasoning during supervisory meetings and supervisory committee meetings *Specific Course***:** i) theory in urban health ii) research course iii) seminar course iv) data analysis course

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GDLEs	Doctoral Degree This degree extends the skills associated with the master's degree and is awarded to students who have demonstrated the following:	Program Learning Outcomes addressing each GDLEs	Evidence confirming the expectation has been achieved
	d) The ability to evaluate the broader implications of applying knowledge to particular contexts.	d) 3, 4, 6, 7	*Examples of assignments:* i) Submit papers for publication ii) submit dissertation proposal for funding *Specific Course*: i) research course ii) theory in urban health ii) seminar course
5. Communication skills	The ability to communicate information, arguments, and analyses accurately and reliably, orally and in writing to a range of audiences.	1, 2, 3, 4, 6	*Examples of assignments:* i) group/team seminar or presentation about urban health challenge *Program Activities* i) synthesis of relevant literature, innovation discipline-specific or collaborative solutions across disciplines and/or research methods ii) dissertation iii) candidacy exam iv) dissertation exam v) interactions with supervisor vi) interactions with supervisory committee *Specific Course*: i) seminar course
6. Awareness of limits of knowledge	Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods,	1, 6	*Examples of assignments:* i) submit papers for publication ii) submit dissertation proposal for funding iii) Collaboration and team work across disciplines

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GDLEs	Doctoral Degree This degree extends the skills associated with the master's degree and is awarded to students who have demonstrated the following:	Program Learning Outcomes addressing each GDLEs	Evidence confirming the expectation has been achieved
	and disciplines.		*Program Activities:* i) develop proposal ii) candidacy exam iii) dissertation iv) dissertation exam v) interactions with supervisor vi) interactions with supervisory committee *Specific Course*: i) seminar course

1.b.vi. Comparator Programs

An environmental scan of university programs locally, nationally, and internationally (i.e. United States, Ireland, England, Australia, Wales, Scotland) was conducted to determine similarity in focus between the intended PhD program in *Urban Health* and other programs. Graduate Program Directors/Coordinators, Faculty contacts, and Graduate Program Administrators were contacted by email and/or via telephone. In instances where a Program Director/Coordinator and/or Program Administrator could not be reached, the Program website was reviewed.

Results indicate that a **PhD Program that focuses solely on *Urban Health* does not exist**, locally, nationally, or internationally. Three U.S. schools have PhD programs that identify Urban Health as one of many areas of foci:

1) **Case Western University** in Ohio offers a *PhD in Anthropology* with five focus areas, one of these being Urban Health (other areas include Anthropology, International health, Psychological anthropology, and Human biology/physical anthropology).

2) **Rutgers University** in New Jersey offers a *PhD in Urban Systems* that examines the complex interrelationships within urban environments, including the social, cultural, political, economic, geographic, organizational, and bioenvironmental factors that influence urban populations. Urban Health is one of three areas of specialization offered within this program. Global Urban Studies and Urban Environment are the other two areas.

3) **Portland State University** in Oregon offers a *PhD in Community Health*, in which Urban Health is one of three areas of foci (other areas include: Aging and Social and Behavioral Health).

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In addition to university based programs, a research institute with a focus on Urban Health has been identified. This institute was titled: ***The Centre for Urban Health Initiatives*** (CUHI) and was established in 2004 at the University of Toronto, with support of the CIHR's Institute of Population and Public Health under its Centers for Research Development program. CUHI provided infrastructure and platforms for the stimulus of inter-disciplinary research, training and knowledge exchange on the social and physical determinants of health. Scholarship within the centre focused on emerging areas of population and public health, including neighbourhoods, food security and urban agriculture, physical environments, youth sexual health, chronic disease prevention and management, environmental health justice and policy pathways for equitable health and health care. However, due to discontinuation of funding from CIHR, CUHI closed on April 15, 2011. Throughout the centre's operations, over 108 academic researchers across 25 disciplines and 20 institutions were actively engaged in research. A total of 116 research projects were completed that led to numerous spin-off projects, proposal submissions, and successful major grants and publications. In addition, CUHI provided training supports and opportunities for at least 126 graduate students and 119 undergraduates, one post-doctoral fellow and 29 other doctoral students. Many of the centre's platforms served as spaces for collaboration and dialogue among researchers and stakeholders from a variety of disciplines. Knowledge exchange activities have been extensive and involved impressive numbers of community and policy stakeholder users of research across diverse settings as well as faculty and students from a variety of disciplines. Although the CUHI was not a formal degree granting institute, the effectiveness of the Centre attests to the interest in, need for and possible impact of offering a PhD in Urban Health within the City of Toronto, as well as demonstrating the variety of disciplines that can potentially – and successfully - engage in such a program.

The proposed PhD in *Urban Health* program is **unique**, in that it will be the **<u>only</u>** doctoral degree granting program that solely focuses on *urban health* within a Canadian context. St. Michael's Hospital, one of the DCSN's community partners, does have a Centre for Urban Health Solutions (CUHS). This Centre is a research hub focusing on the development and implementation of concrete responses within health care and social service systems at the level of public policy and is not an academic, degree granting institution. Providing the PhD in *Urban Health* will strengthen the collaboration between Ryerson University and St. Michael's Hospital, offering the CUHS students an opportunity to complete an academic degree and creating opportunities for collaborative learning experiences.

Another unique aspect of the PhD in *Urban Health* is that it will be located within the most diverse, urbanized city in Canada. Location and student engagement with the broader diverse community, will make this a highly attractive program for prospective students.

1.c. Curriculum Overview

Students in the program will be **required to successfully complete five graduate courses**. Currently, the number of courses required for completion of a doctoral degree at Ryerson University ranges from four (Biomedical Engineering PhD program) to twelve courses (PhD in Economics). For the PhD in *Urban Health* program, four of the five courses will be core, one-term courses; while the remaining course will be an elective, one-term courses that can be taken

from any graduate department within Ryerson University. The core courses are new 9000-level courses that focus on **1)** Theories and Concepts in Urban Health, **2)** Research Methods in Urban Settings, **3)** Pathways to Becoming a Successful Scientist – Seminar Course and **4)** Data Analysis in Urban Health Research. The **elective** course can be selected from a list of existing graduate courses and must have a clear link to the theoretical, substantive or methodological component of the dissertation and will need to be approved by the dissertation committee prior to enrolment. Even though the number of courses required for successful completion is five, students may be encouraged to take additional electives depending on their overall level of substantive, theoretical, and methodological knowledge as identified by their dissertation committee.

Students will be required to pass a *Candidacy Examination* that includes the completion and successful oral examination of the dissertation proposal during their second year (5th term of enrolment) in the PhD Program. Once the student has passed the Candidacy Exam, they will be required to undertake an original study. This research will culminate in the student writing a dissertation and defending it through a *final PhD Oral Examination* no later than their twelfth term of enrolment in the PhD Program. Our intended goal is to have a gold standard for program completion of 4 years; however, Ryerson University policy does allow students to take up to 6 years to complete a PhD.

1.d. Curriculum Structure

The curriculum will be **structured** to facilitate completion in four calendar years (48 months) of full time study with a significant emphasis on the dissertation research, collaborative learning, and experiential learning opportunities across all years (Table 2). There will not be a part-time option in this program to ensure timely completion of the dissertation and student success thereby ensuring graduates are available to fill projected gaps in academic and professional positions. All students must remain active in the program unless they are on an approved Leave of Absence.

Table 2: Program Curriculum

Year	Fall	Winter	Spring/Summer
1	Required: Theories and Concepts in Urban Health and Seminar and Work on Dissertation Optional: Elective	Required: Research in Urban Health Settings and Seminar and Work on Dissertation Optional: Elective	Required: Work on Dissertation Optional: Elective

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Year	Fall	Winter	Spring/Summer
2	Required: Work on Dissertation and Prepare for Candidacy Exam	Required: Candidacy Exam	Required: Work on Dissertation
3	Required: Work on Dissertation	Required: Data Analysis in Urban Health Research and Work on Dissertation	Required: Data Analysis in Urban Health Research and Work on Dissertation
4	Required: Work on Dissertation and Prepare for Final Dissertation Exam	Required: Work on Dissertation and Prepare for Final Dissertation Exam	Required: Final Dissertation Exam

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

Similarity: There does not appear to be any overlap between the PhD Program in *Urban Health* and current or anticipated new graduate programs at Ryerson University.

Synergy: The PhD in *Urban Health* program will build on, strengthen and enrich our existing Master of Nursing (MN) Program, as well as the other Graduate Programs in the FCS including: Child and Youth Care, Early Childhood Studies, Nutrition Communication, Social Work, and Urban Development. Specifically, the proposed program leverages the existing strengths and capacities of the DCSN Graduate Program. The MN program provides opportunities for professional nurses to develop the leadership and educational expertise to advance nursing knowledge and practice. Through critical thinking and scholarly inquiry, the MN students integrate advanced theory, research, and practice knowledge into their roles as Advance Practice Nurses. To date, the MN program has graduated over 1200 students who now work in a variety of professional roles that require skills in research to engage communities and other professionals in improving health and social services to be responsive to the needs of diverse populations in urban centres across sectors.

The PhD in Urban health is complementary to the **two fields** in our Master of Nursing program: *Leadership in Health Care Policy and Education* and *Health and Illness of Individuals and Communities*. The availability of the PhD program will thus allow our MN graduates to have

access to doctoral education that directly builds on the knowledge gained in the Masters of Nursing Program and extend this in areas specific to Urban Health by providing students with the opportunity to acquire a thorough understanding of a substantial body of knowledge that significantly expands the depth and breadth of knowledge of urban health theories and research methods. This new program also builds on the research skills and scholarship acquired in the MN program by providing students with the opportunity to conceptualize, design, and implement a research study that merits publication in peer review journals and which facilitates informed judgements on complex issues in urban communities. Involvement in these learning activities will strengthen their intellectual independence as academics and professionals. Finally, the PhD in Urban Health program will provide increased research opportunities for faculty and graduate students from a variety of disciplines and professions.

Furthermore, significant efforts have been made to enhance the recruitment of thesis students into the MN program that include: profiling thesis students on our MN website, having thesis students as speakers at annual information and orientation sessions, and incorporating thesis students into recruitment videos. As well, one of the main initiatives of the MN program is to continue to strengthen and build on faculty members' supervisory skills. A formalized mentorship program for first time supervisors that includes the use of a co-supervisory model will be implemented to facilitate the acquisition of mentorship skills by novice faculty. Throughout the mentorship experience knowledge of the role of the supervisor, strategies for supervision, challenges associated with interacting with students, and tips for student success are shared by the mentor, on an ongoing basis. The use of a co-supervisory model provides shared supervisory opportunities for faculty, during periods in which the number of faculty members is greater than the number of thesis students.

Given the changing nature of the profession, the significant strides the MN program has been made over the years in recruiting, graduating, and profiling our thesis students; as well as the significant training and opportunities that have been provided to faculty for supervision; it is a logical next step in our evolution as a School to offer a doctoral degree. As well, given the nature of the PhD in Urban Health program, graduates from other FCS graduate programs will also benefit from opportunities to build on their Master's Degrees, and synergies appreciated by learning about Urban Health challenges with and from faculty and students from a variety of disciplines and professions.

Faculty members from departments/schools outside of the DCSN (i.e. Occupational and Public Health, Nutrition, Early Childhood Studies, Midwifery, Child and Youth Care, Department of Geography and Environmental Studies) who are members of YSGS, will have the opportunity to participate in this program by applying to the school's Graduate Program for membership. This process is consistent with current practice at Ryerson University.

Integration: The PhD in *Urban Health* program will focus on preparing graduates to work within a multidisciplinary team approach to health research (endorsed by Tri-Council and

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Provincial Funding agencies such as the Canadian Institutes of Health Research and the Ontario Ministry of Health and Long-Term Care Research Funds program) and health management (currently used for the design and delivery of services, across healthcare settings, within the urban health environment). Working with members from a variety of professions is essential to generating a comprehensive, multi-dimensional understanding of and solving complex research and clinical problems (Neumann et al., 2017). Providing opportunities for faculty members from various schools and departments to actively engage in this program will allow students to relate concepts from various disciplines to their own discipline specific fields of expertise, as well as to identify and value the contributions of multiple disciplines to the management and resolution of complex problems within the urban environment.

1.f. Provost's Authorization to Proceed

Please see Appendix A for a copy of the Provost's authorization to proceed. Within the letter, the Provost stated:

1) *Consider the potential involvement of other faculty members*: *I encourage you to consider the potential contributions to the program of Ryerson faculty members outside of the Daphne Cockwell School of Nursing.*

   Please see Appendix A for response letters to the School of Geography and Environmental Studies and the School of Occupational and Public Health in which it was noted*: faculty members from the Faculty of Community Services and Programs across Ryerson University will have the opportunity to participate in this program by applying to the DCSN's Graduate Program Council for membership within the PhD in Urban Health Program.*

2) *University Degree Level Expectations*: *proposal expresses clearly defined learning objectives as they relate to program goals and the University's graduate degree level expectations*

   The Graduate Program Director has met with the University Curriculum Consultant, Ms. Paolo Borin, on 3 separate occasions. Together, they completed the Learning Outcomes, GDLE mapping to LO, and Curriculum mapping to LO.

2 PROGRAM DETAILS

2.a.i. Alignment with Institutional Plans

The PhD in *Urban Health* is strongly aligned with the Mission and Academic Plans of the University, Faculty of Community Services, and the DCSN. *Education that builds on the expertise of various disciplines, applied knowledge, and experiential learning* reflect strategic priorities identified across the University, and within the Faculty of Community Services and the Daphne Cockwell School of Nursing. The PhD program will allow graduate students from a

variety of disciplines to learn with, from, and about each other, and view topics related to urban health through a variety of lenses. The design and implementation of a research study will provide students with the opportunity to generate new knowledge and apply knowledge to find innovative solutions relevant to the urban health context; engage with diverse groups of individuals, within and outside of the classroom; and learn through critical reflection and problem solving.

Furthermore, Ryerson University is well positioned to support a PhD in *Urban Health* program. The University embraces discovery, and supports the use of scientific knowledge and methodology, while encouraging a culture of education through advanced graduate training of a highly skilled workforce. Ryerson University has also provided various learning opportunities outside of the classroom that continue to support the creation of scientific knowledge in innovative and creative ways. This is evident through the creation of the Zone Learning programs. Zone Learning is a multi-disciplinary and collaborative opportunity that facilitates cross-pollination of ideas from students across a variety of academic backgrounds. Active mentorship, coaching and support from Ryerson faculty and sector professionals allow students to gain real world experience, make strategic decisions and have access to broader community networks of entrepreneurs, investors and funders, and technology (http://www.ryerson.ca/calendar/2017-2018/optional-specializations/zone_learning/). The Biomedical, Clean Energy, and Science Discovery zones are three areas within the Zone Learning model in which students from a PhD in Urban Health program can potentially be involved.

In addition, Ryerson University's strategic location in the heart of a diverse, multicultural city allows for sustainable and strong partnerships with large tertiary teaching and research hospitals, community organizations, and various urban health centres and agencies. The partnerships that the University has and which it continues to explore will help to provide potential PhD students in *Urban Health* a unique "hands-on," experiential opportunity to network, collaborate nationally and internationally, gain expertise, as well as employment while in the program and following graduation.

2. a.ii. Clarity and appropriateness of the Program's requirements and associated Learning Outcomes in addressing the Graduate degree level expectations

The requirements of the program and associated program LOs are appropriate in addressing the GDLE in that they facilitate a thorough understanding and enhanced depth and breadth of theoretical and empirical knowledge related *Urban Health,* which prepares graduates to be leaders in a variety of areas. As well, the program and its associated LOs build capacity at an advanced level to allow for the conduct of research by cultivating graduates' abilities to conceptualize, design, and implement research for the generation of new knowledge; to inform the understanding and resolution of urban health challenges at the forefront of the discipline; and to critically appraise alternative research designs or methods in light of unforeseen problems through collaborating on and leading research studies. Furthermore, the qualities and transferable

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skills gained throughout this program, specifically the intellectual independence to be academically, professionally, and ethically engaged and current, will strengthen graduates' professional capacity and autonomy. Finally, the candidacy exam and dissertation defense procedures, as well as publication and presentation at conferences, serve to provide graduates with opportunities to communicate complex and/or ambiguous ideas, issues, and conclusions clearly, and rationally; while being able to appreciate the limitations of their own work, as well as the complexities of knowledge, and the potential contributions of other interpretations, methods, and disciplines.

2. a. iii. Appropriateness of degree nomenclature
A PhD is the appropriate nomenclature for this degree, as this program will be research intensive, encompass advanced academic work, and will produce graduates who will be considered an authority of the current knowledge of an area pertaining to *Urban Health* and will be able to independently extend this knowledge through the conduct of rigorous research studies. This program will produce graduates who have the advanced skills to be in command of their specific field and be able to make a significant contribution to it.

2.b. Admissions
2.b.i. Calendar Admission Requirements
Admission requirements (as they would appear in the calendar):

1. Completion of a Master's degree in a health or related discipline (e.g., nursing, social work, urban development, early childhood studies, occupational and public health, disability studies, midwifery, youth and child care, nutrition, medicine, pharmacy, and dentistry). Applicants from other academic programs will be considered on an individual basis.
2. Applicants will be required to have a cumulative GPA of at least B+ in courses credited to their Master's degree, which is consistent with the minimum GPA requirement in over 93% of the doctoral programs at Ryerson University.
3. Applicants will be required to submit two letters of recommendation from academic referees; who can address the candidate's intellectual capabilities, capacity to engage in research at a doctoral level and leadership potential. In cases where an applicant has completed a Master's degree more than five years ago, a professional reference can be submitted in place of one of the two academic references.
4. Applicants must demonstrate evidence of research potential in the form of a Master's thesis, publication in a refereed journal, and/or experience working in a research-intensive context, e.g. research assistant, or coordinator, as reported in their CV.
5. 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 course during their first year of enrollment in the PhD in Urban Health program.

6. A *Statement of Interest* that addresses the potential candidate's reasons for enrolment, research interest(s) and career goals will be required. Specifically, the statement should cover: i) the identification of a supervisor, ii) the applicant's reasons for graduate study in the PhD program, iii) research interest(s) they may wish to pursue within the field of Urban Health, iv) how previous studies and experience have prepared them for the program and v) career objectives and how the PhD program in *Urban Health* relates to them.

Applicants will be evaluated relative to three criteria: academic excellence, research potential, and leadership potential.

International applicants are also required to demonstrate familiarity with the Canadian Urban Health landscape. This may be evident by successful completion of at least one university or college course that addresses an Urban Health phenomenon.

2.b.ii. Appropriateness of Program Admission Requirements for Learning Outcomes

The LOs associated with the PhD in *Urban Health* program focus on the development of specific complex skills that relate to **i)** advanced analysis and problem solving (e.g. being able to analyze and synthesize relevant evidence, forming and defending independent conclusions, designing and implementing research studies), **ii)** interpersonal collaboration and leadership (i.e. being able to facilitate group discussions, respond appropriately to feedback), **iii)** project planning and management (i.e. collaborate on projects, manage a study from beginning to end, identify goals to be accomplished and establish realistic timelines for completion, prioritize tasks while anticipating potential problems), **iv)** research and information management (i.e. identify sources of information applicable to a given problem, understand and synthesize large amount of quantitative and/or qualitative data, develop organizing principles to effectively sort and evaluate data), and **v)** written and oral communication (i.e. prepare concise and logically-written materials, organize and communicate ideas effectively in oral presentations to small and large groups including professionals, communities and policy makers, debate issues in a collegial manner and participate in group discussions, use logical argument to persuade others, explain complex or difficult concepts in basic terms and language).

Applicants with at minimum, a Master's degree in a health or related discipline will already have acquired the basic knowledge associated with each of these skills, in particular, analysis of evidence and research process. As well, a Master's degree would have introduced the applicant to the process of graduate studies within a health care discipline, and would have acquainted them to key issues or topics of concern, thus, enhancing their transition to a doctoral program with a focus on *Urban Health*. Thus, 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, as they work towards the completion of their doctoral degree.

The requirement for demonstrated evidence of research potential in the form of a Master's thesis, publications, and/or engagement in research projects provides a measure of the applicant's

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research skills and experience in working collaboratively with team members, assisting in the planning, designing and implementation of research studies, and the dissemination of research findings.

The admission requirement of a GPA of B+ or higher, indicates the applicant's capability and aptitude with graduate level education which can predict their likelihood of successfully achieving the intended LOs. Similarly, the letters of reference are another predictor of the applicant's capacity to succeed in a doctoral program and to realize the intended program's LOs.

2.b.iii. Alternative Requirements

Applicants with a Master's Degree in a language other than English will be required to have achieved a minimum TOEFL score of 93, or the equivalent in other related tests (MELAB – score 85, IELTS – score 7). A PhD Admissions committee will be formed to evaluate the applicants' submission package. An admission screening tool (Appendix B) will be used to assess GPA, Reference Letters, Curriculum Vitae, and Statement of Interest. This is similar to the process that is used for assessment of Master of Nursing applicants. The statement of interest document allows for the recognition of prior work and/or learning.

2.c. Structure and Graduate Degree Level Expectations

Table 3 is a pictorial representation of the Learning Outcomes and GDLEs as they relate to the PhD in *Urban Health* curriculum.

The PhD in *Urban Health* program will provide students with the opportunity to develop doctoral level basic/introductory skills, pertaining to research and scholarship, application of knowledge, professional autonomy, communication, and awareness of limits. Students will be exposed to these doctoral level foundational skills as they proceed through their required courses, the beginning stages of their proposal and conduct of study, and their interactions with their supervisory committee. The elective courses (listed in this table) will also nurture the development of graduate level foundational skills, as these courses are at the Master's level, in which basic graduate level skills are introduced to the learner.

In addition to the cultivation of foundational doctoral level skills, the PhD in *Urban Health* program will also foster the transition of skills from basic to proficient, in that the skills the learner will acquire will eventually be enhanced, through prolonged exposure to course content, ongoing discussion with faculty and colleagues over the course of the program, and active engagement in a range of learning activities (in particular those planned for the seminar course), so that the performance of these skills demonstrate a high level of achievement expected of a doctoral level graduate. Doctoral level proficiency in skills will become most evident as the learner progresses through the middle to later stages of the program, specifically as they become more independent in the facilitation and leadership of their research study, the writing of the dissertation, and the dissertation exam; the more competent, skilled and capable they become. As well, by the time of graduation, the learner will be proficient in addressing all the learning outcomes and GDLEs, based on their frequent interactions with their supervisor, and committee as well as collaboration with them on various scholarly activities (e.g. preparing papers for

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publication, presentation at conference), which may represent diverse disciplines over the course of the four years, thus enabling them to enhance their research, application of knowledge, professional autonomy and scholarship, practice, communication, and awareness of limits skills.

Table 3: Mapping of PhD in Urban Health Curriculum to Learning Outcomes

F = Foundational / Introductory / Basic Skills

P = Proficiency / Student demonstrates achievement expected of a graduate

Course Code	Curriculum Requirement	LO1 F	LO1 P	LO2 F	LO2 P	LO3 F	LO3 P	LO4 F	LO4 P	LO5 F	LO5 P	LO6 F	LO6 P	LO7 F	LO7 P	GDLE
UH9AAA	Theories and Concepts in Urban Health			X				X				X				1,2a,2b, 4b, 4c, 4d
UH9BBB	Research in Urban Health Settings			X				X			X	X		X		1,2a, 4b, 4c, 4d
UH9CCC	Seminar Course			X		X		X			X	X		X		1,2a, 2b,2c,3b,4b, 4c, 4d,5, 6
UH9DDD	Data Analysis				X		X	X				X				1,2b, 4b, 4c
	Develop a Proposal	X		X	X			X		X			X	X		1,2a, 2c, 3b,4a, 4b, 4c,5, 6
	Candidacy Exam		X		X	X		X		X			X		X	1,2a,3b, 4b, 4c,5, 6
	Conduct of Study	X							X	X		X			X	1,2a,2c,3a, 3b, 4a, 4b, 4c,5
	Dissertation								X		X		X		X	1,2a,2b, 2c,3b, 4a, 4b, 4c, 5, 6
	Dissertation Exam		X		X		X		X		X		X		X	1,2a,3b, 4b, 4c, 5, 6
	Interactions with Supervisory Committee	X		X		X		X		X		X		X		1,2a, 2b,4a, 4b, 4c, 5, 6
	One-on-One Interactions with		X		X		X		X		X		X		X	1,2a, 2b, 4a, 4b, 4c, 5, 6

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		LO1		LO2		LO3		LO4		LO5		LO6		LO7		
Supervisor																
Core Totals		3	3	5	5	3	3	7	4	4	5	6	5	4	5	
		F	P	F	P	F	P	F	P	F	P	F	P	F	P	
Electives – selection of one graduate elective																
Code	Course Name															**GDLE**
MN 8910	Individuals and Families Experience with Health and Illness: Theoretical Perspectives					X		X				X				1, 2b, 4b
MN 8911	Population Health and Health Promotion: Community and Global Perspectives					X		X				X				1, 2b, 4b
MN 8920	Health Policy: A Comparative Analysis					X		X				X				1, 2b, 4b
MN 8921	Leadership in Education					X		X				X				1, 2b, 4b
MN 8931	Diversity and Globalization: Promoting Urban Health					X		X				X				1, 2b, 4b
MN 8934	Interprofessional Health Education	X		X		X		X				X				1, 2b, 4b
MN 8935	Theory and Practice of Program Planning and Evaluation					X		X				X				1, 2b, 4b
MN 8936	Advanced Therapeutic Communication: An Inter-Professional Perspective	X		X		X		X				X				1, 2b, 4b

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PL 8304	Housing & Redevelopment				X	X			X				1, 2b, 4b
PL 8305	Contemporary Urban Design				X	X			X				1, 2b, 4b
PL 8314	Parks in the Contemporary City				X	X			X				1, 2b, 4b
PL 8317	Environmental Planning				X	X			X				1, 2b, 4b
PL8315	Transportation Planning				X	X			X				1, 2b, 4b
CY 8004	Management and Policy Development in Child & Youth Care				X	X			X				1, 2b, 4b
CY 8940	Indigenous Early Learning				X	X			X				1, 2b, 4b
CY 8942	Children's Health				X	X			X				1, 2b, 4b
NC 8101	Epidemiology for Nutrition Research and Interpretation				X	X			X				1, 2b, 4b
NC 8102	Nutrition and Health Behaviour				X	X			X				1, 2b, 4b
NC 8103	Nutrition Communication Strategies				X	X			X				1, 2b, 4b
NC 8201	Food and Nutrition Policy				X	X			X				1, 2b, 4b
NC 8209	Knowledge Translation				X	X			X				1, 2b, 4b
SK 8212	Critical Perspectives on Mental Health				X	X			X				1, 2b, 4b

2.d. Professional Licensing and Accreditation

In response to the evolution of health care education within Canada, the Canadian Association of Schools of Nursing (CASN), Canadian Association for Social Work Education (CASWE), the

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Dieticians of Canada, and the Committee on Accreditation of Canadian Medical Schools (CACMS) have developed national, consensus based standards that articulates the core expectations for doctoral programs delivered across the country, within these disciplines. The underlying goal in developing these standards was to capture the most salient elements for programs and graduates at the doctoral level. These standards stipulate all doctoral programs within these disciplines must build on what students have achieved at the Master's level while fostering learning at a higher level. The assumption underlying the doctoral section of the standard is that the student has already integrated the core expectations at the baccalaureate and master's levels. Within the standard, doctoral education is identified as preparing graduates for advanced roles inclusive of researcher and scholar.

Since the PhD in *Urban Health* program will be housed in and administered by the Daphne Cockwell School of Nursing; accreditation by CASN will be sought out. This program is designed so that it is well positioned to attain CASN accreditation in the future. The PhD in *Urban Health* program aligns with the standards necessary to achieve CASN accreditation. Table 4 maps the main domains identified by CASN to the PhD Urban Health curriculum and the program's learning outcomes.

The six domains identified by CASN reflect a guiding principle and represent a sphere of degree level outcomes and provide a heuristic organizing structure. These domains are not viewed as existing in silos, but as interwoven and interdependent.

Table 4: Domains identified by CASN mapped to the PhD in Urban Health Curriculum and the Program Learning Outcomes

Canadian Association of Schools of Nursing (CASN) DOMAINS	CASN Principles	PhD Curriculum	Student expectation	Program Learning Outcomes
Knowledge	Advanced knowledge and critical understanding of a substantive area of inquiry	-Theories and Concepts in Urban Health course - Elective course	Papers focus on review and critical analysis of urban health concepts and theories to inform their understanding of challenges in urban health and their research problem	3, 4, 5, 6
	Advanced knowledge of sociopolitical and organizational	- Research in Urban Health Settings course		3, 4, 5, 6

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Canadian Association of Schools of Nursing (CASN) DOMAINS	CASN Principles	PhD Curriculum	Student expectation	Program Learning Outcomes
	context related to practice and research			
	Independent and creative thinking in developing new understanding of existing knowledge	- Dissertation work	Systematic review of literature (theoretical, empirical), which could be submitted for publication / presentation	5, 6
	Breadth of advanced knowledge related to research methodology, methods, and knowledge translation	- Research in Urban Health Settings course - Data Analysis in Urban Health Research course	Papers focus on development of proposal, analysis of data and preparation of final report	3, 4, 5, 6
Research methodologies, critical inquiry, evidence	Ability to conduct a rigorous evaluation of existing scholarship and critically appraise the nature of the evidence	-Theories and Concepts in Urban Health course - Research in Urban Health Settings course - Seminar course - Dissertation work	Group work to identify an urban health issue, synthesize relevant literature, and explore possible solutions	1, 5, 6, 7
	Rigorous conceptualization of research problems, critical appraisal and synthesis of existing literature, and evidence-based justification of research questions, designs, methods,	-Theories and Concepts in Urban Health course - Research in Urban Health Settings course - Seminar course - Dissertation work	Papers focus on the analysis of urban health challenges, theories or concepts, and methods Dissertation data	5, 6, 7

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Canadian Association of Schools of Nursing (CASN) DOMAINS	CASN Principles	PhD Curriculum	Student expectation	Program Learning Outcomes
	and data interpretation			
	Ability to conduct a constructive peer evaluation of scholarship including grant proposal and research articles submitted for publication	-Seminar course	Report on reviews of a proposal and of a manuscript submitted for publication	1, 5, 6, 7
Practice	Ability to systematically review current research and identify gaps	- Seminar course - Dissertation work	Report (written and oral) on a literature review	2, 3, 4
	Ability to develop coherent, methodologically sound, and persuasive proposal for research funding / to become and independent researcher	- Research in Urban Health Settings course - Data Analysis in Urban Health Research course - Candidacy and Dissertation Exam - Dissertation work		4, 5, 6
	Ability to develop advanced knowledge and professional expertise in an area of practice	-Theories and Concepts in Urban Health course - Elective course - Dissertation work		6
Communication, collaboration	Engagement with a community of scholars to advance substantive areas of knowledge / team	- Seminar course - Dissertation work	Group work to identify an urban health issue, synthesize relevant literature, and	1, 2, 7

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Canadian Association of Schools of Nursing (CASN) DOMAINS	CASN Principles	PhD Curriculum	Student expectation	Program Learning Outcomes
	work / collaboration		explore possible solutions - conduct of study	
	Ability to disseminate complex knowledge clearly to a variety of diverse audiences / knowledge translation	- Seminar course - Dissertation work	- Presentation - Group work to identify an urban health issue, synthesize relevant literature, and explore possible solutions - dissertation	3, 4
Professionalism	Professional responsibility as a scholar / accountability to society and discipline	- Seminar course - Dissertation work	- Presentation - Group work to identify an urban health issue, synthesize relevant literature, and explore possible solutions - conduct of study	5, 6, 7
	Ethical conduct	- Seminar course - Dissertation work	- Presentation - Group work to identify an urban health issue, synthesize relevant literature, and explore possible solutions - ethical conduct of study	7
Leadership	Leadership in scholarly work	- Dissertation work - Seminar course	- Submit papers for publications - demonstrate leadership skills through conduct of study	4, 5, 7

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Canadian Association of Schools of Nursing (CASN) DOMAINS	CASN Principles	PhD Curriculum	Student expectation	Program Learning Outcomes
			- facilitate and lead supervisory committee discussions	

2.e. Mode of Delivery and Graduate Degree Level Expectations
2e.i. Planned Modes of Delivery

The proposed mode of delivery for the PhD in *Urban Health* program will be hybrid and will consist of: 1) **face-to-face interactions** within and outside the classroom; with the supervisor (and co-supervisor, if applicable) and supervisory committee; and 2) independent **learning with faculty supervision** in the form of a dissertation.

Table 5 provides a summary of the program in which the relationship between the required curriculum courses, dissertation, teaching formats, assessment methods learning objectives (LOs), and GDLE, are outlined.

Table 5: Teaching and Assessment Methods Mapped to Program LOs and GDLEs

Required Curriculum Course Name	Teaching Format	Assessment Format	LOs Addressed	GDLEs
Theories and Concepts in Urban Health	Lecture-Discussions, Guest Speakers, Small Group Work	Paper – Critical Analysis; Group Project/ Presentation; Paper-Research/Evidence Based	LO1, LO3, LO4, LO5, LO6, LO7	1, 2a, 2b, 4b, 4c, 4d
Research in Urban Health Settings	Lecture-Discussions, Guest Speakers, Small Group Work	Paper- Critical Analysis; Case Study Analysis; Paper – Research/Evidence Based	LO1, LO3, LO4, LO5, LO6, LO7	1, 2a, 2b, 4b, 4c, 4d
Seminar Course	Lecture-Discussions, Guest Speakers, Small Group	Case Study Analysis; Individual Presentation;	LO1, LO2, LO3, LO4, LO5, LO6, LO7	1, 2a, 4b, 4c, 4d, 5, 6

	Work	Poster		
Data Analysis	Lecture-Discussions, Guest Speakers, Small Group Work	Paper – Critical Analysis of Data Analysis techniques; Group Project Presentation; Case Study	LO3, LO4, LO5, LO6, LO7	1, 2b, 4b, 4c,
Dissertation	Independent Work with Faculty Supervision	Research Proposal, Dissertation, Presentation	LO1, LO2, LO3, LO4, LO5, LO6, LO7	2a, 2b, 2c, 3a, 3b, 4a, 4b, 4c, 4d, 5, 6

The **face-to-face modality for teaching** is an effective mode of delivery for supporting students within a health related PhD Program and for meeting the intended Learning Outcomes and Graduate degree level expectations, as it has been shown to support a dynamic teaching-learning interactions between: students, students and faculty (i.e. instructor, supervisor, committee member), and students, faculty members, and community/clinical partners (Daniels, 2016). Face-to-face learning fosters this relationship. Richness of information and memorable experiences are deduced through behavior and body language, including one's mannerisms, gestures, tone, language, and volume of voice. Face-to-face communication allows the entire experience to not only be heard but also seen and felt (Daniels, 2016).

Students will be expected to work collaboratively with faculty members from diverse urban health backgrounds to develop innovative strategies and solutions to urban health challenges; acquire a depth and breadth of knowledge of a specific area related to urban health; conceptualize and produce research and scholarship; and to demonstrate professional capacity and an awareness of limits.

The classroom discussion will be supplemented by course information, online discussion, and chat forums using the Desire 2 Learn (D2L) Brightspace integrated learning platform. This platform is the current learning system at Ryerson University and will serve as a tool for communicating with students, the posting of course materials, facilitation of group work activities, provide a mechanism for the submission of assignments, and offer a secure and confidential platform for the posting of grades.

The completion of the dissertation is an example of __independent learning__ with faculty supervision. The required PhD dissertation provides the learner with the opportunity to work collaboratively with a team that has a diverse urban health background to develop innovative strategies and solutions to an urban health challenge; and to plan, design, and implement a research study that is ethically sound; thus, enabling the learner to immerse themselves in the clinical and/or laboratory setting. The benefits of this independent learning opportunity include: engaged citizenship; fostering civic responsibility; and the importance of contributing to the broader public good; improved attitudes toward social responsibility, respect and tolerance for

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diversity and connection to others, increased likelihood to continue working with the community, and improved written, oral, and interpersonal communication skills (Kolb, 2014).

2.e. ii. Learning Objectives and Graduate Degree Level Expectations

The face-to-face, in class, full time modality for teaching supports the Graduate Degree Level Expectations (GDLEs) and the proposed program's Learning Objectives (LOs) (Table 5). In particular, the in class, face-to-face format is most applicable to the following GDLEs: *depth and breadth of knowledge (GDLE #1), research and scholarship (GDLE #2), and professional autonomy and capacity (GDLE #4).*

Depth and breadth of knowledge encompasses program learning outcomes # 3, 4, 5, and 6 in which a thorough understanding of substantial knowledge related to theories, research methods, and data analytical principles of urban health is demonstrated through explication and debate within the classroom. Group work activities and classroom discussions further nurture the evolution of this depth and breadth of knowledge throughout the 4 required courses. As well, course-based papers that focus on review and critical analysis of urban health concepts and theories to inform understanding of health; the systematic review of theoretical and empirical literature; and the creation of papers submitted for peer review publications further demonstrate this depth and breadth of knowledge.

Research and scholarship incorporates program learning outcomes # 1, 5, 6 in which the ability to conceptualize, design and implement research for the generation of new knowledge; and to adjust the research design or methodology in light of unforeseen problems is demonstrated through in-class discussion, group activities, and assignments that include: individual and group presentations to identify urban health challenges and written assignments.

Professional capacity and autonomy embeds program learning outcomes # 1, 4, 5, 6, 7 in which intellectual independence and the performance of ethical behaviors consistent with academic integrity is most evident through written assignments and oral presentations. Specifically, students will be expected to engage in active leadership through group activities and seminar discussions; and critical reasoning to engage in appropriate behaviors that are ethically sound and reflective of guidelines and procedures for the submission of written assignments and peer reviewed publications that are indicative of rigorous academic standards.

The independent learning modality for teaching also supports and complements the Graduate Degree Level Expectations (GDLEs) and the proposed program's Learning Objectives (LOs). (Table 5). In particular, this modality is most applicable to the following GDLEs: *application of knowledge (GDLE #3), communication skills (GDLE #5), and awareness of limits of knowledge (GDLE #6).*

Level of application of knowledge encompasses the program learning outcomes # 4, 5, 6, 7 in that all students are expected to design, implement, and evaluate a pure or applied research study at an advanced level. In doing so, they enhance their overall academic skills related to research methods, theory development, and data analytic techniques. Furthermore, the GDLE related to communication skills embeds program learning outcomes # 1, 2, 3, 4, 6 and is evident through

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individual and group presentations; interactions with supervisor, supervisory committee, and research teams and partners; and ability to lead and facilitate supervisory committee meetings.

2.f. Assessment of Teaching and Learning and Graduate Degree Level Expectations
2.f. i. Intended Teaching Methods

The PhD in *Urban Health* program will draw on a variety of teaching methods to ensure the program learning outcomes and GDLEs are met. The main teaching methods will include: ***lecture, multidisciplinary case studies, small group activities, guest presentations on topics related to urban health issues and inter-professional collaboration, student presentations, in-class collaborative reviews of papers and proposals, and one-on-one student interactions with supervisor (and co-supervisor, if applicable) and supervisory committee.***

The four required courses and associated course work and assignments have been designed to prepare students for their dissertation in which they will be engaged in primarily, independent learning. The required course work will provide students with varied opportunities to design, implement and test mock research designs, practice data analyses using multidisciplinary case studies and small group activities, embed theoretical analysis into the critical analysis of real-life research scenarios, and provide opportunities to engage in collaborative reviews of manuscripts and research proposals, and the submission of journal articles for peer review and publication.

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

Students will be graded on course deliverables reflecting several GDLEs in both written and oral forms. While instructors will have requisite authority over the courses, templates will be prepared to ensure that evaluations are comprehensive and progressive throughout the program. The *Theories and Concepts in Urban Health, Research in Urban Health Settings, and Data Analysis* courses will all feature **1 individual research paper, 1 applied group project assignment, and 1 individual presentation.** The design of this program is to ensure students acquire core knowledge and understanding of concepts and are prepared for their dissertation which they will be leading. The individual research paper and presentation is necessary to ensure graduates have demonstrated competencies expected of independent researchers and are proficient in their ***professional capacity and autonomy***. Students' ***depth and breadth of knowledge*** will be most evident through their independent assignments. As well their ***communication skills, awareness of limits, and level of application of knowledge*** will be manifested through all of their assignments.

Each of these methods of engagement with course topics enables students to develop leadership and communication skills, demonstrate advanced conceptualization skills, foster professional judgement skills, and engage in the application of research and statistics in a way that is meaningful to the dissertation process while contributing to societal needs. The combination of such methods will support the achievement of the program's learning outcomes and the Graduate Degree Level Expectations.

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The required **candidacy exam, final dissertation exam, and dissertation** are three significant methods of assessment within this program. The formulation of the written *dissertation and the candidacy and dissertation oral examinations* will require students to demonstrate their proficiencies in terms of their *communication skills, depth and breadth of knowledge, and awareness of limits.* Their ability to produce original research is necessary for students to demonstrate their *research and scholarship* capabilities, *level of application of knowledge and professional capacity and autonomy.*

Students will be required to complete all courses with a grade of B (73%) or higher. Grades less than a B are an F. This is consistent with the existing Yeates School of Graduate Studies policies on grading, promotion, and academic standing. Milestones for progression (Appendix C) provides guidelines to ensure students proceed through the program in a timely manner.

This program confirms to all the academic standing, promotion and graduation requirements in Policy 142. There are no variations planned for this program.

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

All course work (written and oral) will use the same framework for student performance. The framework is based on a common rubric (Table 6); 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 6: Common Assessment Rubric

Graduate Degree Level Expectation (GDLE)	Assignment Expectations:
1. Depth and Breadth of Knowledge	Arguments are presented in a coherent and critical manner; and demonstrate a thorough understanding of substantial knowledge that is at the forefront of the issues being addressed.
2. Research and Scholarship	-Demonstrates an ability to conceptualize, design, and implement research for the creation of new knowledge, application and understanding. -Demonstrates an ability to make informed judgements on complex issues - Produces advanced scholarship of a quality to satisfy peer review and to merit publication
3. Level of Application of Knowledge	-Contributes to the development of academic/professional skills, techniques, tools, practices, ideas, theories, approaches

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	and/or materials.
4. Professional Capacity/Autonomy	- Application of intellectual independence to be academically/professionally engaged -Use of ethical behavior that is consistent with academic integrity and the use of appropriate guidelines and procedures for the responsible conduct of research
5. Level of Communication Skills	- Communicates information, arguments, and analyses accurately and reliably, orally and in writing to a range of audiences
6. Awareness of Limits of Knowledge	- Articulates the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines

2.g. Resources

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

Following the initial UPO assessment, the PhD in *Urban Health* program was deemed to require the hire of 1 additional RFA member. The existing **human resources** consist of RFA faculty within the DCSN, whose area of expertise address a broad range of Urban Health topics that include: immigrant and refugee health, HIV care and management, mental health, cognitive impairment, healthy aging, and acute and chronic care issues (Appendix D). As well, RFA faculty across the University with expertise in nutrition, early childhood studies, epidemiology, occupational and public health, geography, social work, disabilities studies, midwifery, urban planning, and child and youth care will also actively contribute to this program (Appendix D).

In terms of **physical resources**, this program will be housed in and administered by the Daphne Cockwell School of Nursing; and will have access to resources within this school. The school is preparing to move to a new building at the end of August 2018. There will be two informal open learning spaces, two enclosed group study rooms, one large enclosed study room, and a student lounge. All of these student spaces have been identified as shared space between undergraduate and graduate students. There will be space for PhD students designated within these learning spaces.

In terms of **financial resources**, the average domestic fee for full time PhD students at Ryerson is: $9,283.80. Three years of doctoral funding averaging $18,000.00/year will be required that encompasses tuition and a general living expense stipend. In addition, since this program will need to be completed on a full-time basis, students will not be able to work more than 10 hours a week outside of their program. Thus, the need for additional funding to assist with living expenses.

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."[1]*

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 website. The terms of employment of graduate students will be consistent with the collective agreements between Ryerson and its employee groups."[2]*

Students will also have access to a number of internal and external awards.[3] The Nursing Graduate Program is committed to helping students access these awards. Faculty members will work closely with students to provide feedback and support for award, research, and/or stipend applications being put forward for internal and/or external funding. To this end, various award application information sessions for both faculty and doctoral students will be designed and implemented by the Graduate Program Director.

2.g.ii. Quality Graduate Research Support

The Brief received from the Computing and Communications Services indicates the University's information technology services including computer and library access can support the proposed doctoral program in Urban Health.

Please see Appendix M for the ***Brief created by the Computing and Communications Services*** (CCS) describing the University's information technology services including computer laboratory access.

2.g.iii. Faculty Expertise

Faculty members from departments/schools <u>outside</u> of the DCSN (i.e. Occupational and Public Health, Nutrition, Early Childhood Studies, Midwifery, Child and Youth Care, Department of Geography and Environmental Studies) who are members of YSGS, will have the opportunity to participate in this program by applying to the school's Graduate Program for membership. This process is consistent with current practice at Ryerson University. The application process will

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

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

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

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consist of submitting an updated curriculum vitae and a summary of current program of research to the Graduate Program Director (GPD), who will then submit this application to the membership committee of the GPC for review to determine appropriate fit, prior to making a decision regarding membership in the PhD in *Urban Health* Program.

Following the posting of the Letter of Intent, faculty members from several departments outside of the DCSN expressed an interest in engaging in this PhD Program. Curriculum vitaes and summaries of current programs of research have been collected from faculty who have expressed an interest in teaching and/or supervising students within this program (Appendix D). Based on the curriculum vitaes collected, 40 faculty members have identified an interest in engaging in this doctoral program. These faculty members have received external funding as a Principal Investigator, and have the experience supervising graduate students' research work. Of the 40 faculty members, 24 are from the Daphne Cockwell School of Nursing, 13 are from the Faculty of Community Services, and three are from the Department of Geography and Environmental Studies.

Faculty members who have not received external funding as a Principal Investigator or have never supervised at the graduate level, will be provided with an opportunity to engage with doctoral students through dissertation committee membership, serving as external examiner, or chair of examining committee. Through active involvement with the PhD program, these faculty members will also receive ongoing mentorship in the area of doctoral student supervision and teaching, as well as research mentorship from senior faculty; and thus positioning themselves to move into supervisory roles as their careers progress.

2.g.iv. Evidence that faculty have the recent research or professional/clinical expertise needed to sustain the program, promote innovation and foster an appropriate intellectual climate

Please see Appendix N for *faculty Curriculum Vitaes* and Appendix D for a summary of each faculty's research or professional/clinical expertise needed to sustain the program, promote innovation, and foster an appropriate intellectual climate.

Faculty who have expressed an interest in engaging in the PhD in *Urban Health* program have research experience in the following areas: environment health equity, urban sustainability, collaborative governance and planning, knowledge production for healthy/sustainable communities, food management and insecurity, health and resiliency of immigrant and refugee populations, sustainable transportation reform, policy creation, disease management, chronic and acute illnesses, indigenous health, toxicology, exposure and risk science that examines the adverse effects of human-made and environmental sources on human health, dementia awareness, geographic information systems and its applications to public health, social policy, and environmental planning; evaluating interventions, patient-centered care, advanced practice roles, patient preferences for treatments, measures for determining the clinical effectiveness of interventions, and social determinants of marginalized and vulnerable populations.

Furthermore, faculty have expertise with vast research methods that include: arts-based research that draws upon several mediums inclusive of narrative, dance, installation work, poetry, visual images, filming and an array of technology; qualitative and quantitative research methods, intervention design and evaluation, treatment preferences, patient-centered care, psychometric evaluation, knowledge synthesis methodologies (e.g. systematic reviews, meta-analysis, scoping reviews), epidemiological study design and analysis (e.g. regression modelling, structural equation modeling), survey research, mixed-methods research, and behaviour change theoretical analyses. A number of faculty have also identified a current involvement with the Cochrane Collaboration (a non-profit organization consisting of world leaders in the field of medicine, nursing, health policy, and research methodology who work together to organize health research findings to facilitate evidence-based choices about health interventions faced by health professionals, patients, and policy makers).

Faculty's commitment to the creation of an innovative intellectual climate to train and mentor graduate students in the field of *Urban Health* is evident through their ongoing engagement in research, as well as their work with graduate students in the capacity of Graduate Assistant, Teaching Assistant, and Research Assistant, both within and outside of Ryerson University. As well, the majority of faculty have taught graduate level courses and many have already independently supervised, co-supervised, served or are serving as dissertation committee member, and doctoral dissertation examiner.

Faculty have extensive experience working with a number of clinical agencies within the Greater Toronto Area, the Province of Ontario, across Canada, and globally. A number of faculty have also received post-doctoral training in the areas of Knowledge Translation, Clinical Trials, Clinical Epidemiology, Health Care Technology and Place, Health Service, Intimate Partner Violence, and Vulnerable Youth and Mental Illness. This advanced training enhances the intellectual climate and capacity to train and mentor students in the field of *Urban Health*.

2.g.v. Supervisory Loads

Faculty members who are eligible to supervise and/or teach in the PhD in Urban Health program will have the following: 1) experience teaching and/or supervising at the Master's and/or Doctoral level and 2) have held external research funding as a Principal Investigator.

Currently, there are 24 faculty members within the DCSN, and 16 faculty members outside of the DCSN, who have expressed an interest in participating in this program, who meet these requirements. The programs of research associated with these individuals will be profiled on our PhD webpage under a section highlighting the list of faculty members from which possible candidates can select as their supervisors.

All faculty members who are supervising and/or teaching within this doctoral program, will be expected to mentor other pre-tenure faculty, or faculty who have not yet received external funding by inviting them to provide guest lectures within their doctoral classes, serve as dissertation committee members, and provide feedback and guidance on external grant applications.

Supervisory loads will be distributed based on eligibility to supervise and area of expertise; however, each faculty member may not supervise more than 3 PhD students at any one point in time.

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

One new FTE in the form of an RFA member will be required for the new PhD in *Urban Health* program. This number is based on the following:

a) Creation of four new semester based, doctoral level courses

b) RFA Teaching Norms within the Daphne Cockwell School of Nursing are 5 semester based courses over the course of an academic year

The existing Master of Nursing Graduate Program consists of four streams (course based, thesis based, combined Master of Nursing and Primary Health Nurse Practitioner, and Certificate only). A steady state of 210 students are enrolled in the MN Program which is offered 2 years full time or 3-4 years part-time. Currently, the MN Program has one Graduate Program Administrator.

A 0.5 FTE, Graduate Program Administrator will be required to address the administrative issues pertaining to the PhD in *Urban Health* program. This doctoral level administrator will be required to engage in: student advising on non-academic matters (i.e. leave of absence, withdrawals, course plans, course changes, enrolments, provide guidance around policies and procedure) from point of admission to completion of program; advising the Graduate Program Director re: Doctoral Policies and Procedures; scheduling and enrolment on Teaching Administration Information system for all Doctoral courses; academic standing reports (i.e. student records); degree audits; coordinate admissions; enrolment reporting to registrar's office for the Ministry of Education; assist with Professional Licensing and Accreditation reporting (i.e. Periodic Program Review); assist with updating Doctoral website content; and marketing and promoting of the program.

Presently, the Graduate Program within the DCSN has one Graduate Program Director. This individual receives two course buyouts and teaches 3 courses, maintains an active SRC portfolio, and engages in Service responsibilities as part of their annual workload. An additional course buyout is being requested for the GPD, which will result in teaching two courses, maintaining an active SRC portfolio, and continuing to engage in University wide service. The one course buyout is explained as follows: **1)** to be used in the performance of duties associated with the PhD in *Urban Health* Program and **2)** to maintain the robust student engagement and marketing portfolio that the current GPD, Dr. Suzanne Fredericks, has enacted over the last year and which will be expanded following the implementation of the PhD Program. Below is an overview of the student engagement and marketing initiative that is currently underway in the Master of Nursing Program.

Student Engagement: Currently, an inaugural student engagement initiative was launched (2017-2018 academic year) titled: *Maximizing your Career Success*. The aim of this initiative was to provide a series of events geared towards graduate students and their role as Advance

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Practitioners. Events that were organized included: two lunch and learns (one focusing on Networking and the other on Branding); two simulation based sessions, one being a three-hour Interview Skills Workshop and the other, a three hour Interview Skills Practice Session; and two Panel Discussion Sessions that involved bringing in leaders in Health Care to speak to current graduate students and alumni about career opportunities. This student engagement will be an annual event, with the focus changing every year. Next year's focus will be in the area of Leadership within Healthcare; and will encompass the creation of a number of events.

Marketing Initiative: A Professional Development (PD) series was launched in September 2016 with the main intent of raising monies to be used for student engagement events and student funding initiatives. The series involved facilitating an educational focused workshop on a specific topic. Attendees are charged a fee at time of registration. Certificates of attendance were provided at the end of each session. To date the following sessions have been designed and delivered by faculty members within the Master of Nursing Program: *Well-being Through Mindfulness Practices; Qualitative Data Analysis; Health Assessment Refresher; Analytic Skills for Health Care Evaluation; Experience Matters: Arts-Informed Narrative Inquiry Qualitative Research Approach; ECG Rhythm Interpretation for Beginners; and Behavioural Analysis for Advanced Practice Clinicians Caring for Older People Living with Dementia.* All sessions have been well attended with audience participants consisting of current student, community partners, alumni, and leaders throughout the community. Even though the intent of this initiative was to raise money, it was noted an unexpected consequence of the Professional Development Series was the enhanced profiling of our Master of Nursing Program, faculty, and students. We would like to continue to refine this PD series and to use it as a tool to profile the PhD in *Urban Health* program, the students and their research work, alumni, and the faculty who teach in this program.

Coordinating both the student engagement and professional development series has taken a tremendous amount of time and energy. The work has been absorbed into the workload of the Graduate Program Director. An added course buyout will provide the Graduate Program Director, protected time to engage more fully in both of these initiatives which will not only profile both graduate programs within the DCSN, but enhance the reputation of our faculty, students, alumni, and the university at large.

2.g.vii. Library

The report from Ryerson University Library and Archives resources and services states the Library "can support the proposed doctoral program in Urban Health. The Library's monograph, serials and databases/e-resources collection in support of the program is based on the Library's existing collections for programs in Nursing, Social Work, Health Services Management, Health Information Management, Disability Studies, Public Health, Psychology, Sociology, Urban Planning, and other related programs and courses".

Please see Appendix L for the **report by the university library** analyzing the adequacy of Ryerson's collections to support the program's curriculum requirements.

2.g.viii. Projected Enrolment

Projected enrolment levels for at least the first five years of the operation of the new program, leading to the intended steady state enrolment levels and the year in which such steady-state will be reached.

The anticipated enrolment goal is 5 PhD candidates in the first year of registration and 5 each year thereafter for a steady state enrolment in year four of 20 PhD students.

2.g.ix. Tuition

Tuition for the PhD in *Urban Health* program will be based on Ryerson University's <u>annual domestic</u> full time fee for PhD programs of $8,548.48 for 2018-2019. Students pay tuition fees per term, as per Ryerson University policy, which is equal to 1/3 of the annual amount - $2849.49.

The tuition for this program is significantly lower than professionally based programs; however within the Master of Nursing program, many students face competing demands of maintaining employment while attending school coupled with family care-giving responsibilities and home-life demands. Thus, their income tends to be lower than students in other graduate programs.

The operating budget of the current Master of Nursing program is strained relative to the number of students enrolled in the program. It is noted that budgetary constraints reflected an inequitable distribution of funding across the Faculty of Community Services (FCS) in relation to the program's operating budget, the number of scholarships available, and the monies to support key events. With regards to the PhD in *Urban Health* program, it is anticipated student funding in the form of external monies received by faculty for doctoral student training will assist in the current budgetary constraints. A significant number of faculty have, or are in the process of applying for external grants with doctoral student training embedded within the budget.

The process for student flow-through will be based on the existing Master of Nursing program which benefits from very good time to completion rates with over 88% of full-time students completing in 4 years, with an average of 1.9 to 2.4 years to completion. Part-time students also have above average completion times, with the average time to completion of 2.6 to 3.1 years. This is in part due to the program's unique 3-year planning cycle—a significant program asset that is customised to the diverse student population, resulting in important program flexibility. By extension, this is an important differentiating strength for the Master of Nursing program and for Ryerson University. A **<u>similar</u>** planning cycle will be employed over the course of the 4 year doctoral program and will be customised to reflect the anticipated diverse multidisciplinary student population to enhance student flow-through the program.

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2.h. Quality and Other Indicators
2.h.i. Quality Indicators Definitions and Use

Faculty who have expressed an interest in engaging in the PhD in Urban Health program represent a broad array of qualifications, research interests, and research expertise as identified above in section 2.g.iv.

Many faculty members have received awards and/or recognition for their research and scholarly record. These include most recently: Dr. Sepali Guruge received the 2015 Dean's Scholarly, Research and Creativity Activity Award and the 2016 Ryerson Collaborative Research Award in March 2016; and was appointed to the Royal Society of Canada's College of New Scholars, Artists and Scientists; Dr. Josephine Wong received the Community Partners Award from the Ontario AIDS Network in 2015 and the Faculty Scholarly, Research, and Creative Activity Award in 2013 with Dr. Suzanne Fredericks.

Dr. Cristina Catallo (2015-2016) and Dr. Suzanne Fredericks (2016-2017) have successfully completed the Provost's Academic Leadership Program. As well, many faculty have positions Boards of Directors as Member or Chair of professional and scholarly related organizations (e.g. Registered Nurses Association of Ontario, Gerontological Nursing Association Ontario, Registered Nurses Foundation of Ontario, Sigma Theta Tau Interantional, Canadian Council of Registered Nurse Regulators' Research Advisory Committee, and various health care (Health Quality Ontario, REB Chair Women's College Hospital, REB member of SickKids Hospital/UHN, Community Health Centre, Toronto Central LHIN, World Young leaders of Dementia) and funding (e.g. CIHR, SSHRC, Ministry of Health and Long Term Care, Primary Care Ontario) organizations.

As such, when considered collectively, the scholarly, research, and creative (SRC) activities capture a broad spectrum of health-related practice, educational and research issues and topics. The diversity of perspectives and experiences is reflected in our Learning Outcomes which positions graduates for success in advanced leadership, scientific, and research positions across all health care sectors and in varied types of positions.

2.h.ii. Intellectual Quality of Student Experience

It is anticipated, faculty will continue to draw on their programs of research to enhance their classroom discussions and student experiences throughout their involvement in this doctoral program. Many faculty will continue to provide opportunities for graduate students to work as research assistants in their funded research projects. In addition, graduate students are active members on governance committees (Graduate Program Council) and existing graduate program committees (Indigenous Health Sub-Committee and the Membership committee) of the DCSN graduate program, and are encouraged to participate in professional organizations.

Supports and resources are available at the School, Faculty and University level to support students and faculty research programs. Specifically, at the School level, several strategic supports to ensure faculty and graduate students' productivity in the area of research include:

1. The creation of a Scholarship, Research and Creative Activities (SRC) Committee that consists of 10 -12 faculty representatives, actively engaged in research who are appointed to meet monthly throughout the academic year to plan and implement strategies that build research capacity amongst all faculty in the DCSN. This is chaired by the Associate Director of SRC (Dr. Margareth Zanchetta). This Associate Director has protected time (teaching release) to champion SRC work of the faculty and students across all programs in the School.

2. Creation of Research Clusters in the Spring of 2010. Six Research Clusters were originally identified to support networking and research activity between and among DCSN faculty members. These clusters included Health and Illness across the Lifespan (HIL); Mental Health and Well-Being (MHW); Professional Nursing Education (PNE); Gender Studies; Diverse and At-risk Populations (DAP) and Health Care Policy (HCP). Two funding competitions were made available through a DCSN funding envelope, and resulted in several publications, workshops, and grant writing activities. Each cluster evolved according to the needs of the membership. Currently, the clusters have been refined to reflect the individual programs of research of faculty members and to streamline membership. Thus, four research clusters are now supported, independent of funding, within the school: The HIL Cluster, MHW Cluster, the PNE Cluster, and the DAP Cluster. Policy threads now run across each of these clusters, thus the HCP Cluster is no longer active, and the Gender Studies (GS) transformed into a Masculinities network. As the research capacity of DCSN faculty matures, several researchers have successfully launched independent programs of research and thus are no longer active members of formal Research Clusters.

3. Three Innovative Multidisciplinary Research Centres are located within the DCSN: *The Centre for the Advancement of the Scholarship of Teaching & Learning; Nursing Centre for Research and Education on Violence against Women and Children; and the Centre for Health in at Risk Populations (CHIRP)*. Below is a brief description of each Research Centre:

   a. The Centre for the Advancement of the Scholarship of Teaching and Learning (CASTL) facilitates and expands the scholarship of discovery related to Scholarship of Teaching and Learning (SoTL). Using a more structured, coordinated and cohesive manner, the Centre maximizes the collective strengths of the Faculty of Community Services (FCS). The Centre focuses on integrating the current teaching and learning focused scholarly activities of FCS faculty members. It also identifies opportunities for collaboration and development of scholarly initiatives focused on teaching and learning in support of professional preparation to advance community service and enhance funding opportunities in support of collaborative SoTL projects.

   b. The Centre for Research and Education on Violence Against Women and Children brings together researchers, educators, policy-makers, and practitioners, and community partners whose interests lie in working towards the prevention of

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violence against women and children within the context of the promotion of health for individuals, communities, and the broader society, locally, nationally and globally. The centre's work includes, but is not limited to, multidisciplinary education and practice, including curriculum development which is informed by engaging diverse community partnerships in pursuit of the above.

c. The Centre for Health in at Risk Populations (CHIRP) aim is to identify and address clinical research questions related to promoting health in vulnerable individuals, families and communities.

Faculty are encouraged to become active members of the research centre most relevant to their program of research.

4. This intended program also builds on the expertise of the *Urban Health Research Chair* and the *Tier I Canada Research Chair in Intervention Design*, both of which are housed in the Daphne Cockwell School of Nursing (DCSN). Research Chairs offer consultation to faculty members regarding research capacity building. CIHR's Tier 1 Canada Research Chair in Design and Evaluation of Health Interventions is Dr. Souraya Sidani, a full professor. This Research Chair offers synergistic opportunities to build on interested faculty members' existing research programs to include research foci on theoretically derived interventions. The second Research Chair housed within the DCSN is the Chair in Urban Health, which is currently being held by Dr. Sepali Guruge, a full professor. One of the mandates of this Chair position is to offer consultation to faculty whose research is aligned with urban health issues.

5. DCSN's *Visiting Scholars Program* was created in 2009 and has been providing faculty members and graduate students the opportunity to work with and learn from nationally and internationally recognized scholars. The scholars are identified by representatives of the school based on the alignment of research programs with a strategic plan for enhancing SRC outcomes and have included: Dr. Brendan McCormack, Dr. Joan Anderson, Dr. Joy Johnson, and Dr. Nancy Edwards. Topics that scholars have addressed include: methodological approaches, grant writing and building research partnerships, and theoretical frameworks that serve as the philosophical underpinnings of the DCSN such as social justice and health care equity. Visiting scholars have also facilitated graduate student seminars; and have met with graduate students in a small group to discuss critical issues regarding professional development in the area of research. They have delivered key note addresses and public lectures for faculty and guests. The Visiting Scholar initiatives is funded through seed monies received from a private donor.

6. *SRC Colloquia* are sponsored and hosted by the DCSN's SRC Committee on a monthly basis throughout the academic year. The colloquia provides faculty with an opportunity to learn about each other's research programs, creates an environment to support networking for potential research partnerships, encourages opportunities for graduate students to identify potential thesis supervisors and committee members, and fosters job prospects for graduate students as Research Coordinator, Research Assistants or

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volunteer learners. The topics of these colloquia have covered research methodology, preliminary findings of various research initiatives, and innovative knowledge translation strategies.

7. SRC Infrastructure Support is provided for all faculty members on an ongoing basis. This includes the services of a staff person (SRC Assistant) who provides support to the Associate Director-SRC, the SRC Committee, and to activities involved in the planning and implementation of the Visiting Scholars Program, the RA Program, the Research Clusters, and the writing and circulation of the 'Everyone Makes a Mark' DCSN Newsletter that is developed two to three times a year.

8. *'Everyone Makes a Mark'* Newsletter is a tool for dissemination in which current SRC activities of both students and staff are distributed widely within the School. This newsletter also serves to inform students and faculty about each other's work, while celebrating the growth in SRC capacity within the school.

9. Space for research assistants and PhD students will be provided by the School in our new Health Sciences Building.

At the Faculty level, extensive supports to enhance the intellectual quality of the student experience as well as faculty research is provided. These supports include:

- Positioning for Success in Academic Workshop Series that occur monthly. The purpose of these workshops is to address topics of interest for faculty members in their roles as researchers and scholarly teachers. Examples of topics include: completing CIHR applications; managing research funds; strategies for creating a sense of coherence in teaching, research, and service activities; and enhancing student scholarship and research capacity.
- Methodology Series that occurs quarterly, focusing on mixed methods, systematic reviews, and community-based participatory research.
- Writing Circles provide faculty members and graduate students an opportunity to work together as part of an inter-professional group each semester to offer feedback on manuscripts in progress.
- Mentorship Circles provide pre-tenure and Mid-Career faculty members a forum to dialogue about strategies to enhance their programs of research. These meetings take place on a quarterly basis.
- Writing Weeks are designed to support faculty members in their scholarly writing and are held in February, May and August each academic year. Writing Week consists of 3 components: a) a kick-off workshop during which guest speakers address a particular topic/theme related to scholarly writing, b) Drop-in and Write sessions during which faculty can come together and write in a relatively distraction-free environment with their fellow colleagues, c) Access to 15 hours of free editorial services for a manuscript near completion for attending writing week activities.
- Funding Competitions are offered twice a year, in October and March. These include Seed grants ($5000) available to support quality research projects or projects to develop

external funding proposals for team development, community partnership and feasibility studies; Travel grants (maximum of $1200) to support travel for presentation at peer-reviewed conferences; and Publication support grants ($1500) designed to support manuscript completion and submission covering activities contained within a single academic year. Publication grants cover expenses such as hiring an experiences and qualified RA to assist with manuscript completion, hiring a professional editor, paying for publication charges for quality open access journals and small presses, and other relevant expenses. All grants are reviewed through an adjudication process involving representatives of the DCSN and other schools within the Faculty of Community Services.

At the University level, supports to enhance the intellectual quality of the student experience as well as faculty research include:

- Two School Appointed Grants Officers available to support research applications to CIHR, SSHRC, NSERC, as well as other relevant external funding bodies such as HCSRF, Ministry of Health and Long-Term Care, WSIB, Patient Safety Association, and Alzheimer Society of Canada.

- YSGS has recently created a Director of Experiential Learning (EL) position which oversees the following activities:

  o Conduct of a systematic review of existing EL opportunities available in graduate programs at Ryerson, in order to identify best practices and gaps to be addressed

  o Develop measures to track EL opportunities and outcomes at the graduate level

  o Provide guidance and suggest resources to graduate programs looking to incorporate EL opportunities.

Dr. Janice Waddell, an Associate Professor within the DCSN and faculty member who will be actively engaged within the PhD in *Urban Health* program was named the Inaugural Director for this position.

- OVPRI Annual Internal Grants Competitions such as SSHRC-SIG and Health Research grant, and a Biannual Research Assistant grant program.

- PIVOT, a portal that allows researchers to identify external granting bodies that are well aligned with the program of research.

- Interprofessional Networking opportunities to discuss developing programs of research with colleagues from other disciplines from across the university campus through sponsored lunches and meetings.

- Canadian Common CV Writing Assistance available to those faculty working up an external grant requiring a CCV for the nominated-PI, PI, or Co-PIs.

- Professional Development Fund is provided to each faculty member (as per RFA Collective Agreement, article 18) for research and scholarship activities of $ 2000 per year.

References

Bai, X., Nath, I., Capon, A., Hasan, N., & Jaron, D. (2012). Health and wellbeing in the changing urban environment: complex challenges, scientific responses, and the way forward. *Current Opinion in Environmental Sustainability*, *4*(4), 465-472.

Barasa, E. W., Cloete, K., & Gilson, L. (2017). From bouncing back, to nurturing emergence: reframing the concept of resilience in health systems strengthening. *Health policy and planning*, *32*(suppl_3), iii91-iii94.

Bircher, J. & Kuruvilla, S. (2014). Defining health by addressing individual, social and environmental determinants: New opportunities for health care and public health. Journal of Public Health Policy, 35, 363-386. Doi: 10.1057/jphp.2014.19

Bolliger, D. U., & Halupa, C. (2012). Student perceptions of satisfaction and anxiety in an online doctoral program. Distance Education, 33(1), 81-98.

Braveman, P., & Gruskin, S. (2003). Defining equity in health. *Journal of Epidemiology & Community Health*, *57*(4), 254-258.

Corburn, J. (2009). Toward the Healthy City: People, Places, and the Politics of Urban Planning. MIT Press.

Cohen, B. (2006). Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability. Technology in society, 28(1-2), 63-80.

Daniels, H. (2016). Vygotsky and pedagogy. Routledge.

Elwyn, G., Frosch, D., Thomson, R., Joseph-Williams, N., Lloyd, A., Kinnersley, P., ... & Edwards, A. (2012). Shared decision making: a model for clinical practice. *Journal of General Internal Medicine, 27*(10), 1361-1367.

Galea, S., & Vlahov, D. (2005). Urban health: evidence, challenges, and directions. *Annu. Rev. Public Health, 26,* 341-365.

Galea, S., & Vlahov, D. (Eds.). (2008). Handbook of Urban Health: Populations, Methods, and Practice. Springer.

Gill, V., & MacDonald, A. (2013). Conference Board of Canada. In Understanding the Truck Driver Supply and Demand Gap and Its Implications for the Canadian Economy. Toronto: Conference Board of Canada.

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Kirst, M., McDaniel-Schaefer, N., Hwang, S., & O'Campo, P. (Eds.). (2014). Converging Disciplines: A Transdisciplinary Research Approach to Urban Health. Springer.

Kolb, D. A. (2014). Experiential learning: Experience as the source of learning and development. FT press.

Lee, J. J., Helke, J., & Laczko, F. (2015). *World migration report 2015*. International Organization for Migration.

Mazereeuw, M. V., Yurkiewich, A., Jamal, S., Cawley, C., Jones, C. R., & Marrett, L. D. (2017). Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice. *Cancer*, *37*(6).

Rydin, Y., Bleahu, A., Davies, M., Davila, J. D., Friel, S., De Grandis, G. et al. (2012). Shaping cities for health: complexity and the planning of urban environments in the 21st century. The Lancet, 379, 2079-2108.

UN-Habitat. (2012). *Enhancing urban safety and security: Global report on human settlements 2007*. Routledge.

Young, S., & Duncan, H. E. (2014). Online and face-to-face teaching: How do student ratings differ? Journal of Online Learning and Teaching, 10(1), 70.

Waltner-Toews, D. (2004). *Ecosystem sustainability and health: a practical approach*. Cambridge University Press.

Willging, P. A., & Johnson, S. D. (2009). Factors that influence students' decision to dropout of online courses. Journal of Asynchronous Learning Networks, 13(3), 115-127.

Wilk, P., Cooke, M., Stranges, S., & Maltby, A. (2017). Reducing health disparities among indigenous populations: the role of collaborative approaches to improve public health systems.

WHO. (2016). Global Report on Urban Health: Equitable, Healthier Cities for Sustainable Development. Kobe, Japan: World Health Organization Centre for Health Development (WHO Kobe Centre).

Report of an External Peer Review of
Proposed New PhD Program in Urban Health
in the Daphne Cockwell School of Nursing (DCSN),
with the support of the Faculty of Community Services (FCS).
Ryerson University
Site Visit June 13-14, 2018

Dr Blake Poland
Dalla Lana School of Public Health,
University of Toronto

Dr Yolanda Babenko-Mould,
Arthur Labatt Family School of Nursing,
Western University

July 20, 2018

BACKGROUND

This independent external Peer Review was commissioned by the Vice Provost and Dean of the Ryerson Yeates School of Graduate Studies with a mandate to evaluate and report in writing on the academic quality of the proposed program and the capacity of the designated academic unit to deliver it in an appropriate manner. The terms of reference of the Peer Review Team (PRT), detailed in Appendix 2, includes reference to alignment with institutional goals and priorities, program learning outcomes, admissions requirements, program structure, curriculum content and mode of delivery, assessment methods, resources (including faculty complement and student funding) and capacity to deliver, as well as program strengths and weakness and opportunities for improvement. Detailed recommendations are provided in the Executive Summary and mirrored in the relevant sections of the Review Commentary section.

The proposed PhD in Urban Health program will be housed in and administered by the Daphne Cockwell School of Nursing (DCSN), with the support of the Faculty of Community Services (FCS). It will be governed under the DSCN Graduate Program Council and the Yeates School of Graduate Studies Council. Faculty members from the DCSN, FCS, and other affiliated faculties will facilitate the course offerings through a variety of educational approaches including but not limited to: co-supervision, dissertation committee membership, and team teaching. The DCSN and FCS facilities, resources, and infrastructure will be used to support this program.

The review is based on received documentation (July 2017 program LOI, January 2018 full proposal, CVs of relevant faculty, and Appendices), and two days of site visits that involved meetings with members of the Graduate Curriculum Committee, the Associate Dean of the Yeates School of Graduate Studies, faculty from DCSN, FCS, Geography and other potential academic partners, Nursing masters students, librarians, administrative staff, and a tour of new

building (see Appendix 3 for full itinerary). Additional information was requested and provided during the site visit.

The structure of this report generally follows the Terms of Reference. The Terms of Reference are provided in Appendix 1, and the Panel Membership is in Appendix 2. Appendix 3 details the Site Visit Itinerary.

EXECUTIVE SUMMARY

We commend the Graduate Program lead(s) for the level of detail and clarity of documentation provided for the review, as well as the collaborative planning completed to date.

The Review finds that the Daphne Cockwell School of Nursing (DCSN), in partnership with key academic allies (most notably the Faculty of Community Services), is well positioned to undertake the proposed PhD program in Urban Health. As noted in the program proposal materials, the program is unique in terms of framing and focus on urban health in the Canadian context. It aligns well with key Ryerson mission statements and the University's longstanding reputation for a strong community-engaged focus on urban issues and social justice.

Notwithstanding this considerable promise, the program is not without potential challenges. That it is to be layered on top of existing commitments that include heavy faculty teaching loads, albeit at a time when these are ostensibly being reduced, underscores the need for adequate resourcing in terms of faculty hires, administrative support, library resources, and student funding. Additionally, the governance structure was not decisively articulated during meetings or in documents provided, which was likely due to the stage of program development. To support a successful program launch, a detailed governance model would need to be created in collaboration with participating departments to support clear understanding of levels of decision-making and accountability, as well as extent of contributions. By doing so, the program will have a strong foundation on which to develop in the coming years.

Recommendations: (see "Review Commentary" section below for detailed discussion and rationale)

1. Develop a governance model with clear lines of accountability, and processes for decision-making, resource sharing, and inter-departmental collaboration to support the proposed program.

2. Consider representation from partner agencies somewhere in program governance structure (e.g. advisory council), including agencies working with equity-seeking groups, and reflecting the diversity of urban health as represented in the Framework and across the city

3. Develop a partnership strategy and principles that will govern partnership development

4. Targeted expansion of internal partnerships and outreach: rather than a general call for expressions of interest, approach key colleagues in other departments who are leaders in urban (health) research

5. Expand external partnerships beyond the relatively few listed to include Toronto Public Health (especially their Urban Issues Team), The Wellesley Institute, and key community-based organizations (e.g. CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty, etc)

6. Identify process used to develop the proposed learning outcomes.

7. Clarify role of 'clinical' and 'practice' elements and how these apply to applicants from the social sciences.

8. Consider creation of a Framework for Higher Education in Urban Health that identifies and articulates the core principles, pedagogical practices, range of theories and methodologies, and key content that will form the 'core' of this program, optimized for the Ryerson and Toronto context.

9. Consider articulating a core set of sub-specializations or areas of focus that the program has the requisite expertise to support

10. Flesh out the existing learning objectives/outcomes (which are relatively generic) with ones that are specific to urban health (content)

11. Develop metrics for measuring performance on revised learning objectives (the proposal, as it currently stands, indicates when and how more generic learning outcomes will be met, but not always how they will be measured or quality assessed)

12. Consider adding a theory requirement for PhD theses in Urban Health (currently none is specified)

13. Add a methodological prerequisite to the admissions criteria

14. Add two additional elective requirements (for a total of 3 electives, and 7 semester courses overall) to better meet the learning needs in theory, methods, and substantive content.

15. Add courses in 'advanced methods' and 'advanced theory' that adequately service the needs of students at the doctoral level.

16. Hire two additional tenure-stream faculty, and consider earmarking one of these for an indigenous scholar with expertise in urban health

17. Increase student funding from the proposed $18,000/year over 3 years, to $27,000 over 4 years.

18. Create a student funding policy that clarifies what successful applicants will be offered over the 4 years they are in the program, what portions will come from Research Assistantships, Teaching Assistantships, faculty contributions, or other sources, limits on outside work (e.g. to 10hrs/wk), etc.

19. We endorse the proposed addition of a 0.5FTE for administrative support of the program.

20. Increase library support for the acquisition of books and journals to support the proposed program to the tune of $6,500 in the first year and $4,500 to the base budget.

21. Library staff should be encouraged to work with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection

REVIEW COMMENTARY

In this section, we review strengths and weaknesses before moving into detailed discussion of program focus and institutional fit, program governance and partnerships, curriculum design and development, and resourcing. Each section concludes with recommendations.

STRENGTHS

We note the following strengths of the proposed program:

- The proposed PhD in Urban Health program is unique, in that it will potentially be the only doctoral degree granting program that solely focuses on urban health within a Canadian context. Furthermore, insofar as it will be located within one of the most diverse, urbanized cities in Canada, will make this an attractive program for prospective students.

- There was clear and widespread enthusiasm for the proposed program amongst the faculty and students we met during the site visit

- Structurally well positioned to take on a program of this nature, located as it is at the intersection of Nursing and FCS (including planning, etc)

- Range of qualified faculty both within Nursing and across FCS, as well as across the university

- Diversity of relevant faculty interests and expertise within Nursing and beyond, and corresponding capacity of faculty to supervise dissertations on a wide range of urban health topics, utilizing a range of research methodologies (quantitative, qualitative, mixed method, arts-informed, participatory, community-based, etc)

- Faculty are clearly well-loved by students. We heard consistently about the high regard that MN graduate students (thesis and non-thesis streams) have for faculty, and the appreciation they have for the personalized attention, guidance and support that faculty provide

- Level of interest and engagement of faculty. That 38 faculty made themselves

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available to meet with us in June attests to this.

- A number of faculty are currently supervising or co-supervising PhD students in other programs.

- Presence of a Canada Research Chair in Urban Health (Sepali Guruge) and faculty with strong urban health research expertise and research experience in Nursing (e.g. Josephine Wong) and amongst other named program partners (e.g. Sara Edge, others)

- History of collaboration and collaborative program development (e.g. well-developed and successful multi-site Nurse Practitioner program)

- Institutional commitment to supporting research and the development of advanced training programs (e.g. FCS Academic Support Centre, OVPRI)

- New space in the new building (we particularly commend the attention that was paid to providing student space in context of compact urban/inner city university, especially as commuter-shed for students is 2+hrs, we were told)

- Impressive librarian support

WEAKNESSES:

The weaknesses we identify pertain primarily to the documentation that was made available, and the lack of curriculum detail pursuant to the stage of planning the proposed program is at.

- The absence of detailed curriculum and course outlines means that reviewers were limited in their capacity to assess the adequacy of the proposed program. We understand this reflects the stage of planning the program is at, and have confidence that this will be addressed once the program has been approved and work on implementation begins. In this report, we make numerous recommendations that could inform subsequent planning, regarding admissions requirements, curriculum content and course offerings, etc.

- The literature review undergirding the proposal was thin and didn't cite key influential sources including the recent Lancet report on urban health (Rydin et al, 2012), relevant high-level reports from the World Health Organization (WHO 2016, 2010, 2008), and books from influential authors that could be key resources in a program on Urban Health such as Corburn's Toward the Healthy City (Corburn, 2009), Freudenberg's Urban Health & Society (Freudenberg et al, 2009), the Handbook of Urban Health (Galea & Vlahov, 2008; see also Vlahov et al, 2007), and Kirst et al's Canadian text on transdisciplinary approaches to urban health research (Kirst et al, 2014), to name but a few.

- The opening pages of the program proposal describe several negative health impacts associated with urbanization, but make no mention of some of the

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positive ones (e.g. cities as engines of innovation, the so-called 'urban health dividend', etc)

- As previously noted, the current faculty teaching load (5 semester courses) is high, and Nursing is one of the last to be transitioning to lower course loads (current Ryerson average, and DSCN goal, is 4). Additional faculty hires will be required to ensure there is adequate bandwidth to support a new program.

- Additional resources will be required in terms of both faculty hires and library support to enable (these are detailed in "Resources" section of our review).

PROGRAM FOCUS AND INSTITUTIONAL FIT

The proposed program, and key specified elements, closely aligns with Ryerson University's Mission to engage in the "advancement of applied knowledge and research to address societal needs" (full proposal document). In particular, the overarching purpose of the proposed PhD program is grounded in strategically linking theoretical course work with the very real issues being experienced by individuals, families, and communities in various urban health contexts.

The connection between learning outcomes and Ryerson's Mission and Academic Plan were highlighted during discussion with numerous faculty, staff, and administrators. Hearing a similar message from so many individuals and groups within the University community suggests that the proposed PhD program in Urban Health will truly aim to 'live' out the University's mandate.

The Mission of the Faculty of Community Services' Mission notes a strategic focus on "the intersection of mind and action by a commitment across our disciplines to social change" (Faculty of Community Services [FCS] Academic Plan 2014-2019 Executive Summary, pg. 2) closely aligns with the proposed program learning outcomes, as engaging in theory courses while collaborating with academics and community members to address urban health issues can ultimately lead to social change on many levels. As well, the proposed PhD program learning outcomes are closely linked to the FCS strategic goals.

PROGRAM GOVERNANCE & PARTNERSHIPS

We note that a fully articulated governance model has yet to be developed, and is a logical next step once the development of the proposed program has been approved. That said, there is clearly a strong culture of inter-departmental collaboration evident in the development of the proposal thus far, and the discussions that have informed its development. We are confident that this is a favourable condition of success, and that formalizing a workable governance model (with clear lines of accountability, decision-making process, representation, and resource sharing) will help further consolidate and operationalize this goodwill.

We understand that proposals for new PhD programs are vetted across the university, but that a more targeted outreach may be required, moving forward. For example, there are colleagues in Sociology (e.g. Cheryl Teelucksingh, Mustafa Koc) whose work is relevant and who may wish to supervise students in the new program. They may also be teaching courses that would be welcome electives for students in the proposed PhD program (e.g. Sociology is itself developing a PhD program). We therefore recommend following up earlier general calls for expressions of interest with a more targeted expansion of internal partnerships and outreach by using existing social/research networks to identify (and then approach) key colleagues in other departments who are leaders in urban (health) research.

We note that several key partners outside of Ryerson are identified (such as the Centre for Urban Health Solutions), which is a promising start. We believe this could be expanded to include, for example, Toronto Public Health (especially their Urban Issues Team), The Wellesley Institute, and key community-based organizations (e.g. CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty, to name but a few)

Recommendations:

1. Develop a governance model with clear lines of accountability, and processes for decision-making, resource sharing, and inter-departmental collaboration to support the proposed program.

2. Consider representation from partner agencies somewhere in program governance structure (e.g. advisory council), including agencies working with equity-seeking groups, and reflecting the diversity of urban health as represented in the Framework and across the city

3. Develop a partnership strategy and principles that will govern partnership development

4. Targeted expansion of internal partnerships and outreach: rather than a general call for expressions of interest, approach key colleagues in other departments who are leaders in urban (health) research

5. Expand external partnerships beyond the relatively few listed to include Toronto Public Health (especially their Urban Issues Team), The Wellesley Institute, and key community-based organizations (e.g. CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty, etc)

Curriculum Design & Development

This section covers learning outcomes, mode of delivery, admissions requirements, program structure, curriculum content, and student assessment.

Learning Outcomes: Although the program proposal and program letter of intent documents do not outline the process undertaken to determine the overall proposed PhD program learning outcomes, key elements of the outcomes include: collaboration,

inter-professionalism, health promotion, innovation, reflection and critical reasoning, sound research, connections to policy, and respecting diversity. Each of these elements link to theory-based courses and the dissertation process, while also focusing on developing and maintaining ties with the community (academic and in urban health settings).

Learning outcomes 5 and 7 (full proposal document) most closely relate to PhD level nomenclature, while the remaining outcomes could readily be applied to master's level courses. As such, the learning outcomes could benefit from more advanced nomenclature to reflect PhD level expectations/outcomes.

At least two of the learning outcomes refer to terms such as 'clinical' or 'practice'. Given that the proposed PhD program will be 'housed' with the Daphne Cockwell School of Nursing (DCSN), clarity is required so that potential non-nursing candidates can envision themselves applying to the PhD in Urban Health program.

Mode of Delivery: The program will be delivered in a traditional format with students attending courses on campus at Ryerson. It is anticipated that PhD students will primarily hold in-person meetings with their supervisor and committee members. Given that the PhD program will be a new offering, student numbers in the program will initially be small with scaled growth over time. This type of structure for the mode of delivery will enable students to have small group learning with their peers in a supportive environment where faculty are able to closely supervise students. Such a context supports collaboration, autonomy, and relationship building within and outside the academic setting in terms of peer and faculty consultation with one another, and connections with community members during the dissertation process. The mode of delivery will enable the program to meet Graduate Degree Level Expectations.

Recruitment: At least two of the learning outcomes refer to terms such as 'clinical' or 'practice'. Given that the proposed PhD program will be 'housed' with the Daphne Cockwell School of Nursing (DCSN), clarity is required so that potential non-nursing candidates can envision themselves applying to the PhD in Urban Health program. The program will need to give attention to how it will frame and market itself. The video that Northeastern University produced about it's MPH in Urban Health may be of interest:
https://www.youtube.com/watch?time_continue=9&v=5dikRZJJW84

Admissions Requirements: We note that careful consideration will need to be given to what to look for in applicants coming from outside of nursing, where backgrounds may vary considerably in terms of prior exposure to theory, research methods, substantive content, essay writing, and social science ways of thinking.

Given the importance of writing in a field that straddles the social and health sciences, it may be necessary to add a writing proficiency requirement to the admissions criteria.

Our experience also suggests that it may be necessary to add a methodological prerequisite to the admissions criteria to ensure that applicants have a minimum of prior methodological

training (ideally quantitative and qualitative) upon which the program can build, as a consistent base.

<u>Program Structure & Requirements</u>: The program is structured to meet graduate degree level expectations through mandatory course work (including electives), collaboration with peers and faculty, discussions with supervisors, application of knowledge to the dissertation process, and dissemination of knowledge through papers and conference presentations. The structure is scaled from introductory or foundational to advanced doctoral level knowledge and skills throughout the course of the program. Expectations are for students to complete the PhD in Urban Health Program within four years, in keeping with the course work and dissertation progression requirements.

Four new doctoral-level courses are proposed in the program plan:
      UH9AAA – Theories and Concepts in Urban Health
      UH9BBB – Research in Urban Health Settings: Methodological Issues, Strengths, & Opportunities
      UH9CCC – Pathways to Becoming a Successful Scientist: Seminar Course
      UH9DDD- Data Analysis in Urban Health Research

To develop in-depth theoretical knowledge in the field of Urban Health, we believe that more than one theory-based course should be offered to students in the proposed program. It is challenging to see how students can form a fulsome understanding of theory related to the field of Urban Health with one major course. An additional theory-based course or two would enable learners to be able to meet program expectations in a more knowledgeable and substantive manner. Such an adjustment would add to each student's course load, but at the doctoral level, it is anticipated that the benefit for students of having an additional course or two within the four-year structure would ultimately be more beneficial than detrimental in terms of work load and completion times.

The PhD proposal also notes an extensive array of electives available for learners to take, as desired, during their doctoral program. Although the courses draw from various disciplines and support graduate level goals, the courses are at the master's level. During our discussions with current master's students, they expressed a concern that they would have likely taken a number of the master's level courses already or would prefer not to take master's level courses in a PhD program. Students would rather be taking electives or additional core courses at the PhD level. We believe that the provision of electives or additional PhD core courses would enable students to reach graduate level expectations in a more comprehensive manner.

<u>Curriculum Content</u>: With regard to the effectiveness of the proposed curriculum in reflecting the current state of the discipline, and the effectiveness of innovative or creative curriculum components, we had insufficient information upon which to base a fulsome assessment of this component of the proposed program, since no course outlines or curricular context have yet been developed. Similarly, the learning outcomes that have been specified to date are relatively generic, and do not include specific urban health content.

We note that a choice has been made to not include a comprehensive exam (a proposal defense is proposed as an alternate milestone). We were told that this reflects the need to keep completion times competitive, and that other comparator programs are going in the same direction. While we see the merits of this reasoning, it begs the question of what will constitute the core knowledge for a program that is potentially wide-ranging in scope, where the core course offerings are limited in number and potential to deliver depth in theory, methods or substantive content, and where learning will be significantly student-centred and student-driven. We acknowledge that it is not self-evident or a matter of accepted consensus in the field as to what core perspectives, theories, methodologies, substantive topic areas, and skill sets should be considered 'core' in urban health. Nevertheless, this will need to be defined and articulated, both as a matter of program framing for recruitment purposes, and to inform the development and delivery of the required courses. This was widely acknowledged in our discussions with faculty, and there was clear interest in collaborative development of a framework for the program that would clarify and articulate these choices.

Section 2.g.iv (p.37) of the proposal lists faculty expertise in terms of substantive content and methodology, but not theoretical proficiency. It would have been helpful to have a systematic understanding of the range of theory relevant to urban health represented within the existing faculty pool.

We note the existence of several excellent courses in the list of available electives on topics such as diversity and migration that should arguably be in the core required courses. It will be necessary to clarify overlap and minimum content requirements.

Drawing on key resources in the field, and extending the collaborative planning process with interested colleagues that has already begun, we see merit in the creation of a Framework for Higher Education in Urban Health that identifies and articulates the core principles, pedagogical practices (e.g. experiential learning, inclusion of the arts, etc), range of theories and methodologies, and key content that will form the 'core' of this program. This should be clearly positioned within the broader urban health field ("What is urban health?") while simultaneously representing a unique expression of potential that reflects the particular institutional opportunity structures (e.g. FCS-Nursing partnership) and faculty complement ("What is urban health here?"). Some elements of this 'core' that we heard and/or recommend be considered include:

- Equity & social justice
- Community resilience
- Strength-based approaches
- Practice orientation (from clinical to community-engaged practice & policy)
- Interdisciplinarity
- Interprofessional theory & practice
- Evidence-based (while maintaining appropriate reflexivity about what constitutes "evidence")

- Solutions-focused (not just describing problems, but seeking to act on them in collaboration with others); intervention research
- Process-oriented
- Theory-informed
- Methodological innovation

We also think it would be helpful to articulate a core set of sub-specializations or areas of focus that the program has the requisite expertise to support, including:

- Environmental and ecological determinants of health, planetary health (including built environment and health, active transportation)
- Mental health in an urban context
- Migration, immigrant & newcomer health
- Diversity, racialization, and the health of marginalized groups
- Policy analysis & development
- Indigenous health
- Urban health in the context of globalization

We believe that one elective semester course is unlikely to be able to fill the learning needs of students for additional theoretical, methodological, and substantive topic expertise required for successfully undertaking dissertation research. We recommend adding two additional elective requirements (for a total of 3 electives, and 7 semester courses overall) to better meet these needs.

We also note that more advanced courses in theory and method may be required. Initially, given the small cohort of incoming students, these needs could be met with individualized independent study courses, but in due course, consideration should be given to creating regular offerings in 'advanced methods' and 'advanced theory' that adequately services the needs of students at the doctoral level. This would also address a concern raised by the graduate students we met with, that as currently proposed, the electives available to them would be ones at the "masters level" that they already have access to or in some cases may have already taken. In particular, additional methodological training may be required beyond the necessarily broad-ranging "Research in Urban Health Settings" course, prior to data collection (and the Data Analysis course that follows).

Student Assessment: We were informed that students will be required to submit scholarly papers reflecting critical analysis of key topics related to theories and concepts underpinning urban health, conduct a systematic review of the literature, develop a research proposal based on their dissertation topic, engage in group work, develop reports related to literature reviews or urban health issues, submit papers for publication, and co-facilitate course topics through presentations. Each of these methods of engagement with course topics enables students to develop leadership and communication skills, demonstrate advanced conceptualization skills, foster professional judgement skills, and engage in the application of research and statistics in a way that is meaningful to the dissertation process while contributing to societal needs. The combination of such methods will support the achievement of the program's learning

outcomes and the Graduate Degree Level Expectations.

Recommendations:

6. Identify process used to develop the proposed learning outcomes.

7. Clarify role of 'clinical' and 'practice' elements and how these apply to applicants from the social sciences.

8. Consider creation of a Framework for Higher Education in Urban Health that identifies and articulates the core principles, pedagogical practices, range of theories and methodologies, and key content that will form the 'core' of this program, optimized for the Ryerson and Toronto context.

9. Consider articulating a core set of sub-specializations or areas of focus that the program has the requisite expertise to support

10. Flesh out the existing learning objectives/outcomes (which are relatively generic) with ones that are specific to urban health (content)

11. Develop metrics for measuring performance on revised learning objectives (the proposal, as it currently stands, indicates when and how more generic learning outcomes will be met, but not always how they will be measured or quality assessed)

12. Consider adding a theory requirement for PhD theses in Urban Health (currently none is specified)

13. Add a methodological prerequisite to the admissions criteria

14. Add two additional elective requirements (for a total of 3 electives, and 7 semester courses overall) to better meet the learning needs in theory, methods, and substantive content.

15. Add courses in 'advanced methods' and 'advanced theory' that adequately service the needs of students at the doctoral level.

RESOURCING

This section covers existing faculty complement and capacity, student funding, administrative support, and library resources.

Existing Faculty Complement & Capacity: Appendix D summarizes the expertise and potential contributions of faculty who have expressed interest in contributing to the Program from Nursing, Midwifery, Geography, Planning, Nutrition, Occupational and Public Health, and Early Childhood Studies. We were also provided with a document containing the CVs of 33 faculty who will most likely be involved in facilitating PhD program courses and supervising students. Also, we had an opportunity to meet with over 30 faculty members, primarily from the School of Nursing, but also from programs

that would like to be involved as committee members for PhD students in the new PhD program. Finally, we were pleased to have small group meetings with faculty and staff during various meetings. It is very apparent that faculty have the expertise to facilitate courses and to supervise students. The range of expertise within Nursing and amongst these named colleagues in other departments is considerable, and establishes that faculty expertise is available to support a wide range of potential PhD thesis topics in Urban Health, across a spectrum of methodological traditions (qualitative, quantitative, arts-informed, participatory, community-based, and others). Also, the current School of Nursing staff and the Library staff are well positioned to support student administrative and learning needs. For instance, there are a number of faculty in the School of Nursing with specific expertise in Urban Health and hold or have held funding for research in that topic area.

We were led to understand that Nursing is one of the last Schools to have not yet implemented the reduction in teaching course load expectations (from 5 to 4 semester courses) that has been implemented though much of the rest of the university.

We note that only one hire is currently proposed. We do not believe that the proposal to hire one additional tenure-stream faculty member is sufficient to adequately support the new program. We are concerned that this doesn't adequately take into account the combined faculty complement required to handle a planned reduction in courseload (from 5 to 4) plus the proposed 4 new program-specific courses (as well as the additional electives we are recommending). We therefore recommend that two additional tenure-stream faculty positions be created. Further, we see merit in earmarking one of these for an indigenous scholar with expertise in urban health. We applaud the substantial commitment of many non-indigenous faculty to the inclusion of indigenous health content and perspectives into existing courses. While such 'ally' work is of vital importance, it is also not a substitute for hearing from indigenous peoples and scholars themselves; given the presence of indigenous peoples in significant numbers in urban centres, especially Toronto, this is an important issue to address.

Crafting the job descriptions can be informed by the aforementioned Framework as well as inventory of existing faculty expertise (theorical, methodological, and substantive), so as to identify what gaps may need to be filled.

Student Funding: Guaranteed funding for students will be required for the program to be competitive in a field where guaranteed (multi-year) funding is the norm. Students we met with indicated that they were only apprised of funding one year at a time, and that this complicated financial planning for them. Duration and funding level, together with policies on faculty contributions (recommended or required?), clawback of departmental funding in the event of securing external funding, etc, will need to be specified clearly in advance. The program proposal indicates the need for $18,000 for each of 3 years. We believe that 4 years of funding is required, and that $18,000/year is too low given the cost of living in the GTA and given that the new UofT standard, for example, is $27,000/year for 4 years.

Administrative Support: We endorse the proposed addition of a 0.5FTE for administrative support of the program.

Library Resources: The library is to be commended for their detailed report (Appendix D), and for the high level of support they provide to DCSN students and faculty. We support their request for additional resources for the acquisition of books (one-time allocation of $6,500 in year 1) and journals ($4,500 increase to base budget) to support the proposed new program, and note the merit of their case for an increased share of the University budget to be on par with provincial averages. We note that the metrics employed to identify journals may miss some that are not listed in Appendix D (e.g. Critical Public Health, Journal of Healthcare for the Poor and Underserved, Health & Social Care in the Community), and we recommend that library staff consult with Urban Heatlh faculty and program director to ensure acquisitions are a good fit.

Recommendations:

16. Hire two additional tenure-stream faculty, and consider earmarking one of these for an indigenous scholar with expertise in urban health

17. Increase student funding from the proposed $18,000/year over 3 years, to $27,000 over 4 years.

18. Create a student funding policy that clarifies what successful applicants will be offered over the 4 years they are in the program, what portions will come from Research Assistantships, Teaching Assistantships, faculty contributions, or other sources, limits on outside work (e.g. to 10hrs/wk), etc.

19. We endorse the proposed addition of a 0.5FTE for administrative support of the program.

20. Increase library support for the acquisition of books and journals to support the proposed program to the tune of $6,500 in the first year and $4,500 to the base budget.

21. Library staff should be encouraged to work with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection

References Cited:

CitiesX edX Course, Harvard University https://www.edx.org/course/citiesx-past-present-future-urban-life-harvardx-urban101x?gclid=Cj0KCQjwx43ZBRCeARIsANzpzb9_756zHadWOrClw_LJfA4ouYW2KEpQBNifnV1S_MMqwslcGvXa9A0aAh1mEALw_wcB

Corburn, J. (2009). Toward the Healthy City: People, Places, and the Politics of Urban Planning. MIT Press.

Freudenberg, N., Klitzman, S., & Saegert, S. (Eds.). (2009). Urban Health and Society: Interdisciplinary Approaches to Research and Practice. San Francisco: John Wiley & Sons.

Galea, S., & Vlahov, D. (Eds.). (2008). Handbook of Urban Health: Populations, Methods, and Practice. Springer.

Kirst, M., McDaniel-Schaefer, N., Hwang, S., & O'Campo, P. (Eds.). (2014). Converging Disciplines: A Transdisciplinary Research Approach to Urban Health. Springer.

Rydin, Y., Bleahu, A., Davies, M., Davila, J. D., Friel, S., De Grandis, G. et al. (2012). Shaping cities for health: complexity and the planning of urban environments in the 21st century. The Lancet, 379, 2079-2108.

Satterthwaite, D. (1993). The impact on health of urban environments. Environment and Urbanization, 5(2), 87-111.

Vlahov, D., Freudenberg, N., Proietti, F., Ompad, D., Quinn, A., Nandi, V. et al. (2007). Urban as a determinant of health. Journal of Urban Health, 84(1), i16-126.

Vlahov, D., Boufford, J. I., Pearson, C. E., & Norris, L. (Eds.). (2010). Urban Health: Global Perspectives. Jossey-Bass.

WHO. (2016). Global Report on Urban Health: Equitable, Healthier Cities for Sustainable Development. Kobe, Japan: World Health Organization Centre for Health Development (WHO Kobe Centre).

WHO. (2010). Why Urban Health Matters. http://www.who.int/world-health-day/2010/media/whd2010background.pdf

WHO. (2008). Our Cities, Our Health: Acting on Social Determinants for Health Equity in Urban Settings. http://www.who.int/social_determinants/resources/knus_final_report_052008.pdf

<u>APPENDIX 1: TERMS OF REFERENCE</u>

MANDATE OF THE PEER REVIEW TEAM

As per Ryerson's Policy 112: Development of New Graduate and Undergraduate Programs, the mandate of the Peer Review Team (PRT) is to evaluate and report in writing on the academic quality of the proposed program and the capacity of the designated academic unit to deliver it in an appropriate manner.

The report of the PRT will address all of the following:

a) The consistency and alignment of the program's learning outcomes with the institution's mission, academic plans and Graduate Degree Level Expectations, and appropriateness of the degree nomenclature;

b) The alignment of the program's learning outcomes with the admission requirements and sufficient explanation of any alternative admission requirements;

c) The appropriateness of the program's structure and regulations to meet specified program learning outcomes and Graduate Degree Level Expectations, and a rationale for program length;

d) The effectiveness of the curriculum in reflecting the current state of the discipline, and the effectiveness of innovative or creative curriculum components. For graduate programs an indication of the nature and suitability of the major research (scholarly, research and creative) requirements and evidence of the requirement to take a minimum of two-thirds of the course requirements from among graduate level courses;

e) The appropriateness of the mode(s) of delivery to meet the program's learning outcomes and Graduate Degree Level Expectations;

f) The appropriateness of methods used to assess, document and demonstrate student achievement of the program's defined learning outcomes and Graduate Degree Level Expectations;

g) The appropriateness and effectiveness of the use of human, physical and financial resources, evidence of a sufficient number and quality of faculty, and evidence of resources to sustain quality scholarship, research, and creative activities;

h) The qualifications, appointment status and recent research (scholarly, research and creative) or professional/clinical expertise of faculty, and evidence of sufficient student financial assistance to ensure quality and numbers of students;

i) The evidence of adequate numbers and quality of faculty and staff to achieve the learning outcomes of the program, of planned/anticipated class sizes, of supervision for experiential learning opportunities (if required) and of adjunct and part-time faculty; and

j) Indicators of quality including faculty, program structure and faculty research (scholarly, research and creative) that will ensure the intellectual quality of the student experience.

The PRT should, at the end of its report, specifically comment on:

i.   The program's strengths, weaknesses and opportunities for program improvement and enhancement;

ii. The program's developmental plan; and

iii. Recommendations for actions to improve the quality of the program, if any, distinguishing between those that the program can itself take and those that would require external action, where possible.

APPENDIX 2: REVIEW PANEL MEMBERSHIP

Blake Poland, PhD, MA, BA
Associate Professor, DLSPH, University of Toronto
Director, Collaborative Specialization in Community Development (www.cdcp.ca)
Co-Director, WHO Collaborating Centre in Health Promotion
Co-Lead, Healthier Cities & Communities Hub
Senior Fellow, Centre for Critical Qualitative Health Research
Full member, Graduate Faculty, School of the Environment
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Yolanda Babenko-Mould, RN, PhD
Associate Professor
Arthur Labatt Family School of Nursing
FIMS & Nursing Building, Room 2306
Faculty of Health Sciences
Western University
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<u>APPENDIX 3: REVIEW MEETING SCHEDULE</u>

DAY 1: WEDNESDAY JUNE 13, 2018

8:45 am   Suzanne Fredericks, Graduate Program Director (GPD) will meet PRT in lobby of Chelsea Hotel (33 Gerrard St W, Toronto, ON M5G 1Z4) and accompany to first meeting

9:00 am – 10:00 am   Review of Appraisal Process and Program Brief
- o <u>Attending</u>: Jennifer Mactavish, Vice-Provost and Dean, Yeates School of Graduate Studies (YSGS); Cory Searcy, Associate Dean YSGS; Lisa Barnoff, Dean Faculty of Community Services (FCS); Pamela Robinson, Associate Dean FCS; Suzanne Fredericks, GPD
- o <u>Location</u>: YDI 1134

10:00 am – 10:45 am   Meeting with GPD and Program Administrator
- o <u>Description</u>: Review of program and questions from documents provided
- o <u>Attending</u>: Suzanne Fredericks, GPD; Gerry Warner, Graduate Program Administrator (GPA)
- o <u>Location</u>: POD 465

11:00 am – 11:30 pm   Tour of Student Learning Centre
- o <u>Attending</u>: Carol Shepstone, Chief Librarian; Don Kinder, Library Teaching Chair at Ryerson and the Head of Library Learning Services; Suzanne Fredericks, GPD
- o <u>Location</u>: LIB 174; Student Learning Centre (341 Yonge Street)

11:30 am - 12:00 pm   Library Visit
- o <u>Attending</u>: Carol Shepstone, Chief Librarian; Don Kinder, Library Teaching Chair at Ryerson and the Head of Library Learning Services; Suzanne Fredericks, GPD
- o <u>Location</u>: LIB 174 (350 Victoria Street)

12:00 pm – 1:30 pm   Lunch with Deans and GPD
- o <u>Attending</u>: Jennifer Mactavish, Vice-Provost and Dean, Yeates School of Graduate Studies (YSGS); Cory Searcy, Associate Dean YSGS; Lisa Barnoff, Dean Faculty of Community Services (FCS); Pamela Robinson, Associate Dean FCS; Suzanne Fredericks, GPD
- o <u>Location</u>: Donatello Restaurant, 37 Elm Street, 416-595-5001;

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Reservation under: Suzanne

1:45 pm – 3:00 pm	Meeting with Current Graduate Students

- o Attending: Current graduate students (Please note: this meeting is to be attended by students and PRT only)
- o Description: Opportunity for PRT to ask questions of current students

3:00 pm – 4:50 pm   Free Time *

- o Description: Dean (s) and/or members of the Graduate Program will be available to meet with reviewers if requested. POD 465 is booked, if PRT members need a quite space to meet.

5:00 pm – 6:30 pm   Dinner with Director DCSN, Associate Director SRC, GPD, GPA

- o Attending: Nancy Walton, Director, DCSN; Margareth Zanchetta, Associate Director Scholarly Research and Creative Activities; Suzanne Fredericks, GPD; Gerry Warner, GPA
- o Location: Reds Midtown, 382 Yonge St., Unit 6, Toronto, ON M5B 1S8; 416-598-3535; Reservation under: Suzanne Fredericks

DAY 2: THURSDAY JUNE 14, 2018

9:00 am   Suzanne Fredericks, Graduate Program Director (GPD) will meet PRT in lobby of Chelsea Hotel (33 Gerrard St W, Toronto, ON M5G 1Z4) and accompany to first meeting

9:15 am – 10:30am   Tour of Daphne Cockwell Health Sciences Complex

- o Attending: Kaye Kim who is CSD's Project Coordinator and Taylor Launchbury, Jr. Project Coordinator; Suzanne Fredericks, GPD
- o Description: Tour of graduate study space, graduate classrooms, faculty workspace

10:30 am – 12:00pm   Meeting with Faculty

- o Attending: Faculty involved in Urban Health PhD Program; Suzanne Fredericks, GPD
- o Description: Opportunity for PRT to ask questions of full time faculty involved in the Program
- o Location: POD 463

12:10 pm – 1:45 pm   Lunch and Discussion with PhD Curriculum Development
                       Committee
                       o   Attending: Sepali Guruge, Professor and Research Chair in
                           Urban Health (2015-present); Elizabeth McCay, Professor and
                           Research Chair in Urban Health (2010-2015); Souraya Sidani,
                           Professor and CIHR Canada Research Chair in Design and
                           Evaluation of Health Interventions (Tier 1); Janice Waddell,
                           Associate Professor and Director of Experiential Learning
                           YSGS; Heather Beanlands, Associate Professor and Co-
                           Director of the Centre for Health in At-Risk Populations;
                           Josephine Wong, Associate Professor and CIHR-OHTN New
                           Investigator; Suzanne Fredericks, GPD
                       o   Location: Milestone, 10 Dundas St E, Toronto, ON M5B 2G9;
                           416-598-2800; Reservation under: Suzanne Fredericks

2:00 pm -2:30 pm   Vice-Provost Academic Exit Interview
                       o   Attending: Marcia Moshe, Vice-Provost Academic
                       o   Location: JOR 1200 (350 Victoria Street)

2:40 pm – 3:10 pm   Exit Interview
                       o   Attending: Jennifer Mactavish, Vice-Provost and Dean, Yeates
                           School of Graduate Studies (YSGS); Cory Searcy, Associate
                           Dean YSGS; Lisa Barnoff, Dean Faculty of Community
                           Services (FCS); Pamela Robinson, Associate Dean FCS;
                           Suzanne Fredericks, GPD
                       o   Location: YDI 1134

3:10 pm – 4:00 pm   Peer Review Team Meeting
                       o   Attending: Peer review team members only
                       o   Location: YDI 1134

NURSING GRADUATE PROGRAM'S <u>RESPONSE</u> TO THE EXTERNAL PEER REVIEWERS RECOMMENDATIONS

RE: PROPOSED NEW PHD IN URBAN HEALTH PROGRAM

Submitted by:

Dr. Suzanne Fredericks, Graduate Program Director

September 13, 2018

The independent external peer review was commissioned by the Vice Provost and Dean of the Yeates School of Graduate Studies (YSGS) with a mandate to evaluate and report in writing on the academic quality of the proposed program and the capacity of the designated academic unit to deliver it in an appropriate manner. The external peer review team consisted of Dr. Yolanda Babenko-Mould (Western University) and Dr. Blake Poland (University of Toronto). The external peer review site visit was conducted on June 13 and 14, 2018. The external peer review report was communicated to the Associate Dean, YSGS on July 25, 2018, which was then communicated to the Graduate Program Director (GPD), Nursing.

The Nursing Graduate Program's response was formulated in consultation with the Dean of the Faculty of Community Service (FCS), Dr. Lisa Barnoff, and the Associate Dean of FCS, Dr. Pamela Robinson.

Summary of Report:

The external peer reviewers cited several strengths in their report, noting the Daphne Cockwell School of Nursing (DCSN) is well positioned to undertake the proposed PhD program in Urban Health. As well, the reviewers identified, the proposed doctoral program as being unique in terms of its framing and focus on Urban Health in the Canadian context; and stated that this program aligned well with key Ryerson mission statements and the University's longstanding reputation for a strong community-engaged focus on urban issues and social justice.

In addition to the strengths identified, the external peer reviewers report included several recommendations, which are discussed below.

As mandated by Ryerson Senate Policy 126, what follows is the Graduate Nursing Program's detailed response to the external reviewers' recommendations identified in their report. This section is followed by a summary of the recommendations and responses presented in a table format. The recommendations are divided into two broad categories: academic and administrative/financial.

DETAILED RESPONSE

A CADEMIC RECOMMENDATIONS

#1: Recommendation:

The literature review in the proposal didn't cite key influential sources including the recent Lancet report on urban health (Rydin et al, 2012), relevant high-level reports from the World Health Organization (WHO 2016, 2010, 2008), and books from influential authors

that could be key resources in a program on Urban Health such as Corburn's Toward the Healthy City (Corburn, 2009), Freudenberg's Urban Health & Society (Freudenberg et al, 2009), the Handbook of Urban Health (Galea & Vlahov, 2008; see also Vlahov et al, 2007), and Kirst et al's Canadian text on transdisciplinary approaches to urban health research (Kirst et al, 2014), to name but a few.

Graduate Program Response:

A detailed review of the urban health literature was undertaken during the LOI and creation of the proposal phase. Based on the results of this review the following key, influential references relating to urban health were included in the Proposal: Galea & Vlahov 2005; Bircher & Kuruvilla, 2014; Seto & Ramankutty, 2016; and Mazereeuw et al., 2017.

Based on the reviewers' recommendations, the additional references were added: Rydin et al., 2012; Corburn, 2009; WHO 2016; Galea & Vlahov 2008; Kirst et al., 2014

#2: Recommendation:

The opening pages of the program proposal describe several negative health impacts associated with urbanization, but make no mention of some of the positive ones (e.g. cities as engines of innovation, the so-called 'urban health dividend', etc)

Graduate Program Response:

The positive aspects relating to Urban Health is already present within the proposal – second sentence in the introduction - *The growth in the development of urban areas has been shown to produce economies that are characterized by an increase in foreign trade, complex market structures, and technological innovations (Bloom, Canning, Fink, 2008; Rydin et al, 2012)*

#3: Recommendation:

Develop a governance model with clear lines of accountability, and processes for decision-making, resource sharing, and inter-departmental collaboration to support the proposed program

Graduate Program Response:

The proposed doctoral program is a PhD in Urban Health that will be housed in the DCSN. In preparing this response, both the Nursing GPD and FCS Associate Dean clarified with YSGS that this program will be governed by the same GPC as the other graduate programs in the School. Thus, no new GPC will be created. The bylaws will be updated <u>before</u> the program is launched; and this work will be integrated with the other governance efforts. The membership of the GPC will include the inclusion of members with experience to engage at both levels (Master and Doctoral) of graduate education within the School.

As part of the updated bylaws for governance, the FCS Associate Dean of Graduate Studies will be included as part of the GPC membership in an *ex officio* role. A GPC meeting will be scheduled early in the fall 2018 semester to provide the FCS Associate Dean of Graduate Studies an opportunity to discuss next steps for the implementation of this program.

#4: Recommendation:

Consider representation from partner agencies somewhere in program governance structure (e.g. advisory council), including agencies working with equity-seeking groups, and reflecting the diversity of urban health as represented in the Framework and across the city

<u>Graduate Program Response</u>:

This process is already established within the DCSN. An advisory committee that includes representatives from equity seeking groups and which reflect the diversity of urban health meets with the DSCN Director, GPD, and Associate Directors on an annual basis. The advisory board supports academic program accountability by providing guidance and feedback and serving as partners in research and community collaborations. Specifically, recommendations from the advisory board informs research and provides advice with curriculum content and job placement.

Once the PhD in Urban Health Program is approved, the make-up of the existing advisory board will be reviewed by the GPD, in consultation with the School Director, to determine whether or not additional members should be added.

In addition, the FCS Dean's office has a number of strategic partnerships underway and may be able to assist with the development of a partnership strategy this Fall. The Nursing GPD will consult with the FCS Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles. As well, efforts are currently underway within the FCS EDI committee which may assist in building relationships with equity-seeking groups.

#5: Recommendation:

Develop a partnership strategy and principles that will govern partnership development

Graduate Program Response:

The principles that will govern the partnership development will be outlined in the GPC Bylaws. The PhD curriculum committee has developed a theoretical framework for the Urban Health PhD Program (**see response to recommendation #10**). This framework contains 3 domains (health and wellbeing; safety and security; and migration, immigration, and settlement.) which will be used to structure the principles that will govern the partnership development strategy that will be embedded within the GPC bylaws.

Finally, the Nursing GPD will consult with the FCS Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.

#6: Recommendation:

Targeted expansion of internal partnerships and outreach: rather than a general call for expressions of interest, approach key colleagues in other departments who are leaders in urban (health) research

Graduate Program Response:

One of the priorities of the Partnership Development Strategy, as discussed in recommendation #5, will be a targeted expansion of internal partnerships and outreach. Thus, the inclusion of internal partnership and outreach will be incorporated into the design of the Partnership Development Strategy; and the Nursing GPD will consult with the FCS Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.

#7: Recommendation:

Expand external partnerships beyond the relatively few listed to include Toronto Public Health (especially their Urban Issues Team), The Wellesley Institute, and key community-based organizations (e.g. CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty, etc).

Graduate Program Response:

Another priority of the Partnership Development Strategy, as discussed in recommendation #5, will be to expand the external partnerships to include Toronto Public Health (i.e. Urban Issues Team), The Wellesley Institute, CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty. Thus, the inclusion of external partnership will be incorporated into the design of the Partnership Development Strategy. Similar to responses to recommendations 4, 5, and 6; the Nursing GPD will consult with the FCS Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.

#8: Recommendation:

Identify process used to develop the proposed learning outcome

Graduate Program Response:

The Nursing GPD worked with Ms. Paolo Borin, the Curriculum Development Consultant from the Office of the Vice Provost Academic, to identify PhD level learning outcomes; and to map the learning outcomes to the curriculum and the GDLEs.

The GPD met with Ms. Borin for face-to-face meetings on the following dates: Oct 13, 2017 and Oct 30, 2017). As well the GPD had one meeting by phone (Oct 19, 2017) with Ms. Borin; and interacted via email with her on Oct 19 and Oct 20, 2017.

#9: Recommendation:

Clarify role of 'clinical' and 'practice' elements and how these apply to applicants from the social sciences.

Graduate Program Response:

The term "clinical" and "practice" refer to place of employment. To avoid confusion, these terms have been removed from Learning Outcomes # 4 and # 6 in the Proposal.

Furthermore, while this program does not offer clinical placements, the consideration of other broad experiential learning opportunities and its effect on graduate education will be integrated into the development of a *Positioning for Success* workshop currently being designed by the FCS Associate Dean, with one session focusing on experiential learning in graduate education.

#10: Recommendation:

Consider creation of a Framework for Higher Education in Urban Health that identifies and articulates the core principles, pedagogical practices, range of theories and methodologies, and key content that will form the 'core' of this program, optimized for the Ryerson and Toronto context.

Graduate Program Response:

The Nursing GPD met with the DCSN PhD Curriculum committee on June 27, 2018 to develop a theoretical structure for the PhD in Urban Health framework. Revisions and edits were shared among members electronically. The final version of the updated framework has since been embedded into the proposal on page 1. The framework contains the core elements of the program that can be optimized for the Ryerson and Toronto context. Below is the framework in question:

Theoretical structure of the PhD in Urban Health Program

Urbanization, which began with industrialization, has intensified over the past few decades under the complex social, economic and political forces associated with globalization, neoliberalism and advanced capitalism. Neoliberal market-oriented policies, adopted by many nations around the world, have contributed to increased environmental degradation, economic inequities, social vulnerabilities and health disparities. Thus, to effectively define the evidence and research direction for urban health priorities, a theoretical frame of reference is needed to explain how the urban context may affect health; and to identify strategies for addressing health related issues (Galea & Vlahov, 2005).

Urban health is the health and disease of a population that is a result of exposure to populations living in highly dense settings (Galea & Vlahov, 2005). The PhD in Urban Health program is situated within a theoretical framework that supports students across disciplines in innovatively exploring questions, issues, challenges and opportunities which individuals and/or communities experience within the context of urban settings. Informed by program values, this theoretical frame of reference considers the intersections between: a) individual, social, and environmental determinants and b) substantive domains which reflect key issues of concern in urban settings.

Values are the fundamental guides and stimuli for action. They underpin the curriculum and are the standards, principles, and judgements in which the curriculum is rooted. The values that underpin the PhD in Urban Health program include: *equity, resilience, collaboration, and sustainability*. Equity is the absence of systematic disparities in health between social groups who have different levels of underlying social advantage/disadvantage (Braveman & Gruskin, 2003). Resilience refers to a process of adapting to

adversity, trauma, and significant stress (Barasa, Cloete, Gilson, 2017). Collaboration is the working together, sharing of responsibility for problem-solving, and making decisions to formulate and carry out plans for maintaining and/or promoting health, as well as equitable partnerships and includes the notion of multidisciplinary (Elwyn et al., 2012); while sustainability is the need to promote and maintain health without exhausting natural resources or causing severe ecological damage (Waltner-Toews, 2004). Equity, resilience, collaboration, and sustainability encompass all components and elements related to the PhD in Urban Health program.

A major conceptual perspective essential to understanding Urban Health are determinants which are the factors, characteristics, and/or indicators that definitively affect health and wellbeing; and can be classified as individual, social, or environmental (Bircher & Kuruvilla, 2014).

Individual determinants refers to the potentials of individuals (biological, personally acquired) in meeting the demands of life (physiological, psychological, environmental) (Bircher & Kuruvilla, 2014), while *social determinants* are the social factors (e.g., social engagement, collective efficacy, trust) that can positively or negatively affect an individual's health. *Environmental determinants* relate to the living, ecological, and the work environment (Bircher & Kuruvilla, 2014). Examples of determinants include, but are not limited to: income, social status, education (e.g. effect of lower levels of education on health, stress, and self-confidence), physical environment (e.g. effect of safe water and clean air, healthy workplaces, safe houses, communities and roads on health), employment, working conditions, social support networks, culture (e.g. influence of customs, traditions, and beliefs on health), genetics (e.g. genetic makeup influences lifespan, healthiness and the likelihood of developing illnesses), personal behaviours (e.g. balanced eating, keeping active, smoking, drinking), mental capacity and coping skills (e.g. adaptation to stresses and challenges), health services (e.g. access and use of services), gender (e.g. men and women experience diseases differently), globalization, and healthy child development (http://www.who.int/hia/evidence/doh/en/index1.html).

The values related to equity, resilience, collaboration, and sustainability influence the determinants as they shape and provide the stimuli for actions.

Domains are the **SUBSTANTIVE FOCI** of the Urban Health program; and can be viewed as the areas of specialization that emerge from the determinants, which are influenced by the program values.

The **three main domains** associated with this program are:

 # 1 - *HEALTH AND WELLBEING* -   Defined as a "*state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity*" (https://www.aohc.org/model-health-and-wellbeing). Within an urban environment, many potential hazards related to urban living exist which impact on an individual's overall health and wellbeing. These include but are not limited to:

genetics; lifestyle; substandard housing; urban, environmental, and health geography; contaminated food and water; nutrition; air pollution; and congested traffic (Bai, Nath, Capon, Hasan, Jaron, 2012).

 # 2 - *SAFETY AND SECURITY* – Relates to "protecting people from critical (severe) and pervasive (widespread) threats and situations that can include, <u>but are not limited to</u>: crime and violence, access to education, chemical exposure, employment status, sanitation, adequate shelter, and participation in social and cultural life (UN-Habitat, 2012)

 # 3- *MIGRATION, IMMIGRATION, AND SETTLEMENT* – The effect of migration, immigration, and settlement processes on the health and wellbeing of individuals can result in significant challenges that include but <u>are not limited to</u>: immigrant and refugee health; injuries and violence that stem from migration, immigration, and settlement; unsafe living conditions; precarious employment and labor market integration; racism, colonialism, and undocumented status (Lee, Helke, Laczko, 2015).

The values related to equity, resilience, collaboration, and sustainability serve as a lens for studying the individual, social, and environmental determinants of health by addressing issues related to health and wellbeing; safety and security; and migration, immigration, and settlement. The examples identified can be transferred between domains, which are intentionally kept broad to encompass a variety of topics.

#11: Recommendation:

Consider articulating a core set of sub-specializations or areas of focus that the program has the requisite expertise to support

<u>Graduate Program Response</u>:

A core set of areas of focus that the program has the requisite expertise to support have been identified. These areas are titled: Domains and include: 1) health and wellness; 2) safety and security; and 3) migration, immigration, and settlement. Examples of specific areas of foci are included for each domain. Please see Theoretical framework on page 1 of the Proposal.

#12: Recommendation:

Flesh out the existing learning objectives/outcomes (which are relatively generic) with ones that are specific to urban health (content)

<u>Graduate Program Response</u>:

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The values (equity, resilience, collaboration, and sustainability) and domains (health and well-being; safety and security; migration, immigration, and settlement) identified in the *Theoretical structure of the PhD in Urban Health Program* were used to tailor the learning outcomes to ones that are specific to the *Urban Health* content. Please see below for Learning Outcomes that are specific to *Urban Health* content.

Learning Outcomes
Upon completion of this program, graduates will be able to:

1. Work collaboratively with team members from a variety of disciplines and professions to develop innovative, sustainable strategies and solutions to challenges pertaining to urban populations that can relate to health and well-being; safety and security; and/or migration, immigration, and settlement.

2. Engage in clear, effective, and respectful collaborative interpersonal communication with professionals and other members of diverse and equity seeking teams and communities in urban health settings.

3. Verbally present, discuss and defend information, reasoned arguments, sustainable strategies and solutions, as well as research findings; clearly and concisely for an audience from diverse disciplines and professions.

4. Write clearly, concisely, and effectively for research, policies, and urban community audiences on issues pertaining to equity, resilience, collaboration, and sustainability within *Urban Health*.

5. Plan, design, and implement innovative and advanced research studies in response to complex challenges and issues relating to *Urban Health*.

6. Reflect discuss, and apply critical reasoning to the generation, selection, and application of theories, methodologies, and empirical knowledge to address fundamental *Urban Health* questions in primary area of study that can relate to health and well-being; safety and security; and/or migration, immigration, and settlement.

7. Lead research that is ethically sound, and demonstrates initiative, as well as personal and professional responsibility.

#13: Recommendation:

Develop metrics for measuring performance on revised learning objectives (the proposal, as it currently stands, indicates when and how more generic learning outcomes will be met, but not always how they will be measured or quality assessed)

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Graduate Program Response:

The metrics for measuring performance on revised learning objectives already exist in *Section 2.f.ii. Assessment Methods for Student Achievement and Learning Outcomes and Graduate Degree Level Expectations (GDLEs)* in the Proposal. Within this section it states:

Students will be graded on course deliverables reflecting several GDLEs in both written and oral forms. While instructors will have requisite authority over the courses, templates will be prepared to ensure that evaluations are comprehensive and progressive throughout the program. The Theories and Concepts in Urban Health, Research in Urban Health Settings, and Data Analysis courses will all feature 1 individual research paper, 1 applied group project assignment, and 1 individual presentation. The design of this program is to ensure students acquire core knowledge and understanding of concepts and are prepared for their dissertation which they will be leading. The individual research paper and presentation is necessary to ensure graduates have demonstrated competencies expected of independent researchers and are proficient in their professional capacity and autonomy. Students' depth and breadth of knowledge will be most evident through their independent assignments. As well their communication skills, awareness of limits, and level of application of knowledge will be manifested through all of their assignments.

The following was added to this section: Each of these methods of engagement with course topics enables students to develop leadership and communication skills, demonstrate advanced conceptualization skills, foster professional judgement skills, and engage in the application of research and statistics in a way that is meaningful to the dissertation process while contributing to societal needs. The combination of such methods will support the achievement of the program's learning outcomes and the Graduate Degree Level Expectations.

#14: Recommendation:

Consider adding a theory requirement for PhD theses in Urban Health

Graduate Program Response:

Currently all students are required to take a Theories and Concepts in Urban Health (new PhD level course). This course will review theoretical issues relating to urban health that include: *equity, resilience, collaboration, and sustainability*. This course will provide students with the foundational skills to reflect, discuss, and apply critical reasoning to the generation, selection, and application of theories; and empirical and clinical knowledge to address fundamental *Urban Health* questions related to their primary area of study

(i.e. dissertation). Students will be expected to demonstrate a critical analysis of the relevance and applicability of urban health theories and concepts throughout their assignments.

Even though the number of courses required for successful completion is five, students may be encouraged to take additional electives depending on their overall level of substantive, theoretical, and methodological knowledge as identified by their dissertation committee.

#15: Recommendation:

Add a methodological prerequisite to the admissions criteria

Graduate Program Response:

The following was added to the Proposal, Section 2.b. Admissions; 2.b.i. Calendar Admission Requirements; item #5

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 course during their first year of enrollment in the PhD in Urban Health program.

#16: Recommendation:

Add two additional elective requirements (for a total of 3 electives, and 7 semester courses overall) to better meet the learning needs in theory, methods, and substantive content.

Graduate Program Response:

The following was added to Section 1. c. Curriculum Overview in Proposal:

Even though the number of courses required for successful completion is five, students may be encouraged to take additional electives depending on their overall level of substantive, theoretical, and methodological knowledge as identified by their dissertation committee.

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#17: Recommendation:

Add courses in 'advanced methods' and 'advanced theory' that adequately service the needs of students at the doctoral level

Graduate Program Response:

Students have access to advanced doctoral methods and theory courses that are offered across the University. For example:
1) Advanced Qualitative Research (SS8001) – department of policy studies (PhD level course)
2) Research Foundations for Policy Studies (PD9002) – department of policy studies (PhD level course)
3) Foundations of Quantitative Research (PD9004) – department of policy studies (PhD level course)
4) Research Foundations for Policy Studies (PD9002) – department of policy studies (PhD level course)
5) Statistical Analysis of Social Science Research (SS8000) – department of policy studies (PhD level course)
6) BP8101 Stats for the Health Sciences – Biomedical Physics

ADMINISTRATIVE AND FINANCIAL RECOMMENDATIONS

#1: Recommendation:

Hire two additional tenure-stream faculty, and consider earmarking one of these for an indigenous scholar with expertise in urban health

Graduate Program Response:

The availability of funds to hire new faculty members to support this program will be determined by the UPO when the full program costing is completed.

The site visit team noted the importance of recruiting a faculty member who is indigenous and/or has expertise in urban health with an indigenous focus. The FCS Dean's Office is in support of this recommendation recognizing the importance of indigenous hires in a School whose profession is specifically named in the TRC. For this hire FCS is committed to working with the School to access support provided by the University to ensure all of us are aligned on best practice.

#2: Recommendation:

Increase student funding from the proposed $18,000/year over 3 years, to $27,000 over 4 years.

#3: Recommendation:

Create a student funding policy that clarifies what successful applicants will be offered over the 4 years they are in the program, what portions will come from Research Assistantships, Teaching Assistantships, faculty contributions, or other sources, limits on outside work (e.g. to 10hrs/wk), etc.

Graduate Program Response to both recommendations #2 & #3:

The internal funding for doctoral students at Ryerson typically comes from three sources: YSGS provides a pool of funds to be distributed, GA/TA opportunities and in some cases, there are RA and stipend research funds available from individual faculty members' SRC work. The FCS Dean's office encourages the DCSN to explore new opportunities to direct GA/TA funds to doctoral students. A specific suggestion put forward by FCS is as follows:

FCS will provide course development funding for the creation of a new undergraduate open elective in Urban Health geared to introducing students across campus to Urban Health issues. The goal is to create a course that will generate new GA/TA and teaching opportunities for the Urban Health doctoral students.

In addition, FCS will explore how to use pre-released GA/TA funds allocations if the open elective course continues as a means of strengthening support packages. FCS has suggested the School also be active in encouraging and supporting doctoral students to apply for external funding. In doing so, FCS will partner with the School to develop workshops for these students. 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.

A key area that will be addressed at the GPC meetings this Fall will focus on faculty members with access to research funding receiving priority for doctoral student recruitment

Finally, a student funding policy committee will be created as a standing committee of the GPC. This committee will be consulted and will identify the types of funding applicants will be offered over the 4 years they are in the program. Specifically, they will indicate the portions of funding that will come from Research Assistantships, Teaching Assistantships, faculty contributions, or other sources, limits on outside work (e.g. to 10hrs/wk), etc. This committee will also serve to advise

the GPD, in the distribution of Research and/or Graduate Assistantships; as well as to recommend to sources of funding (e.g., external and internal scholarships, research assistantships, and other awards that may come to the attention of this committee) for students within the program.

#4: Recommendation:

We endorse the proposed addition of a 0.5FTE for administrative support of the program.

Graduate Program Response:

The Graduate Curriculum Committee and the GPD strongly supports the additional resources regarding administration as this is deemed to be essential. The Nursing Graduate Program is committed to working with the DCSN Director and FCS Dean, in looking at allocation of resources for graduate program. However, we are aware that the ability to hire new additional admin support for this program will be determined by the UPO when the full program costing is completed.

#5: Recommendation:

Increase library support for the acquisition of books and journals to support the proposed program to the tune of $6,500 in the first year and $4,500 to the base budget

Graduate Program Response:

We strongly support the acquisition of books and journals to support the proposed program (value: $6,500 in the first year and $4,500 to the base budget regarding administration) as this is deemed to be essential. We are committed to working with the Chief Librarian, Content Librarian, DCSN Director, FCS Dean, and YSGS, during the first 5 years of the program implementation, to continuing to enhance the library collection to support the PhD in Urban Health Program.

#6: Recommendation:
Library staff should be encouraged to work with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection

Graduate Program Response:
We strongly support this recommendation and will work closely with the Content Librarian during the first 5 years of the program implementation, by working with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection, to support the PhD in Urban Health Program.

ACADEMIC RECOMMENDATIONS

Recommendation	Nursing Graduate Program Response
1. The literature review in the proposal didn't cite key influential sources including the recent Lancet report on urban health (Rydin et al, 2012), relevant high-level reports from the World Health Organization (WHO 2016, 2010, 2008), and books from influential authors that could be key resources in a program on Urban Health such as Corburn's Toward the Healthy City (Corburn, 2009), Freudenberg's Urban Health & Society (Freudenberg et al, 2009), the Handbook of Urban Health (Galea & Vlahov, 2008; see also Vlahov et al, 2007), and Kirst et al's Canadian text on transdisciplinary approaches to urban health research (Kirst et al 2014), to name but a few.	A detailed review of the urban health literature was undertaken during the LOI and creation of the proposal phase. Based on the results of this review the following key, influential references relating to urban health were included in the Proposal: Galea & Vlahov 2005; Bircher & Kuruvilla, 2014; Seto & Ramankutty, 2016; and Mazereeuw et al., 2017. Based on the reviewers' recommendations, the additional references were added: Rydin et al., 2012; Corburn, 2009; WHO 2016; Galea & Vlahov 2008; Kirst et al., 2014
2. The opening pages of the program proposal describe several negative health impacts associated with urbanization, but make no mention of some of the positive ones (e.g. cities as engines of innovation, the so-called 'urban health dividend', etc)	The positive aspects relating to Urban Health is already present within the proposal – second sentence in the introduction - *The growth in the development of urban areas has been shown to produce economies that are characterized by an increase in foreign trade, complex market structures, and technological innovations (Bloom, Canning, Fink, 2008; Rydin et al 2012)*
3. Develop a governance model with clear lines of accountability, and processes for decision-making,	This doctoral program will be governed by the same GPC as the other graduate programs in the School. Thus, no new GPC will be created. The bylaws will be

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| resource sharing, and inter-departmental collaboration to support the proposed program | updated <u>before</u> the program is launched; and this work will be integrated with the other governance efforts. The membership of the GPC will include the inclusion of members with experience to engage with both levels (Master and Doctoral) of graduate education within the School.

As part of the updated bylaws for governance, the FCS Associate Dean of Graduate Studies will be included as part of the GPC membership in an *ex officio* role. A GPC meeting will be scheduled early in the fall 2018 semester to provide the FCS Associate Dean of Graduate Studies an opportunity to discuss next steps for the implementation of this program.

Activity: Update existing GPC bylaws
Timelines: During Fall 2018 semester
Responsibility: DCSN GPD will lead the updating of GPC bylaws |
| 4. Consider representation from partner agencies somewhere in program governance structure (e.g. advisory council), including agencies working with equity-seeking groups, and reflecting the diversity of urban health as represented in the Framework and across the city | This process is already established within the DCSN. An advisory committee that includes representatives from equity seeking groups and which reflect the diversity of urban health meets with the DSCN Director, GPD, and Associate Directors on an annual basis.

In addition, the FCS Dean's office has a number of strategic partnerships underway and may be able to assist with the development of a partnership strategy this Fall. The Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles. As well, efforts underway within the FCS EDI committee that may assist in building relationships with equity-seeking groups.

Activity 1: Once the PhD in Urban Health Program is approved, the make-up of the existing advisory board will be reviewed by the GPD, in consultation with the School Director, to determine whether or not additional members should be |

	added. **Timeline:** During first year of the PhD in Urban Health Program **Responsibility:** DCSN GPD will work with the School Director in reviewing the make-up of the advisory board. As well, the Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.
5. Develop a partnership strategy and principles that will govern partnership development	The principles that will govern the Partnership Development Strategy will be outlined in the GPC Bylaws for the PhD in Urban Health program. **Activity**: The 3 domains (health and wellbeing; safety and security; migration, immigration, and settlement) identified within the theoretical framework for the PhD in Urban Health program will be used to structure the principles that will govern the partnership development strategy that will be embedded within the GPC bylaws. **Timeline**: During the first year of the PhD in Urban Health Program **Responsibility**: DCSN GPD will be responsible for leading the creation and implementation of the Partnership Development Strategy. As well, the Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.
6. Targeted expansion of internal partnerships and outreach: rather than a general call for expressions of interest, approach key colleagues in other departments who are leaders in urban (health) research	One of the priorities of the Partnership Development Strategy, as discussed in recommendation #5, will be a targeted expansion of internal partnerships and outreach. **Activity**: The inclusion of internal partnership and outreach into the design of the Partnership Development Strategy **Timeline**: During the first year of the PhD in Urban Health Program **Responsibility**: DCSN GPD will be responsible for integrating the inclusion of internal partnership and outreach into the design of the Partnership Development Strategy. As well, the Nursing GPD will consult with the Associate Dean

	Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.
7. Expand external partnerships beyond the relatively few listed to include Toronto Public Health (especially their Urban Issues Team), The Wellesley Institute, and key community-based organizations (e.g. CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty, etc)	Another priority of the Partnership Development Strategy, as discussed in recommendation #5, will be to expand the external partnerships to include Toronto Public Health (i.e. Urban Issues Team), The Wellesley Institute, CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty. **Activity:** Inclusion of external partnership will be incorporated into the design of the Partnership Development Strategy. **Timeline**: During the first year of the PhD in Urban Health Program **Responsibility**: DCSN GPD will be responsible for integrating the inclusion of external partnership into the design of the Partnership Development Strategy. As well, the Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.
8. Identify process used to develop the proposed learning outcome	The Nursing GPD worked with Ms. Paolo Borin, the Curriculum Development Consultant from the Office of the Vice Provost Academic, to identify PhD level learning outcomes; and to map the learning outcomes to the curriculum and the GDLEs. The GPD met with Ms. Borin for face-to-face meetings on the following dates: Oct 13, 2017 and Oct 30, 2017). As well the GPD had one meeting by phone (Oct 19, 2017) with Ms. Borin; and interacted via email with her on Oct 19 and Oct 20, 2017.
9. Clarify role of 'clinical' and 'practice' elements and how these apply to applicants from the social sciences.	The term "clinical" and "practice" refer to place of employment. To avoid confusion, these terms have been removed from Learning Outcomes # 4 and # 6 in the Proposal.

	Furthermore, while this program does not offer clinical placements, the consideration of other broad experiential learning opportunities and its effect on graduate education will be integrated into the development of a *Positioning for Success* workshop currently being designed by the FCS Associate Dean, with one session focusing on experiential learning in graduate education. **Activity:** Topic on *experiential learning opportunities and its effect on graduate education* will be integrated into the development of a *Positioning for Success* workshop **Timeline:** Winter 2019 **Responsibility:** FCS Associate Dean
10. Consider creation of a Framework for Higher Education in Urban Health that identifies and articulates the core principles, pedagogical practices, range of theories and methodologies, and key content that will form the 'core' of this program, optimized for the Ryerson and Toronto context.	The Nursing GPD met with the DCSN PhD Curriculum committee on June 27, 2018 to develop a theoretical structure for the PhD in Urban Health framework. Revisions and edits were shared among members electronically. The final version of the updated framework has since been embedded into the proposal on page 1. The framework contains the core elements of the program that can be optimized for the Ryerson and Toronto context.
11. Consider articulating a core set of sub-specializations or areas of focus that the program has the requisite expertise to support	A core set of areas of focus that the program has the requisite expertise to support have been identified. These areas are titled: Domains and include: 1) health and wellness; 2) safety and security; and 3) migration, immigration, and settlement. Examples of specific areas of foci are included for each domain. Please see Theoretical framework on page 1 of the Proposal.
12. Flesh out the existing learning objectives/outcomes (which are relatively generic) with ones that are specific to urban health (content)	The values (equity, resilience, collaboration, and sustainability) and domains (health and well-being; safety and security; migration, immigration, and settlement) identified in the *Theoretical structure of the PhD in Urban Health Program* were used to tailor the learning outcomes to ones that are specific to the *Urban Health* content. Please see Page 4 in the Proposal for Learning Outcomes

	that are specific to Urban Health content
13. Develop metrics for measuring performance on revised learning objectives (the proposal, as it currently stands, indicates when and how more generic learning outcomes will be met, but not always how they will be measured or quality assessed)	The metrics for measuring performance on revised learning objectives already exist in Section 2.f.ii. Assessment Methods for Student Achievement and Learning Outcomes and Graduate Degree Level Expectations (GDLEs) in the Proposal. However, the following was added to this section: Each of these methods of engagement with course topics enables students to develop leadership and communication skills, demonstrate advanced conceptualization skills, foster professional judgement skills, and engage in the application of research and statistics in a way that is meaningful to the dissertation process while contributing to societal needs. The combination of such methods will support the achievement of the program's learning outcomes and the Graduate Degree Level Expectations.
14. Consider adding a theory requirement for PhD theses in Urban Health	Currently all students are required to take a Theories and Concepts in Urban Health (new PhD level course). This course will review theoretical issues relating to urban health that include: *equity, resilience, collaboration, and sustainability*. This course will provide students with the foundational skills to reflect, discuss, and apply critical reasoning to the generation, selection, and application of theories; and empirical and clinical knowledge to address fundamental *Urban Health* questions related to their primary area of study (i.e. dissertation). Students will be expected to demonstrate a critical analysis of the relevance and applicability of urban health theories and concepts throughout their assignments. As well, the following was added to *Section 1. c. Curriculum Overview* in Proposal: Even though the number of courses required for successful completion is five, students may be encouraged to take additional electives depending on their overall level of substantive, theoretical, and methodological knowledge as identified by their dissertation committee.

15. Add a methodological prerequisite to the admissions criteria	The following was added to the Proposal, Section 2.b. Admissions; 2.b.i. Calendar Admission Requirements; item #5 *Applicants must have demonstrated knowledge of research methods prior to applying, as evidenced in their transcripts.*
16. Add two additional elective requirements (for a total of 3 electives, and 7 semester courses overall) to better meet the learning needs in theory, methods, and substantive content.	The following was added to *Section 1. c. Curriculum Overview* in Proposal: Even though the number of courses required for successful completion is five, students may be encouraged to take additional electives depending on their overall level of substantive, theoretical, and methodological knowledge as identified by their dissertation committee.
17. Add courses in 'advanced methods' and 'advanced theory' that adequately service the needs of students at the doctoral level	Students have access to advanced doctoral methods and theory courses that are offered across the University.

ADMINISTRATIVE AND FINANCIAL RECOMMENDATIONS

Recommendation	Nursing Graduate Program Response
1. Hire two additional tenure-stream faculty, and consider earmarking one of these for an indigenous scholar with expertise in urban health	The availability of funds to hire new faculty members to support this program will be determined by the UPO when the full program costing is completed. **Activity and Timeline:** This process for obtaining a new hire will occur during the first year of the PhD program. **Responsibility**: The DCSN GPD will work with FCS, DCSN Director, and the Departmental Hiring Committee to secure the new hire.
2. Increase student funding from the proposed $18,000/year over 3 years, to $27,000 over 4 years. 3. Create a student funding policy that clarifies	**Activity:** The FCS Dean's office encourages the DCSN to explore new opportunities to direct GA/TA funds to doctoral students. A specific suggestion put forward by FCS is as follows:

what successful applicants will be offered over the 4 years they are in the program, what portions will come from Research Assistantships, Teaching Assistantships, faculty contributions, or other sources, limits on outside work (e.g. to 10hrs/wk), etc.	FCS will provide course development funding for the creation of a new undergraduate open elective in Urban Health geared to introducing students across campus to Urban Health issues. The goal is to create a course that will generate new GA/TA and teaching opportunities for the Urban Health doctoral students. **Activity:** create new undergraduate open elective in Urban Health **Timeline:** During Winter 2019 semester **Responsibility:** FCS in collaboration with DCSN
4. We endorse the proposed addition of a 0.5FTE for administrative support of the program.	The Graduate Curriculum Committee and the GPD strongly supports the additional resources regarding administration as this is deemed to be essential. The Nursing Graduate Program is committed to working with the DCSN Director and FCS Dean, in looking at allocation of resources for graduate program. However, we are aware that the ability to hire new additional admin support for this program will be determined by the UPO when the full program costing is completed.
5. Increase library support for the acquisition of books and journals to support the proposed program to the tune of $6,500 in the first year and $4,500 to the base budget	**Activity, Timeline, Responsibility:** We strongly support the acquisition of books and journals to support the proposed program (value: $6,500 in the first year and $4,500 to the base budget regarding administration) as this is deemed to be essential. We are committed to working with the Chief Librarian, Content Librarian, DCSN Director, FCS Dean, and YSGS, during the first 5 years of the program implementation, to continuing to enhance the library collection to support the PhD in Urban Health Program.
6. Library staff should be encouraged to work with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection	**Activity, Timeline, Responsibility:** We strongly support this recommendation and will work closely with the Content Librarian during the first 5 years of the program implementation, by working with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection, to support the PhD in Urban Health Program.

In conclusion, thank you to the external peer reviewers for a very thorough assessment of the strengths and challenges of the proposed PhD in Urban Health Program. The reviewers' recommendations and the graduate program's response (in collaboration with FCS) raise important points regarding the program, and the discussion of these will only have a positive development in the evolution of this program.

Yeates School of Graduate Studies

Response from YSGS on the PRT Report for the Proposed
Graduate Program: Urban Health (PhD)

Dr. Jennifer Mactavish, Vice Provost & Dean, YSGS
Dr. Cory Searcy, Associate Dean, Programs, YSGS
September 13, 2018

The Peer Review Team (PRT) for the proposed PhD program in Urban Health consisted of Dr. Yolanda Babenko-Mould (Western University) and Dr. Blake Poland (University of Toronto).

The PRT site visit was conducted on June 13 and 14, 2018. The PRT report was communicated to the Associate Dean, YSGS on July 25, 2018, and the response to the report from the Daphne Cockwell School of Nursing (DCSN), the proponents of the proposed PhD in Urban Health, was communicated on September 9, 2018.

The PRT cited several strengths of the proposed Urban Health program in their report, including the program's uniqueness and its alignment with Ryerson University's mission. The PRT also noted that the DCSN is "well positioned to undertake the proposed PhD program in Urban Health." 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 response to the report of the DCSN. 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 DCSN responses) in the form of table

1

ACADEMIC RECOMMENDATIONS

Recommendation	Nursing Graduate Program Response	YSGS Response
1. The literature review in the proposal didn't cite key influential sources including the recent Lancet report on urban health (Rydin et al, 2012), relevant high-level reports from the World Health Organization (WHO 2016, 2010, 2008), and books from influential authors that could be key resources in a program on Urban Health such as Corburn's Toward the Healthy City (Corburn, 2009), Freudenberg's Urban Health & Society (Freudenberg et al 2009), the Handbook of Urban Health (Galea & Vlahov, 2008; see also Vlahov et al, 2007), and Kirst et al's Canadian text on transdisciplinary approaches to urban health research (Kirst et al, 2014), to name but a few.	A detailed review of the urban health literature was undertaken during the LOI and creation of the proposal phase. Based on the results of this review the following key, influential references relating to urban health were included in the Proposal: Galea & Vlahov 2005; Bircher & Kuruvilla, 2014; Seto & Ramankutty, 2016; and Mazereeuw et al., 2017. Based on the reviewers' recommendations, the additional references were added: Rydin et al., 2012; Corburn, 2009; WHO 2016; Galea & Vlahov 2008; Kirst et al., 2014	YSGS supports the program-level response.
2. The opening pages of the program proposal describe several negative health impacts associated with urbanization, but make no mention of some of the positive ones (e.g. cities as engines of innovation, the so-called 'urban health dividend', etc)	The positive aspects relating to Urban Health is already present within the proposal – second sentence in the introduction - *The growth in the development of urban areas has been shown to produce economies that are characterized by an increase in foreign trade, complex market structures, and technological innovations (Bloom, Canning, Fink, 2008; Rydin et al, 2012)*	YSGS supports the program-level response.
3. Develop a governance model with clear lines of accountability, and processes for decision-making, resource sharing, and inter-departmental collaboration to support the proposed program	This doctoral program will be governed by the same GPC as the other graduate programs in the School. Thus, no new GPC will be created. The bylaws will be updated <u>before</u> the program is launched; and this work will be integrated with the other governance efforts. The membership of the GPC will include the inclusion of members with experience to engage with both levels (Master and Doctoral) of graduate education within the School.	YSGS supports the program-level response. YSGS notes that its Strategic Initiatives and Policy Advisor and Associate Dean, Programs are available for consultation on any potential modifications to the GPC bylaws. YSGS notes that any updates to the bylaws must be developed in accordance with Ryerson University Policy 45 on Governance

2

Recommendation	Nursing Graduate Program Response	YSGS Response
	As part of the updated bylaws for governance, the FCS Associate Dean of Graduate Studies will be included as part of the GPC membership in an *ex officio* role. A GPC meeting will be scheduled early in the fall 2018 semester to provide the FCS Associate Dean of Graduate Studies an opportunity to discuss next steps for the implementation of this program. **Activity**: Update existing GPC bylaws **Timelines**: During Fall 2018 semester **Responsibility**: DCSN GPD will lead the updating of GPC bylaws	Councils.
4. Consider representation from partner agencies somewhere in program governance structure (e.g. advisory council), including agencies working with equity-seeking groups, and reflecting the diversity of urban health as represented in the Framework and across the city	This process is already established within the DCSN. An advisory committee that includes representatives from equity seeking groups and which reflect the diversity of urban health meets with the DSCN Director, GPD, and Associate Directors on an annual basis. In addition, the FCS Dean's office has a number of strategic partnerships underway and may be able to assist with the development of a partnership strategy this Fall. The Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles. As well, efforts underway within the FCS EDI committee that may assist in building relationships with equity-seeking groups. **Activity 1:** Once the PhD in Urban Health Program is approved, the make-up of the existing advisory board will be reviewed by the GPD, in consultation with the School Director, to determine whether or not additional members should be added. **Timeline:** During first year of the PhD in Urban Health Program **Responsibility:** DCSN GPD will work with the School Director in reviewing the make-up of the advisory board. As well, the Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.	YSGS supports the program-level response.

3

Recommendation	Nursing Graduate Program Response	YSGS Response
5. Develop a partnership strategy and principles that will govern partnership development	The principles that will govern the Partnership Development Strategy will be outlined in the GPC Bylaws for the PhD in Urban Health program. **Activity**: The 3 domains (health and wellbeing; safety and security; migration, immigration, and settlement) identified within the theoretical framework for the PhD in Urban Health program will be used to structure the principles that will govern the partnership development strategy that will be embedded within the GPC bylaws. **Timeline**: During the first year of the PhD in Urban Health Program **Responsibility**: DCSN GPD will be responsible for leading the creation and implementation of the Partnership Development Strategy. As well, the Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.	YSGS supports the program's commitment to develop a set of principles to govern partnership development. These principles, however, do not necessarily need to be included in the GPC bylaws. As noted above, YSGS notes that its Strategic Initiatives and Policy Advisor and Associate Dean, Programs are available for consultation on any potential modifications to the GPC bylaws.
6. Targeted expansion of internal partnerships and outreach: rather than a general call for expressions of interest, approach key colleagues in other departments who are leaders in urban (health) research	One of the priorities of the Partnership Development Strategy, as discussed in recommendation #5, will be a targeted expansion of internal partnerships and outreach. **Activity**: The inclusion of internal partnership and outreach into the design of the Partnership Development Strategy **Timeline**: During the first year of the PhD in Urban Health Program **Responsibility**: DCSN GPD will be responsible for integrating the inclusion of internal partnership and outreach into the design of the Partnership Development Strategy. As well, the Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.	YSGS supports the program-level response.
7. Expand external partnerships beyond the relatively few listed to include Toronto Public Health (especially their Urban Issues Team), The Wellesley Institute, and key community-based organizations (e.g. CHCs with research capacity such as Access Alliance; The	Another priority of the Partnership Development Strategy, as discussed in recommendation #5, will be to expand the external partnerships to include Toronto Public Health (i.e. Urban Issues Team), The Wellesley Institute, CHCs with research capacity such as Access Alliance; The Storefront in Scarborough, The Colour of Poverty.	YSGS supports the program's commitment to explore partnerships with external partners. YSGS notes that the nature of any potential partnerships must be clear in advance.

4

Recommendation	Nursing Graduate Program Response	YSGS Response
Storefront in Scarborough, The Colour of Poverty, etc)	**Activity:** Inclusion of external partnership will be incorporated into the design of the Partnership Development Strategy. **Timeline**: During the first year of the PhD in Urban Health Program **Responsibility**: DCSN GPD will be responsible for integrating the inclusion of external partnership into the design of the Partnership Development Strategy. As well, the Nursing GPD will consult with the Associate Dean Graduate Studies before partnership development processes occur to ensure alignment with overall goals and principles.	
8. Identify process used to develop the proposed learning outcome	The Nursing GPD worked with Ms. Paola Borin, the Curriculum Development Consultant from the Office of the Vice Provost Academic, to identify PhD level learning outcomes; and to map the learning outcomes to the curriculum and the GDLEs. The GPD met with Ms. Borin for face-to-face meetings on the following dates: Oct 13, 2017 and Oct 30, 2017). As well the GPD had one meeting by phone (Oct 19, 2017) with Ms. Borin; and interacted via email with her on Oct 19 and Oct 20, 2017.	YSGS supports the program-level response.
9. Clarify role of 'clinical' and 'practice' elements and how these apply to applicants from the social sciences.	The term "clinical" and "practice" refer to place of employment. To avoid confusion, these terms have been removed from Learning Outcomes # 4 and # 6 in the Proposal. Furthermore, while this program does not offer clinical placements, the consideration of other broad experiential learning opportunities and its effect on graduate education will be integrated into the development of a *Positioning for Success* workshop currently being designed by the FCS Associate Dean, with one session focusing on experiential learning in graduate education. **Activity:** Topic on *experiential learning opportunities and its effect on graduate education* will be integrated into the	YSGS supports the program-level response.

Recommendation	Nursing Graduate Program Response	YSGS Response
	development of a *Positioning for Success* workshop **Timeline:** Winter 2019 **Responsibility:** FCS Associate Dean	
10. Consider creation of a Framework for Higher Education in Urban Health that identifies and articulates the core principles, pedagogical practices, range of theories and methodologies, and key content that will form the 'core' of this program, optimized for the Ryerson and Toronto context.	The Nursing GPD met with the DCSN PhD Curriculum committee on June 27, 2018 to develop a theoretical structure for the PhD in Urban Health framework. Revisions and edits were shared among members electronically. The final version of the updated framework has since been embedded into the proposal on page 1. The framework contains the core elements of the program that can be optimized for the Ryerson and Toronto context.	YSGS supports the program-level response. YSGS notes that the three domains outlined as a part of the theoretical framework are not currently conceptualized as formal "Fields" of study within the program, as defined by the Quality Council. If the program chooses to formally add Fields in the future, a major modification of the program under Ryerson University Policy 127 will be required.
11. Consider articulating a core set of sub-specializations or areas of focus that the program has the requisite expertise to support	A core set of areas of focus that the program has the requisite expertise to support have been identified. These areas are titled: Domains and include: 1) health and wellness; 2) safety and security; and 3) migration, immigration, and settlement. Examples of specific areas of foci are included for each domain. Please see Theoretical framework on page 1 of the Proposal.	YSGS supports the program-level response. YSGS notes that the three domains outlined as a part of the theoretical framework are not currently conceptualized as formal "Fields" of study within the program, as defined by the Quality Council. As above, YSGS also notes that any formal addition of program Fields in the future will require a major curriculum modification under Policy 127.
12. Flesh out the existing learning objectives/outcomes (which are relatively generic) with ones that are specific to urban health (content)	The values (equity, resilience, collaboration, and sustainability) and domains (health and well-being; safety and security; migration, immigration, and settlement) identified in the *Theoretical structure of the PhD in Urban Health Program* were used to tailor the learning outcomes to ones that are specific to the *Urban Health* content. Please see Page 4 in the Proposal for Learning Outcomes that are specific to Urban Health content	YSGS supports the program-level response.
13. Develop metrics for measuring performance on revised learning objectives (the proposal, as it currently stands, indicates when and how more generic learning outcomes will be met, but not always how they will be measured or quality	The metrics for measuring performance on revised learning objectives already exist in Section 2.f.ii. Assessment Methods for Student Achievement and Learning Outcomes and Graduate Degree Level Expectations (GDLEs) in the Proposal.	YSGS supports the program-level response.

6

Recommendation	Nursing Graduate Program Response	YSGS Response
assessed)	However, the following was added to this section: Each of these methods of engagement with course topics enables students to develop leadership and communication skills, demonstrate advanced conceptualization skills, foster professional judgement skills, and engage in the application of research and statistics in a way that is meaningful to the dissertation process while contributing to societal needs. The combination of such methods will support the achievement of the program's learning outcomes and the Graduate Degree Level Expectations.	
14. Consider adding a theory requirement for PhD theses in Urban Health	Currently all students are required to take a Theories and Concepts in Urban Health (new PhD level course). This course will review theoretical issues relating to urban health that include: *equity, resilience, collaboration, and sustainability*. This course will provide students with the foundational skills to reflect, discuss, and apply critical reasoning to the generation, selection, and application of theories; and empirical and clinical knowledge to address fundamental *Urban Health* questions related to their primary area of study (i.e. dissertation). Students will be expected to demonstrate a critical analysis of the relevance and applicability of urban health theories and concepts throughout their assignments. As well, the following was added to *Section 1. c. Curriculum Overview* in Proposal: Even though the number of courses required for successful completion is five, students may be encouraged to take additional electives depending on their overall level of substantive, theoretical, and methodological knowledge as identified by their dissertation committee.	YSGS supports the program-level response.
15. Add a methodological prerequisite to the admissions criteria	The following was added to the Proposal, Section 2.b. Admissions; 2.b.i. Calendar Admission Requirements; item #5 *Applicants must have demonstrated knowledge of research methods prior to applying, as evidenced in their transcripts.*	YSGS supports the program-level response.

Recommendation	Nursing Graduate Program Response	YSGS Response
16. Add two additional elective requirements (for a total of 3 electives, and 7 semester courses overall) to better meet the learning needs in theory, methods, and substantive content.	The following was added to Section 1. c. Curriculum Overview in Proposal: Even though the number of courses required for successful completion is five, students may be encouraged to take additional electives depending on their overall level of substantive, theoretical, and methodological knowledge as identified by their dissertation committee.	YSGS supports the program-level response.
17. Add courses in 'advanced methods' and 'advanced theory' that adequately service the needs of students at the doctoral level	Students have access to advanced doctoral methods and theory courses that are offered across the University.	YSGS supports the program-level response.

ADMINISTRATIVE AND FINANCIAL RECOMMENDATIONS

Recommendation	Nursing Graduate Program Response	YSGS Response
1. Hire two additional tenure-stream faculty, and consider earmarking one of these for an indigenous scholar with expertise in urban health	The availability of funds to hire new faculty members to support this program will be determined by the UPO when the full program costing is completed. **Activity and Timeline:** This process for obtaining a new hire will occur during the first year of the PhD program. **Responsibility**: The DCSN GPD will work with FCS, DCSN Director, and the Departmental Hiring Committee to secure the new hire.	YSGS supports the program-level response. It notes, however, that the hiring of additional faculty is outside of its purview. YSGS further notes that the original proposal contained a request for one additional faculty hire. The request for an additional new faculty hire may need to be considered as a part of a revised financial assessment by the University Planning Office (UPO). YSGS encourages the program to work with the FCS Dean's office and the Provost's office on any future faculty hiring plan.

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Recommendation	Nursing Graduate Program Response	YSGS Response
2. Increase student funding from the proposed $18,000/year over 3 years, to $27,000 over 4 years. 3. Create a student funding policy that clarifies what successful applicants will be offered over the 4 years they are in the program, what portions will come from Research Assistantships, Teaching Assistantships, faculty contributions, or other sources, limits on outside work (e.g. to 10hrs/wk), etc.	Activity: The FCS Dean's office encourages the DCSN to explore new opportunities to direct GA/TA funds to doctoral students. A specific suggestion put forward by FCS is as follows: FCS will provide course development funding for the creation of a new undergraduate open elective in Urban Health geared to introducing students across campus to Urban Health issues. The goal is to create a course that will generate new GA/TA and teaching opportunities for the Urban Health doctoral students. Activity: create new undergraduate open elective in Urban Health Timeline: During Winter 2019 semester Responsibility: FCS in collaboration with DCSN	YSGS supports the program's efforts to explore opportunities for improved student funding packages. YSGS notes, however, that the university is not currently able to offer multi-year guaranteed funding packages. YSGS notes that centrally-allocated graduate scholarship funding is derived from our Provincial government grant allocation that is based on eligible FTE enrolments. Making target at the program, Faculty, and university levels is the pathway to stability in funding. It is not currently possible for YSGS to guarantee funding as it is subject to annual budgetary decisions that are outside its purview. Funding guarantees do not reconcile with the government's funding model or the annual budget process of the university. YSGS, however, continues to advocate for strong central support for graduate student funding. YSGS also encourages the program to explore other sources of student funding, particularly graduate student stipends and research assistantships funded through faculty research grants. YSGS encourages the program to consult with FEAS and FOS regarding how they have handled enhancing the competitiveness of student funding packages. The creation of an undergraduate open elective is outside its purview, but YSGS

Recommendation	Nursing Graduate Program Response	YSGS Response
		supports the creation of GA and teaching opportunities for the program's PhD students. YSGS notes that any GA or instructor hiring must be conducted in accordance with the relevant collective agreements.
4. We endorse the proposed addition of a 0.5FTE for administrative support of the program.	The Graduate Curriculum Committee and the GPD strongly supports the additional resources regarding administration as this is deemed to be essential. The Nursing Graduate Program is committed to working with the DCSN Director and FCS Dean, in looking at allocation of resources for graduate program. However, we are aware that the ability to hire new additional admin support for this program will be determined by the UPO when the full program costing is completed.	YSGS supports the program response, but it notes that the hiring of administrative support is outside of its purview. YSGS encourages the program to work with its Faculty on this issue.
5. Increase library support for the acquisition of books and journals to support the proposed program to the tune of $6,500 in the first year and $4,500 to the base budget	**Activity, Timeline, Responsibility:** We strongly support the acquisition of books and journals to support the proposed program (value: $6,500 in the first year and $4,500 to the base budget regarding administration) as this is deemed to be essential. We are committed to working with the Chief Librarian, Content Librarian, DCSN Director, FCS Dean, and YSGS, during the first 5 years of the program implementation, to continuing to enhance the library collection to support the PhD in Urban Health Program.	YSGS encourages the program to work with the library on the acquisition of resources suitable to its requirements. YSGS notes, however, that the acquisition of library resources is outside its purview.
6. Library staff should be encouraged to work with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection	**Activity, Timeline, Responsibility:** We strongly support this recommendation and will work closely with the Content Librarian during the first 5 years of the program implementation, by working with program faculty to identify relevant journals that might be missed through conventional metrics that may not be part of the current collection, to support the PhD in Urban Health Program.	YSGS supports the program-level response.

In conclusion, we thank the external reviewers and colleagues at Ryerson University for a very thorough assessment of the strengths and challenges of the proposed Urban Health program. The PRT recommendations and DCSN's responses raise important points regarding the program, and the discussion of these will only have a positive development in the development and evolution of the program.

Dr. Jennifer Mactavish
Vice Provost & Dean
Yeates School of Graduate Studies

Dr. Cory Searcy
Associate Dean, Programs
Yeates School of Graduate Studies
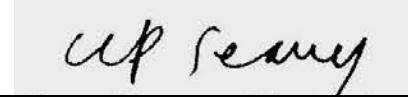
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& Architectural
Science**

Ryerson
University
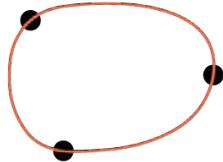
Department of
**Architectural
Science**
Ryerson

Proposal for a Ph.D. Program in Building Science

Last Updated October 1, 2018

Building Science Graduate Program
http://www.ryerson.ca/graduate/buildingscience/

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BASIC INFORMATION

PROGRAM GENERAL INFORMATION

1.1.1   Name of the Program and the Proposed Degree Designation(s)

This document proposes to add a doctoral degree within the existing Graduate Program in Building Science (currently offering two separate Masters degrees). The proposed degree designation is: Ph.D. (Building Science).

1.1.2   Identification of the Designated Academic Unit

Graduate Program in Building Science
Department of Architectural Science
Faculty of Engineering and Architectural Science

1.1.3   Program Governance Structure

The Graduate Program in Building Science is currently governed by the program's Graduate Program Council. The program is managed by the Associate Chair, Graduate Studies, Building Science within the Department of Architectural Science. The program is administered by the Graduate Program Administrator. No change is currently anticipated as part of the proposed doctoral degree.

1.1.4   Principle Faculty Members involved in Proposal Development

- Russell Richman, Associate Chair, Graduate Studies, Building Science, Department of Architectural Science.
- Miljana Horvat, Associate Dean, Graduate Studies, Faculty of Engineering and Architectural Science.
- Mark Gorgolewski, Chair, Department of Architectural Science.
- Umberto Berardi, Associate Professor, Department of Architectural Science.

PROGRAM OVERVIEW

1.1.5   Program Rationale

Building science is the discipline that bridges the gap between architecture and engineering providing an analytical approach and design appreciation that clearly distinguishes it from other disciplines. It seeks to apply the scientific fundamentals of building physics to the interaction between the components of a building, its users, and the environment. It addresses issues such as building envelope design, building performance, building energy management, resilience, performance assessment, durability, forensic investigation, human interaction, life cycle costing, construction process, and building management. In recent years, building science has become closely linked with the need to provide a strong technical basis for building in a more sustainable way and address the impact of buildings on climate change. It is imperative that

sound building science principles underpin the efforts to reduce the environmental impact of buildings.[1]

The Building Science Graduate Program was established at Ryerson University in 2008, following many years as a building science undergraduate option in the Bachelor of Architectural Science program. It is an interdisciplinary graduate program unique in Canada that bridges the gap between engineering and architecture, while overlapping with both disciplines. It provides graduates of building-related programs an opportunity to explore the building science principles necessary to deliver sustainable buildings. The program provides high-quality, professionally relevant graduate education for students considering careers in the Architecture, Engineering and Construction (AEC) industry.

Throughout its first decade, the program has demonstrated the capacity to deliver high quality graduate education, to attract quality students who move on to influential positions in industry, as well as faculty members' ability to attract significant SRC funding. It has succeeded with developing a strong SRC base with Master's level students; however, to move to the next level it requires longer term and deeper research capacities offered by a Ph.D. level degree. In addition, the program has strong contacts with industry partners who work with our graduate students on research initiatives, particularly related to sustainable built environments; a Ph.D. program will allow these to be expanded. Several faculty members with expertise in building science have graduated and/or are supervising Ph.D. students conducting building science research in other departments across Ryerson; these experiences have shown that a Ph.D. program must be part of the current Graduate Program in Building Science for academic, administrative and logistical necessity. Finally, a Ph.D. program is also critical for attracting and retaining excellent faculty members, as articulated in Ryerson's Academic Plan 2014-2019, as well as in the FEAS Strategic plan 2015-2020.

In its most recent version passed by the Building Science Graduate Program Council in the Spring 2017, the program's PPR report has identified the need to add a Ph.D. program as the next stage in the evolution of this area of study and research. In addition, the Peer Review Team indicated the development of a Ph.D. program to be an immediate action item.

The Ph.D. in Building Science is aimed at providing new opportunities in advanced graduate education in building science for graduates of the MASc program in Building Science, as well as graduates from any Master's of Science and Master's of Applied Science programs in FEAS or other universities. The doctoral program is a natural extension of the Department's MASc program in building science and responds to a demonstrated demand by our graduates for doctoral studies in this area, as well as to inquiries from outside. Many of the students in our current MASc program plan to pursue careers as researchers in academia and industry that require a doctoral degree, and several of our past graduates from the MASc program have proceeded to doctoral level studies in related disciplines at other institutions.

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[1] Building science knowledge is also sometimes considered under names such as building physics, building engineering, architectural engineering and architectural physics in other parts of the world, and increasingly exists as a distinct academic program.

This program is also critical for attracting and retaining excellent faculty members, as candidates with strong research agendas and funding potential will require an established Ph.D. program to support their work. The Ph.D. in Building Science will foster research activities by allowing faculty members to supervise doctoral students within their home program. In addition, the program will increase: (i) research potential, (ii) research output, (iii) knowledge transfer, and (iv) funding.

1.1.6   Societal Need

The need for expertise in the construction industry to develop, research and apply new principles and practices of building science has never been greater given an ever-increasing urgency to address sustainability, carbon intensity and durability of the built environment. Building science enables designers to manipulate the thermal and environmental characteristics of buildings to achieve high performance criteria while reducing reliance on energy consuming building services. Ryerson University is well situated to respond to the need for high level research, doctoral education and innovation in building science since it has the only dedicated graduate level building science program in Ontario.

Being located in downtown Toronto, Ryerson University is at the centre of the 4th largest North American urban conurbation and in a city undergoing significant expansion and construction. According to 2013 - 2041 population projections for Ontario, the Greater Toronto Area (GTA) is predicted to be one of the fastest growing urban regions in North America, with its population increasing by almost 3.0 million, or 45.8 per cent, to reach over 9.4 million by 2041.[2] In that time, some $500-billion of new building construction is expected to be completed across this region, accompanied by hundreds of billions of dollars of investments in the renewal of existing buildings. Looking at all of southern Ontario, an estimated $1-trillion will be expended on new and existing buildings over the next 25 years.[3] Gradually, the architecture, engineering and construction (AEC) industry in Toronto and Ontario is embracing sustainable, energy efficient, high performance construction standards, and an awareness of the importance of sound building science is increasing. Initiatives such as revisions to codes and standards, the upgrading of the Toronto Green Standard, requirements for LEED green ratings in many projects, all result in more demanding requirements which need to be implemented with effective building science principles. This requires more building science research capacity in industry and academia.

The low carbon imperative is now becoming accepted in Ontario and Canada, and buildings are seen as a large part of the low carbon future. The Ontario Government goal is to achieve 80% reduction in carbon emissions from 1990 levels by 2050.[4] The life spans of buildings are such that current construction work will contribute to emissions for many years. Canada's building

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[2] *Ontario Population Projections Based on the 2011 Census*. Ontario Ministry of Finance, Fall 2014.
   http://www.fin.gov.on.ca/en/economy/demographics/projections/projections2013-2041.pdf
[3] Defining, Measuring and Predicting Building Performance (2015) Building Science Roundtable, Fall 2015 report,
   https://issuu.com/tedkesik/docs/building_science_roundtable_februar
[4] Ontario Climate Change Strategy, https://www.ontario.ca/page/climate-change-strategy

sector accounted for 35% of total secondary energy consumption and 25% of total greenhouse gas (GHG) emissions in 2013[5]. Also, the Feed In Tariff (FIT) and MicroFit programs have incentivised renewable energy for several years now and established Ontario as a hub for renewable energy. These initiatives place an emphasis on addressing building performance, durability, comfort, healthy environments and particularly energy efficiency. With the aging building stock and rapidly increasing new construction, the sector's environmental impact is expected to keep rising. In the City of Toronto buildings are responsible for about 40% of all greenhouse gas emissions.[6]

The scale of the challenge in reducing fossil fuel dependency in the built environment is great and will require a significant increase in research capacity, innovation, new skills and awareness within the industry. The rapid pace of change in the regulation of building energy performance is already leading to problems for the construction industry and the proposed acceleration of regulatory change towards zero carbon buildings will only highlight the limitations of the industry to deliver.

Several local, provincial and federal government initiatives are intensifying interest in building science as a basis for improving building performance, and this is likely to continue in the next 10 years and beyond. These include:

- The Cap and Trade legislation from the provincial government that will start to put a price on carbon.[7]
- The provincial and municipal initiatives to introduce energy reporting and benchmarking legislation that will require building owners to report their annual energy use to municipalities.[8]
- The City of Toronto tower and neighbourhood renewal initiative to improve disadvantaged high rise residential areas.[9]
- The Provincial proposals to introduce Circular Economy legislation that will put the responsibility for resource efficiency, recycling and waste on manufacturers and encourage reuse of products.[10]
- The Civic Action initiative "Race to Reduce" that set targets for commercial building owners to reduce energy use by 10% over 5 years. This represents more than 42% of the region's commercial office sector.[11]

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[5] Natural Resources Canada (NRC). (2014). Comprehensive energy use database.
http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/menus/trends/comprehensive_tables/list.cfm
[6] Greenhouse Gasses and Air Pollutants in the City of Toronto,
https://www1.toronto.ca/city_of_toronto/environment_and_energy/key_priorities/files/pdf/ghg-aq-inventory-june2007.pdf
[7] https://www.ontario.ca/page/cap-and-trade
[8] https://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTI2Njk2&statusId=MTkxMjM4
[9] http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=7fe8f40f9aae0410VgnVCM10000071d60f89RCRD
[10] https://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTI2Njk2&statusId=MTkxMjM4
[11] http://civicaction.ca/race-to-reduce/

- The Toronto Green Standard now requires higher levels of sustainable performance for many new buildings in the city.[12] This standard is currently being revised by the city and is expected to ramp up the energy efficiency requirements in 2018.
- The Ontario Climate Change Action Plan prepared by the Provincial government proposes to introduce house energy ratings in the near future.[13]
- Progressive changes to building codes (2012, 2017 and expected in 2022) are ramping up the energy efficiency requirements for all new buildings and increasingly require new approaches based on sound building science analysis.
- Increasingly owners now require green ratings such as Leadership in Energy and Environmental Design (LEED), Green Globes or Building Office Managers Association (BOMA) Best for their buildings.
- The Ontario Government has recently increased its focus on investment in science and technology, which is creating opportunities for individuals with the scientific training possessed by highly qualified individuals.
- The City of Toronto's ResilientTO initiatives to create resilient urban environments, and limit the impacts of extreme climate and other events.[14]
- The City of Toronto initiative to develop appropriate urban density guidelines through, for example, the Avenues and Mid-Rise Buildings initiative.[15]

To meet the demands of today's world, the AEC industry needs to build capacity in building science research and innovation yet high level graduate building science education and research in the province is limited. As suggested by the initiatives listed above, sustainable construction and improved building performance based on strong building science principles is becoming increasingly recognized as an essential aspect of contemporary building design, and will continue to exert a growing influence on both new buildings and the renovation of existing buildings. Research stemming from Building Science Ph.D.'s can form the basis for supporting these moves to increase building performance, reduce carbon use intensity, optimize durability and understand innovative enclosure systems and how they interact with the building and its surroundings.

Furthermore, several Canadian universities (British Columbia Institute of Technology, University of Alberta, University of Waterloo, Carleton) and American institutions are developing undergraduate programs in building science or related subjects such as architectural engineering in the upcoming years. The need for building science Ph.D. graduates to act as faculty members in these programs will continue to grow in the next 5 to 10 years.

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[12] http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=f85552cc66061410VgnVCM10000071d60f89RCRD
[13] https://www.ontario.ca/page/climate-change-action-plan
[14] https://www1.toronto.ca/wps/portal/contentonly?vgnextoid=82270093ae9b4510VgnVCM10000071d60f89RCRD
[15] https://www1.toronto.ca/City%20Of%20Toronto/City%20Planning/Urban%20Design/Mid-rise/midrise-FinalReport2.pdf

1.1.7   Anticipated Student Demand

There is considerable interest amongst the current student generation in sustainability issues, and developing new solutions for a high quality, robust, resilient and sustainable built environment. This is an excellent opportunity for Ryerson University to be at the forefront of this area of research. An advantage of the proposed Ph.D. program is that there is a **strong demand from domestic students** for this type of research at the Ph.D. level. Faculty members within the department receive regular enquiries about Ph.D. opportunities primarily from domestic candidates and often from our own Master's graduates. In the last two years alone, there have been approximately ten domestic students wanting to enrol in a Ph.D. program in Building Science. Currently, several faculty in the program have been able to take domestic Ph.D. students in this general subject area through other Ryerson programs such as EnSciMan, Civil Engineering, Mechanical Engineering and Electrical Engineering, as well as through other universities. In the past three years, six domestic students have been admitted to Ph.D. programs in Civil and Mechanical Engineering and Environmental Science and Management that would have otherwise been admitted to the proposed program, if it existed. **This demonstrates capacity and a demand.** However, in these arrangements, our faculty members usually can only have co-supervisory roles, which does not always reflect individuals' mentoring and funding contribution to the Ph.D. students. This can lead to negative effects on faculty members' research output and competitiveness in attracting additional funding and students.

1.1.8   Comparator Programs

There are limited opportunities for studying building science at the doctoral level in Canada. The most closely related program is Concordia University's Building Engineering program in Montreal (QC), however the field of building science is a sub-set of the larger field of building engineering. Otherwise, individual professors at the University of Toronto, Civil Engineering Department (Toronto, ON), the University of Waterloo, Civil Engineering (Waterloo, ON), the University of Calgary (AB), Laval University (QC) and UBC (BC) supervise students in this field. **These programs are typically housed in larger departmental Ph.D. programs (e.g., civil or mechanical engineering; none of these universities have a designated building science Ph.D. program).** Concordia graduates building engineering Ph.D.'s regularly, however many focus on aspects of buildings not directly related to building science (e.g. solar energy systems). In Ontario, supply is limited due to only a couple of professors at other universities supervising an occasional Ph.D. student. UBC has recently established a graduate sustainable building science program with a limited number of Ph.D. students and mainly Master's level students. Again, UBC's program is not attached to any specific department. Finally, the British Columbia Institute of Technology (BCIT) does have a Master's program (MASc, MEng), but with only three full time faculty members, it may not have sufficient capacity to establish a Ph.D. program in the near future.

Program	Specific/Targeted Program in Building Science	Housed in a Single Department	Multiple Faculty with Expertise in Classical Building Science	Estimated # of Ph.D. 's Each Year Graduating with Specific Expertise in Building Science	Additional Comments
Ryerson (proposed Ph.D. program)	Yes	Yes	Yes	2	A discrete program focusing on building science that is housed in a single department and will consistently graduate Ph.D.'s.
Concordia	No	Yes	No	0.5	Building engineering is not specifically building science.
U of T	No	Yes	Yes	0.25	2 building science Ph.D.'s have graduated in the past 8 years.
Waterloo	No	Yes	No	0.1	1 building science Ph.D. has graduated in the past 10 years.
UBC	Yes	No	No	N/A	Faculty members and trainees are based out of their home departments (e.g. engineering, architecture, and physics, etc.)

1.1.9   Program alignment with Academic Plan(s)

A Ph.D. program in Building Science aligns closely with the aims of the following university plans:

1. **Our Time to Lead** (2014 – 2019), Ryerson's five-year academic plan issued by the Provost & VP Academic;
   The Building Science Graduate program addresses these priorities by:
   • Cultivating strong ties with the AEC industry;
   • Engaging these partners in small-scale projects, through research, teaching as well as through the Collaborative Activity[16];
   • Maintaining and expanding the operations within the Building Science Lab;
   • Using a variety of educational methods; and
   • Supporting faculty in their research efforts.

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[16] This is a program requirement where students are required to undertake 50 hrs of self-directed collaborative building science related activity with groups outside the program. This can be industry groups, community groups, other student groups.

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Moreover, the 14 values identified in the *Our Time to Lead* plan, that include: excellence, academic freedom, integrity, enterprising, sustainability, people first, collegiality, lifelong learning, community, inclusion, respect for aboriginal perspectives, equity, diversity and access are also clearly shared with the Building Science Graduate Program and cultivated through the encouragement of collaborative learning, interdisciplinary expertise of our faculty members and diversity in educational background of our students.

The program will also naturally contribute to several of the 8 multidisciplinary research themes that represent Ryerson's strategic strength, including Energy & Sustainability, Health and Wellbeing, City Building, and Technological and Industrial Innovation.

2. **Striving for Excellence** (2015 – 2020), the Faculty of Engineering and Architectural Science's Strategic Plan identifies the following goals pertinent to graduate education:
   - Ensuring that our student experience is action-oriented, collaborative, interdisciplinary and rewarding, with specific attention to defining the role of innovation and entrepreneurship.
   - Strengthening and enhancing the graduate programs, with focused attention on outreach, recruitment and new program development.
   - Increasing Scholarly Research and Creative activity (SRC) intensity and impact.
   - Increasing the reputation and awareness of Ryerson's Faculty of Engineering and Architectural Science with respect to students' experience and quality, research and partnerships.

The Building Science Graduate Program has been founded on those principles and ever since its inception has been fostering the culture of an interdisciplinary approach, collaboration, and action-oriented student experience. These are implemented through SRC, courses and extracurricular activities such as successful participation in student competitions, within and outside of university (Race-to-Zero 2014, 2015, 2016, 2017; Ecostudio, etc.). Innovation and entrepreneurship opportunities provided through various incubators such as the Centre for Engineering Innovation and Entrepreneurship and/or three stages of Esch Award competition also have played a pivotal part in the success of Building Science graduate students, and enhanced their experience while enrolled in the program. The program will also be able to contribute to the newly established Centre for Smart and Future Cities in FEAS.

Interdisciplinary and collaborative approach are not only becoming recognised within the Faculty, the University as well as with the AEC industry, where the graduates of our program are highly sought as potential employees; these are becoming the points of attraction for the potential applicants that are coming to the program, recognising the challenges that climate change is posing on our built environment and natural resources.

3. **The Department of Architectural Science's Academic Plan** (2014-2019), the Department's academic plan has the following key priorities relating to program development:

   - Design and provide resources for an administrative structure with the capacity to effectively and sustainably:
     – Meet current and future demands of all programs, with a focus on student engagement and experiences;
     – Identify and maximize opportunities that support all programs;
     – Encourage advanced levels of engagement with disciplines, professions, industry, communities and city building initiatives;
     – Establish strategies to resource, coordinate and enhance SRC activities and outcomes; and
     – Nurture a critically creative, culturally, socially, and environmentally conscious atmosphere of innovation.

   The proposed Ph.D. program addresses all five key priorities directly.

   In addition to the key priorities, a specific objective of the Academic Plan is to create new graduate programs while maintaining the strength of existing graduate programs, specifically at the Ph.D. level. The proposed Ph.D. program in Building Science is a natural extension of the existing Master's level program and directly fulfills this objective within the Academic Plan. It also forms one of the development goals for the arising from the recent periodic program review.

1.1.10 Program Learning Outcomes and Graduate Degree Level Expectations (GDLEs)

The Graduate Program in Building Science develops students' knowledge and critical thinking to make sound decisions about building technology issues related to sustainable design, and to demonstrate the rationale for design decisions. Students have the opportunity to develop an in-depth understanding of how building materials, components, and services interact as systems to achieve the aesthetic, environmental, technical and spatial requirements of its users. Interdisciplinary approaches to problem solving are inherent to this program and are encouraged.

The specific interdisciplinary program aims are to:
- To address the Academy's and the AEC industry's needs for experts with a strong methodological basis for assessing advanced building science problems.
- To address the AEC industry's needs for professionals who can work in an integrated and interdisciplinary way with other specialists in a team.
- To address the needs of the Academy and industry to provide Building Science experts who can provide a strong technological basis for informing decision making.
- To maintain the Ryerson tradition of using a variety of teaching methods to integrate Building Science with architectural design objectives.
- To strengthen the Department's ability to conduct applied research.

- To develop links with other graduate programs (civil, mechanical and electrical engineering) at Ryerson University and institutions beyond.

The program has developed the following learning outcomes (LO's) for the Ph.D. program. By the end of the Graduate Program in Building Science, students should be able to:

1. Apply advanced building science principles to complex building science problems.
2. Conceptualize, design and implement research to generate new knowledge, applications or understanding of the impact of a building science problem.
3. Generate original research of consequence in the field of building science.
4. Integrate appropriate tools, techniques and theories to support applied building science research at an advanced level.
5. Independently carry out work that is ethical and demonstrates academic and professional integrity.
6. Communicate effectively in writing about applied building science research at an advanced level.
7. Communicate effectively verbally about applied building science research at an advanced level.
8. Visually present data effectively to support communication of advanced building science research results.
9. Recognize and communicate the limitation of one's own knowledge and evaluate potential contributions of other interpretations and methods.

The Doctoral GDLES listed below are explicit in their design to create high quality Ph.D. students. Table 1 shows how the Doctoral GDLES are met by the 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 including, where appropriate, relevant knowledge outside the field and/or discipline.

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.

3. Level of Application of Knowledge. The capacity to:
   a) 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 materials.

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.

5. Level of Communication Skills. The ability to communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively.

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.

Table 1 Mapping the Program Learning Outcomes Against the Doctoral GDLES

GDLE	Learning Outcomes								
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
1. Depth and Breadth of Knowledge	▓								
2. Research and Scholarship		▓	▓						
3. Level of Application of Knowledge				▓					
4. Professional Capacity/Autonomy					▓				
5. Level of Communication Skills						▓	▓	▓	
6. Awareness of Limits of Knowledge									▓

Curriculum Overview

A Master of Applied Science degree in Building Science, Civil Engineering, Building Engineering or Architecture, or a discipline related to these will be required for entry in the Ph.D. program. Within 20 months of entry into the program, students will be required to pass a candidacy exam. The aim of the candidacy exam is to evaluate the student's ability to discuss and defend the research proposal, the feasibility of the proposed dissertation project and to evaluate the student's knowledge in the area of the proposed research and related areas. The candidacy exam will comprise a written component with questions from each committee member focusing on the student's Ph.D. research proposal and a follow-up oral examination.

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Students will be required to undertake a significant piece of original research and to write up and defend their research through a final defense examination.

The proposed program offers students the opportunity to explore a subject in great detail and carry out significant research. The dissertation should represent an excellent researched contribution to the Building Science (or closely related) field. In this regard, topics that support combined aspects of simulation, laboratory and field (i.e. case study) based research will be prioritized.

Curriculum Structure

To pursue the Ph.D. in Building Science, a candidate would have to take a core course and 3 elective courses, chosen from a list of existing courses already available from the Building Science graduate program (Refer to Appendix I). These existing master's level courses will be differentiated for doctoral students, for example, through additional assignments and/or term projects that serve to address one or more the proposed program's learning outcomes. Students who have completed a master's in the existing Graduate Program in Building Science may be limited in course selection, depending on which courses they as part of their master's degree, however this should be minimal due to: (1) M.A.Sc. students taking only 5 of 10 courses offered each year and (2) rotating elective courses offered each year through the existing program. A new Advanced Building Science Theory course will be developed to support the program. Table 2 summarizes the proposed curriculum for the degree.

Table 2 Proposed Curricular Structure

Course Work	
Core Course – BL8105 Advanced Building Science (New Course)	3 hrs
Course 2 (Existing Course)	3 hrs
Course 3 (Existing Course)	3 hrs
Course 4 (Existing Course)	3 hrs
Total course hours	*12 hrs*
Experiential Learning Activities (Choose at least 1 of 3)	
Mentorship Activity**	
Industry Liaison Activity***	
Teaching component****	
Research Activities	
Ph.D. Dissertation Proposal	
Ph.D. Candidacy Exam – written component	
Ph.D. Candidacy Exam – oral presentation component	
Ph.D. Candidacy Exam – oral examination component	

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Ph.D. Dissertation – written component	
Ph.D. Dissertation – oral presentation component	
Ph.D. Dissertation – oral examination component	

     *   BL8105 – Advanced Building Science Theory will be the only new course initiated for this Ph.D. program.

    **   The mentorship activity is a pass/fail milestone activity comprising of collaboration between the Ph.D. student and students from other programs. Collaboration can be completed through various methods, including but not limited to: design competitions, completing a project for a local organization, mentoring a master's level student through their research activities, etc. The student's supervisor will oversee this activity with support from the Graduate Program Director.

   *** The Industry Liaison Activity is a pass/fail milestone activity comprising collaboration between the Ph.D. student and an industry partner. Collaboration can be completed through various methods, including but not limited to: supporting a project directly related to the industry partner's core business activities, completing a paid and/or unpaid internship at an industry partner, etc. The student's supervisor will oversee this activity with support from the Graduate Program Director.

 **** The teaching component is a pass/fail milestone in which the Ph.D. student *teaches* a course-equivalent. *Teaching* can be through a variety of means, including but not limited to: course instructor, course teaching assistant, course lab assistant, etc. As part of this component, the student will be expected to develop a teaching dossier and take course offered through Ryerson's Learning and Teaching Office.

The courses are intended build on core knowledge in Building Science and establish and advanced understanding of the subject. The mode of delivery is traditional lecture classes. These are usually intense classes where students build their core Building Science and related knowledge.

At the recommendation of the candidate's dissertation supervisor and with the approval of the Associate Chair, one or more additional courses may be required for students with a broader disciplinary background who need additional graduate preparation leading to the candidacy examination. The dissertation supervisor, and the candidate's supervisory committee, must approve the course selections or exemptions for each Ph.D. candidate.

The curriculum will be structured such that the course work is usually completed in year 1. The candidacy exam should typically be completed between 12 and 18 months in the program, after which a student will dedicate full time to their dissertation and experiential learning components, including a minimum of one of those listed in Table 2.

When choosing experiential learning activities, the student is allowed to choose activities that best support a direction representing their intended career trajectory in consultation with the student's supervisor and the Graduate Program Director.

Table 3 shows how the program learning outcomes are met by program curricular components. This demonstrates that all the learning outcomes are achieved.

Table 3 Proposed curricular structure mapped against program learning outcomes

FOUNDATIONAL / PROFICIENCY	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
Course Work									
Core course – BL8105	F		F		F	F	F	F	
Course 2	F			F		F		F	
Course 3	F				F	F		F	
Course 4	F					F		F	
Experiential Learning Activities									
Mentorship Activity**				F	F	F		F	F
Industry Liaison Activity***				F	F	F	F	F	F
Teaching component****				F	F	F	F	F	F
Research Activities									
Ph.D. Dissertation Proposal	F	F	F	F	F				F
Ph.D. Candidacy Exam – written component	F	F	F	F	F				
Ph.D. Candidacy Exam – oral presentation	F	F	F	F				F	
Ph.D. Candidacy Exam – oral examination	F	F	F	F			F		
Ph.D. Dissertation – written component		P	P	P	P	P			P
Ph.D. Dissertation – oral presentation		P	P	P	P			P	P
Ph.D. Dissertation – oral examination		P	P	P	P		P		P

Program's Relationship with Other Ryerson Programs

1.1.11 Overlap and Integration with Other Programs

Synergy with Other Programs

The Ph.D. program will add tremendously to the existing Graduate Program in Building Science in that will elevate the discourse within, the research output and the overall quality of the program. The Master's students will benefit by being exposed to the higher level of research activities through collaboration with Ph.D. students. In return, Ph.D. students will be able to establish and maintain close ties with industry through working with Master's students who will be employed in the field. In addition, Ph.D. students will have an opportunity to develop their professional and leadership skills through mentoring Master's and undergraduate students in shared research activities. Finally, senior Ph.D. students may have opportunities to teach some of the building science related courses in the undergraduate program in the Department of Architectural Science, either in fundamental years or in the 4th year of the building science specialization, and may have opportunities as Graduate Assistants to work alongside faculty members to help with course preparation and delivery.

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Intersection with Other Programs

The Ph.D. (Building Science) will be a stand-alone degree; however, the courses and research expertise may be enriched by intersecting with graduate students and faculty in Architecture, other engineering programs (e.g., Civil and Mechanical), and Environmental Applied Science and Management (EnSciMan) graduate programs. Building Science Ph.D. students will collaborate with students in related graduate programs across the university. This trend has already been established with Master's level students in the Graduate Program in Building Science. Other graduate programs across the university will benefit from collaborating with Ph.D. students having expertise in building science to enrich both their extra-curricular (e.g. design competitions) and academic experience. Students may also engage with research through the Centre for Urban Energy and the new Centre for Smart and Future Cities.

Similarity with Other Programs

Building Science is a unique field and is only offered in the Graduate Program in Building Science in the Department of Architectural Science. No significant overlap or similarities are anticipated with other graduate programs in the Faculty of Engineering and Architectural Science, nor any other program at Ryerson University. Building Science is a discrete discipline in FEAS at the intersection of civil engineering, mechanical engineering and architecture. The program cannot be offered in any other department within FEAS or the university at large since the field of Building Science is discretely taught and faculty expertise resides in the Department of Architectural Science with a complement of 9 faculty whose work is predominantly in this subject area.

Overlap or Duplication with External Programs

The existing Graduate Program in Building Science, which currently offers a Master's degree, is **unique in Canada** (and North America) in that it **is a stand-alone graduate program in building science**. The program includes a wide range of technically based building science research output both at the micro scale (i.e., material based research) to the macro scale (i.e., community based research) and all in between (i.e., assemblies, components, whole buildings). The interdisciplinary and collaborative approach of the program is a point of attraction for the potential applicants, recognising the challenges that exist for our built environment and natural resources, and the need for new ways of thinking. **There is no other graduate level building science program housed in a single department and dedicated to the advancement of building science research in Canada.**

Provost's Authorization to Proceed

A copy of the Provost's authorization to proceed has been included in Appendix J. The authorization is supportive with no specific comments and recommendations to address.

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PROGRAM DETAILS

Alignment with Institution's Plans

1.1.12 Consistency with Academic Plans

The proposed Ph.D. program in Building Science aligns closely with the aims of major university plans, including: Our Time to Lead (2014-2019), Striving for Excellence (2015-2020) and the Department of Architectural Science's Academic Plan (2014-2019). Through course work, experiential learning activities and the Ph.D. dissertation (outlined in Table 2, above), the proposed program's learning outcomes (Section 1.2.6) are achieved as outlined in Table 3. The proposed curricular structure also aligns with the GDLEs for Ph.D. level programs as shown through the learning outcomes in Table 1.

1.1.13 Graduate Degree Level Expectations and Learning Outcomes

The Graduate Degree Level Expectations (GDLEs) for a doctorate program are listed in Appendix A. Table 1 above shows how the proposed program learning outcomes satisfy the doctorate level GDLEs.

1.1.14 Degree Nomenclature

The degree nomenclature is appropriate given the learning outcomes achieved upon graduating.

Admissions

1.1.15 Admission Requirements

The doctoral program in Building Science will follow the admission requirements of other Ph.D. programs in FEAS. They are:

- Demonstrated capacity to undertake advanced research through completion of a Master's Degree in Building Science, Civil Engineering, Mechanical Engineering or a related Applied Science Field.
- Minimum grade point average (GPA) of 3.33/4.33 (B+).

English Language Requirements
Applicants who did not complete their Bachelor's or Master's degree in the English Language will be required to submit an English Language Proficiency Test Score. The minimum required scores are as per the general requirement for all other graduate programs at Ryerson:[17]

TOEFL (BIT)	IELTS - Academic	MELAB	CAEL	PTE
93	7.0	85	70	63

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[17] http://www.ryerson.ca/graduate/admissions/requirements/

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For exemption from this requirement, applicants are required to provide an official statement from their institution confirming that English is the language of instruction and examination for the duration of study. Other exceptions may also be considered, as approved by the Associate Chair for the Building Science Graduate Program, FEAS Associate Dean Graduate Studies and the Vice-Provost and Dean of Yeates School of Graduate Studies.

Program Specific Documents Required for Admissions
1. Statement of Interest: A statement of 500-1000 words should address the following:
    • Applicant's reasons for pursuing doctoral studies in Building Science.
    • The research interest(s) they may wish to pursue in a doctoral dissertation.
    • How their previous studies and experience have prepared them for this program.
    • Their career objectives and how this degree program relates to them.

2. Curriculum Vitae: This will include all applicable work experience and publications.

3. Letter of Recommendation (2):
    • All letters of recommendation must come directly from the referee. At least one recommendation letter must be from a professor familiar with the student's work. Student submitted copies will not be accepted.

4. Transcripts
    • Transcripts are required from every degree granting institution the student has attended.

5. Examples of Work (may be requested by proposed supervisor)
    • The proposed supervisor may request copies of previous theses, published articles, reports, etc. to assist in evaluating the student's background.

6. Faculty Supervisor
    • Applicants will list the Building Science Faculty member(s) that they wish to be supervised by (or have already agreed to be supervised by) in their online application.

The admission requirements outlined above adequately prepare incoming students to achieve the learning outcomes for the Ph.D. degree upon graduation.

1.1.16 Calendar Admission Requirements

The following text is taken from:
https://www.ryerson.ca/graduate/future-students/apply/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, you must have achieved a minimum of 3.33/4.33 (B+ or equivalent) in your master's program.

The Yeates School of Graduate Studies is committed to maintaining high quality graduate and professional programs and to offering admission to those applicants that are best qualified and most likely to succeed in these programs. Due to the competitive nature of our programs, it is not possible to offer admission to everyone who applies that meets the minimum entrance requirements for the program. All applications will be considered on an individual basis and subject to competition.

Please review the specific program requirements that you are applying for carefully.

If you have studied outside of Canada, we will use your institution's grading scale to calculate your GPA."

1.1.17 Admission Requirements and Student Achievement of Learning Outcomes

The admission requirements are appropriate for the learning outcomes because they ensure potential students will have the academic, research and experiential background needed to integrate and apply the knowledge and skills delivered in the program. The B+ average minimum offers evidence that candidates are competent academically.

The CV and transcripts will allow the admissions committee to assess applicants' prior experience in the academic and/or professional field of building science. The applicants' Master's degree will demonstrate the basic knowledge associated with the ability to achieve the proposed learning outcomes.

The statement of interest and samples of work will allow the admissions committee to assess applicants' ability to achieve learning outcomes 6, 7 and 8 as they related to written, verbal and visual communication. A meeting with the potential supervisor prior to admission can further add to this assessment.

Applicants who lack pertinent skills may be asked to take appropriate additional courses dependent on their academic background.

1.1.18 Alternative Requirements (if applicable)

None.

Structure and Graduate Degree Level Expectations

The program is structured with three core component groups: courses, experiential learning and research. As shown in Table 1 and Table 3 above, the program is structured in a manner that the program learning outcomes meet the doctoral level GDLES and the curriculum components combine to meet the program learning outcomes. Table 2 above presents the breakdown of the components of the curriculum.

Program Content and Curriculum

1.1.19 Curriculum and Current State of the Discipline

The existing Graduate Program in Building Science curriculum currently addresses the current state of the discipline through its core and elective courses in addition to Master's level theses completed by all students. This was confirmed during the program's recent PPR self-study and site visit. The proposed Ph.D. in Building Science will continue to address the current state of the discipline through the Ph.D. dissertation while being supported by core and elective courses.

1.1.20 Unique or Innovative Features

The Ph.D. in Building Science will be the first in North America; in itself that is an innovative aspect of the Graduate Program in Building Science.

A unique aspect of the curriculum is the inclusion of three experiential learning activities; one with focus on mentoring, teaching and professional activities. The choice of at least one of these activities as a degree requirement allows our students to focus on an area of experiential learning that supports their career trajectory. For example, a Ph.D. applicant in our program may know s/he is pursuing a career in academia; as a result, s/he may choose to engage with the Mentorship Activity and Teaching Component in order to gain experience in these vital academic areas.

1.1.21 Professional Licensing/Accreditation (if applicable)

Not applicable.

Mode of Delivery and Graduate Degree Level Expectations

1.1.22 Planned Modes of Delivery

The proposed mode of delivery for the Ph.D. in Building Science intentionally includes a variety of modes of delivery and student experience to accommodate different aspects of learning, including: (1) in-person interactions within and outside the classroom, with students and/or industry contacts and with a student's supervisor and supervisory committee, and (2) independent learning with faculty supervision in the form of a dissertation. The courses are delivered in small lecture classes with a variety of assignment types and, sometimes exams. This is seen as most appropriate for developing advanced knowledge in the field.

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The experiential learning component of the program is more flexible and require students to take initiative to find opportunities to complete the activities (e.g. collaborative activity, industry liaison activity).

The research component will follow the traditional mode of delivery for a Ph.D. Dissertation in engineering.

Table 4 provides a summary of the program in which the relationship between the required curriculum courses, experiential learning activities, and dissertation with the LO's for the proposed program and the doctoral degree GDLE's.

Table 4 – Teaching and Assessment Methods Mapped to Program LO's and GDLE's

Curricular Activity	Teaching Format	Assessment Format	LO's Addressed	GDLE's Addressed
BL8105 – Advanced Building Science	Lecture and/or lab sessions, discussions, guest speakers, small group work	Assignments (Individual and group); Project; Presentations; Test; Exam	LO1, LO2, LO3, LO4, LO5, LO6, LO7, LO8, LO9	1, 2, 3, 4, 5, 6
Course 2	Lecture – discussions, speakers, small group work	Assignments; Papers; Tests; Exam	LO1, LO5, LO6, LO7, LO8, LO9	1, 4, 5, 6
Course 3	Lecture – discussions, speakers, small group work	Assignments; Papers; Tests; Exam	LO1, LO5, LO6, LO7, LO8, LO9	1, 4, 5, 6
Course 4	Lecture – discussions, speakers, small group work	Assignments; Papers; Tests; Exam	LO1, LO5, LO6, LO7, LO8, LO9	1, 4, 5, 6
Mentorship Activity	One on one meetings, small group work, large group work	Presentations; Projects	LO4, LO5, LO6, LO7, LO8, LO9	3, 4, 5, 6
Industry Liaison Activity	One on one work; group work	Placement; Reports; Presentations; Projects	LO4, LO5, LO6, LO7, LO8, LO9	3, 4, 5, 6
Teaching Component	One on one work, group work	Teaching Placement; Presentations; Lectures	LO4, LO5, LO6, LO7, LO8, LO9	3, 4, 5, 6
Dissertation	Independent work with faculty supervision	Research Proposal; Candidacy Exam; Final Exam	LO1, LO2, LO3, LO4, LO5, LO6, LO7, LO8, LO9	1, 2, 3, 4, 5, 6

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1.1.23 Learning Objectives and Graduate Degree Level Expectations (GDLEs)

The face-to-face, in class, full time modality for teaching supports the Graduate Degree Level Expectations (GDLE's) and the proposed program's Learning Objectives (LO's). The courses deliver foundational exposure to all proposed LO's and GDLE's (Refer to Table 4).

Depth and breadth of knowledge encompasses program LO # 1 in which a thorough understanding of substantial knowledge related to theories, research methods, and data analytical principles of building science is demonstrated through discussion and debate within the classroom. Group work activities and classroom discussions further nurture the evolution of this depth and breadth of knowledge throughout the 4 courses. As well, course-based papers and tests that focus on review and critical analysis of building science theory and application further demonstrate this depth and breadth of knowledge.

Research and scholarship incorporates program LO's # 2 and 3 in which the ability to conceptualize, design and implement research for the generation of new knowledge; and to adjust the research design or methodology in light of unforeseen problems is demonstrated through in-class discussion, group activities, laboratory work and assignments.

Level of application of knowledge encompasses the program LO # 4 in that all students are expected to design, implement, and evaluate a pure or applied research study at an advanced level. In doing so, they enhance their overall academic skills related to research methods, theory development, and data analytic techniques. Furthermore, the GDLE related to communication skills embeds program LO's # 6, 7 and 8 and is evident through individual and group presentations; experiential learning activities; interactions with supervisor, supervisory committee, and research teams and partners; and ability to lead and facilitate supervisory committee meetings.

Professional capacity and autonomy embeds program LO # 5 in which intellectual independence and the performance of ethical behaviors consistent with academic integrity is most evident through written assignments and oral presentations. Specifically, students will be expected to engage in active leadership through the experiential learning activities and in courses through group activities and discussions.

Awareness of Limits of Knowledge is covered in program LO # 9. This is presented as foundational content through the courses and is developed through the experiential learning activities. Proficiency in this area is achieved through the dissertation activities.

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

1.1.24 Intended Teaching Methods

The teaching methods for the Ph.D. in Building Science will follow the methods currently being used in the Graduate Program in Building Science.

The program will draw from a variety of teaching methods to provide and rich, dynamic and effective learning experience for students. The main teaching methods include lectures, class discussion, group learning (of various sized groups), laboratory experiments and demonstrations, applied research, collaborative project oriented learning and placement based learning.

All core course work in the program's curriculum is designed to prepare students to engage in advanced applied building science research. The elective course work will be designed by the student (in consultation with her/his supervisor) to support the Ph.D. dissertation topic in the most robust manner possible at that stage.

The experiential leaning components will be designed to support students' in identifying strengths and weaknesses in the field and will result in a reflective understanding that will guide the student's career trajectory beyond the Ph.D. program.

The Ph.D. dissertation will be executed in the traditional approach of engineering based Ph.D. programs.

1.1.25 Assessment Methods for Student Achievement and Learning Outcomes and Graduate Degree Level Expectations (GDLEs)

The Ph.D. in Building Science will draw on a variety of teaching methods to ensure the program learning outcomes and GDLEs are met. The main teaching methods will include: lecture, small group activities, large group activities, laboratory demonstrations/activities, tests, exams, guest presentations, student presentations, and one-on-one student interactions with supervisor (and co-supervisor, if applicable) and supervisory committee.

Table 4 above shows how students will be graded on course deliverables reflecting several program LO's and GDLE's in both written (assignments, quizzes, projects, exams, etc.) and oral (presentations, informal discussion, etc.) forms. The core course will likely have a heavier reliance on traditional test/exam based assessment to support the quantitative nature of foundational and advanced building science knowledge. Elective courses will transition into application and may have more reliance on project based assessment.

The courses will have a mix of individual and group assessments. The individual assessments are necessary as a type of quality control, to ensure students have the requisite knowledge at an individual level, developing professional capacity and autonomy. Students breadth and depth of knowledge of foundational content will be achieved by the end of the course work.

Research and scholarship capabilities are developed through the Ph.D. dissertation.

Students must complete all courses with a grade of B or higher, consistent with the existing Yeates School of Graduate Studies policies on grading, promotion and academic standing. Milestone experiential learning elements will be pass/fail and assessed by a student's

supervisor and the GPD. The Ph.D. dissertation (and its associated components) will be a pass/fail milestone graded by the Ph.D. dissertation supervisory committee.

All academic standing, promotion and graduation requirements for this program will confirm to the most recent policies approved by Senate. There are no variations planned for this program.

1.1.26 Student Performance and Graduate Degree Level Expectations (GDLEs)

All course work will utilize the same framework of assessment of student performance. The framework is based on a common rubric (see Table 4) developed by mapping the GDLEs against the program's learning outcomes.

Table 4 Common Assessment Rubric

Graduate Degree Level Expectations (GDLEs)	Element Expectations
1. Depth and Breadth of Knowledge	Advanced principles are presented coherently and critically, using peer reviewed literature, that addresses the complex problem.
2. Research and Scholarship	Use of relevant literature that supports generation of new knowledge and original research.
3. Level of Application of Knowledge	Competence in applying an existing body of tools, techniques and theories.
4. Professional Capacity/Autonomy	Application of organizational, professional and social ethics in academic and professional decision making
5. Level of Communication Skills	Coherence, clarity, persuasiveness in written, oral and presentation formats
6. Awareness of Limits of Knowledge	Articulation of limitations and implications of approach; Cognizance of alternative solutions and perspectives

All Ph.D. students will be required to submit academic progress reports each semester in accordance with Ryerson Policy 142.

1.1.27 Promotion and Graduate Requirements (if applicable)

It is not anticipated promotion and graduate requirements will vary from Ryerson's policies on grading, promotion and academic standing.

Resources (Developed in Consultation with University Planning Office)

The UPO has assessed our proposal and provided the following commentary:

"This proposal can proceed to the next stage and does not need to be held back in relation to its financial aspects. Funding is via a reallocation of existing domestic Ph.D. funded spaces within FEAS as confirmed in the September 28, 2017 memo from the Dean of FEAS that was included with the latest material forwarded on November 17, 2017."

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1.1.28 Human, Physical, and Financial Resources

People: Currently, the Department of Architectural Science consists of twenty-seven full-time faculty. Of these, nine faculty are consistently involved in teaching and supervision in the Graduate Program in Building Science. Of these, six hold a Ph.D. in a subject related to building science, and are capable of Ph.D. supervision: Dr. Mark Gorgolewski, Dr. Ramani Ramakrishnan, Dr. Russell Richman, Dr. Zaiyi Liao, Dr. Miljana Horvat and Dr. Umberto Berardi. In addition, several more faculty members from within and outside of the department have been involved in supervision and/or co-supervision of M.A.Sc. and M.B.Sc. students: Dr. Paul Floerke (Arch), Dr. Alan Fung (MIE), Dr. Pamela Robinson (SURP), as well as from outside of Ryerson: Dr. Marianne Touchie (U of T), Dr. John Straube (Waterloo), Dr. Hua Ge (Concordia), Dr. Kim Pressnail (U of T).

Considering that the Ph.D. intake will be 2 students a year, **there will be no need for additional academic and administrative staff support.** The current Associate Chair, Graduate Program Building Science[18] will continue to oversee the academic aspects of the program, while the Graduate Program Administrator, even with the inclusion of duties related to Ph.D. studies (admissions, scheduling the candidacy exams, dissertation defenses) will continue to provide administrative support, as their workload will still be within norms in other FEAS graduate programs.

The technical support in the department is provided by a building science lab technician (hired in August 2017), whose duties revolve around providing support for Building Science graduate students and faculty members SRC. In addition, the department has two full-time IT staff, as well as three technicians in the fabrication lab, who also provide support to the Building Science graduate program based on needs.

In conclusion, **there will be no requirement for additional personnel** for operating this new Ph.D. program**.**

Space: A secure studio space is dedicated for the use of current graduate students in the Building Science Master's program in the south of the 1st floor of the Architectural Science building. This space is sufficient for the new Ph.D. students to have a dedicated workstation next to M.A.Sc. students who already have dedicated desks, in addition to shared desks available for M.B.Sc. students. This is a valuable space which is used as a base for students in the program; it allows for individual as well as for collaborative work. Moreover, the department has dedicated an additional space for Ph.D. students to use as an office, that has been used for several years by Ph.D. students supervised by our faculty in other programs. The existing spaces can accommodate the anticipated steady state of 8 Ph.D. students. In summary, **there will be no additional space requirement** for the Ph.D. Program in Building Science.

Other Physical Resources: The existing facilities include the **Building Science Lab** that provides a space for experimentation and testing focusing on materials and performance. It includes a variety of equipment for use both in the lab and for testing buildings, such as a wind tunnel,

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[18] Formerly known as Graduate Program Director.

thermal conductivity measurement equipment, equipment for air pressurization/depressurization tests, infra-red cameras, monitoring equipment, acoustics and light sensors, drying oven and air quality measurement equipment. The department is currently improving this facility to meet the increasing demands of the SRC and student work in this subject. **BeTOP -** a new CFI sponsored Advanced Building Technology Lab is a customized, full-scale, outdoor enclosure for performing cutting-edge research on advanced building systems enhanced with different nanotechnologies. The enclosure, named BeTOP (Building efficiency: Testing, Operation and Performance), has been designed to enable investigations of the dynamic interactions between building envelope components, indoor environments, and mechanical systems for Canadian buildings. The cell is able be divided in two chambers controlled by different HVAC systems, allowing the effects of the investigated outdoor modules to be studied in comparative ways. An agreement has also been signed with Schneider for a $1M in-kind contribution to create a **Smart Buildings Analytics Lab** and we are working with campus Facilities to create appropriate space for this.

Within the department, the **Computer Aided Design Lab** is an instructional computing space that includes 40 graphic computing workstations, laser printer and digital projector. Workstations provide a wide range of graphic, CAD and Building Science software applications. Major software titles include: Adobe Illustrator, InDesign, Photoshop, Premiere, AutoDesk 3DMax, AutoCAD, EcoTect, Navisworks, NARevit, AutoDesSys Bonzai3D, FormZ, Bentley Microstation, GenerativeComponents, Chaos Group V-Ray, McNeel Rhinoceros 3d, Grasshopper, Microsoft Office Suite, Oracle OpenOffice, Primavera, WUFI, Therm, Design Builder, IES VE. Finally, the Department has a state of the art **Fabrication Lab** which supports student exploration of three-dimensional design, scale model work and prototype construction. It provides a table saw, band saw, milling and sanding devices, hand tools and work surfaces to support traditional wood work; in addition to laser cutters and a 3D printing machine to support rapid prototyping. Recently, new equipment has been added to our Digital Fabrication Lab: a CNC 3-axis milling table (5'x10') and an industrial laser cutter. The lab will be receiving a new robotic arm and is has recently undergone a full-scale renovation.

To summarize, the Department of Architectural Science and the Building Science Graduate Program are well equipped at the moment to support a Ph.D. program. No new equipment is currently required to support the proposed Ph.D. program.

Funding: It is expected that this program would initially take **up to two Ph.D. students per year reallocated from the existing unfilled domestic Ph.D. seats in FEAS**.

1.1.29 Quality Graduate Research Support

Research funding awarded to building science faculty at Ryerson has been steadily increasing which facilitates support for Ph.D. students. *In particular, with research grants for over $700,000 awarded in the year 2016/2017 to Building Science faculty, there is a significant momentum to support growth of our research capabilities.* Table 5 shows the growth of research funding for Building Science faculty since 2010, from sources such as including from NSERC, SSHRC, OPA, MITACs, OCE, SSEF, industry, etc.   Funding packages for Ph.D. students will

have a guaranteed minimum in line with FEAS norms. The packages will be a combination of RGF, stipends, TA assignment and external scholarships.

Table 5 Summary of Research Funding from Faculty Research Funding Accounts (2010 to 2017)

2010	2011	2012	2013	2014	2015	2016	2017	Total
$112,500	$110,000	$133,500	$152,000	$123,000	$300,000	$233,500	$710,000	$1,873,621

1.1.30 Faculty Expertise

Nine faculty members form the core faculty that will deliver and/or support the program. Of these nine, six are able to supervise Ph.D. students in Building Science.

Core Faculty with Ph.D. Supervision Capability

Dr. Umberto Berardi
Courses taught: BL8100, BL101, BL8104

Dr. Berardi is an Associate Professor at Ryerson University, in Toronto (Ontario, Canada). His main research interests are related to the study of building systems that incorporate new materials for improved performance. Dr. Berardi has an extensive publication record for his career stage, including over 70 peer-reviewed journals, 70 international conference papers, and four books. In terms of research outcome, Dr. Berardi's publications have received over 2500 citations in Google Scholar, where he has an h-index of 23, while Scopus database already counts over 1400 citations and an h-index of 17.

Dr. Berardi is the Chair of IAQVEC 2019. Moreover, he was the International Committee Chair of the International Conference on Sustainable Design, Engineering and Construction - ICSDEC 2016 - in Tempe-Arizona. He has been a member of the scientific committee of over 20 international congresses in 15 countries and has given keynotes at international conferences.

Dr. Berardi contributes to several academic and scientific communities. He is the Editor-in-Chief of the Journal Canadian Acoustics, and he has been the editor of several special issues for journals such as Buildings, Sustainability, and Advances in Mechanical Engineering. He is also a member of the editorial board of the following journals: Sustainable Development (Wiley), Intelligent Building International (Taylor), Buildings (MDPI), Sustainability (MDPI), and Energy and Policy Research (Taylor). He has acted as a reviewer for over 70 journals and has been recognized as an Outstanding Reviewer for journals such as Building and Environment, Energy and Buildings, and Sustainable Cities and Society.

Dr. Berardi has a body of funded research comprising over $1.3M in government and private sector sponsored research. In the last two years, he has been awarded a CFI-JELF; NSERC Discovery Grant; Early Research Award from the MRI - Ontario; Building Excellence Research and Education Grants from the BC Housing - Homeowner Protection Office; OCE-VIP projects; a

Ryerson University Innovation Equipment grant; Ryerson Dean's Research Fund for Tools and for Undergraduate Research Experience and several NSERC Engages

Areas of Specialization:
- Acoustics and noise control in buildings
- Building materials analysis
- Analysis of building envelope systems

Dr. Mark Gorgolewski
Courses taught: BL8102, BL8104

Dr Gorgolewski is a Professor and Chair of the Department of Architectural Science at Ryerson University in Toronto. He has worked for many years as an architect, researcher and sustainable building consultant in Canada and the UK. He has been a director of the Canada Green Building Council and chair of the Association for Environment Conscious Building and is a LEED Accredited Professional. Mark has written many papers and books on the subject of sustainable built environments. Currently his areas of research include building performance, and reuse of components and materials in buildings. Mark has participated in various sustainable building projects, including a winning design for the CMHC Equilibrium (net zero energy) Housing Competition and is also co-recipient of the 2007-2008 ACSA/AIA Housing Design Education Award, and recipient of the 2012 H.A. Krentz Research Award from the CISC and the CMHC 2013 Excellence in Education Award.

Areas of Specialization:
- Sustainable design
- Building performance assessment
- Low energy building design
- Circular materials systems

Dr. Miljana Horvat
Courses taught: BL8101, BL8212

Dr. Miljana Horvat is an architect (Arch.Dipl.Ing., Belgrade and M.Arch., McGill) who also completed her Ph.D. in Building Engineering at Concordia University in Montreal. Her research includes design for energy efficiency, performance of building envelopes for cold climates, sustainability and solar energy and architecture. For her research, she has been and still is awarded funding from NSERC and NRCan CANMET/Energy Sustainable Buildings and Communities group. Dr. Horvat teaches courses in Building Envelope Systems, Advanced Building Envelope Systems, Studio in Collaborative Practice, Sustainable Housing Design and Solar Design both on undergraduate and graduate levels. She also supervises graduate students in M.Arch., M.Sc. (Building Science), M.A.Sc. (Building Science) and M.A.Sc. (Environmental Applied Science and Management) at Ryerson.

Areas of Specialization:

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- Solar energy and architecture
- Hygrothermal performance of building envelopes
- Advanced energy efficient facades
- Sustainability
- Performance evaluation of existing buildings
- Housing

Dr. Zaiyi Liao
Courses taught: BL8103, BL8205

Dr. Zaiyi Liao is a graduate of Tsinghua University, China and was awarded a Bachelor's Degree in 1988 and M.ASC in 1990. In 2004, he joined the Department of Architectural Science at Ryerson University after completing his Ph.D. at the Department of Engineering Science, at Oxford University. He is currently teaching in the area of building science.

With funding from NSERC (DG and RTI), CFI, OCE (CollaborativeResearch), OPIC, MTO (Ministry of Transportation Ontario), Ryerson Interdisciplinary Research Initiative, and industrial resources (PPIC, TROW), Zaiyi's current research covers building energy efficiency, intelligent instrumentation and control technology, new-generation of pipeline inspection based on AET (Acoustic Emission Technology), infrastructure-free indoor positioning system and application in fire-fighting operations, computational modeling and simulation of building performance (thermal simulation, ventilation, spread of fire and smoke in buildings). Zaiyi has published 50 journal papers and more than 50 conference papers.

Since 2008, Prof Liao has been offering a fourth-year design studio, known as China Studio, through which a total of more than one hundred Ryerson students have travelled to China exploring the architecture and culture in this distant country.

Areas of Specialization:
- Building Automation
- Fire Safety
- Wastewater Treatment
- Intelligent Sensors and Instrumentation for Construction
- Fundamental Study on the Application of Fuzzy Logic and Neural Network in Inferential Sensing and Control Technology
- Solar Energy Technology and New Generation of Sun-tracking Technology
- Infrastructure-free Indoor Positioning Technology
- Vehicle Classification on Construction Site
- Acoustic Emission Technology for Detecting Faults in PCCP (Pre-stressed Concrete Cylinder Pipeline)

Dr. Ramani Ramakrishnan
Courses taught: BL8211, BL8206

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Ramani Ramakrishnan is a graduate of the Indian Institute of Technology (Madras) with a degree in Civil Engineering. Ramani was offered a research fellowship through the NASA Langley Research Center, George Washington University program in Aero-acoustics at NASA's research center in Hampton, VA, USA. Ramani completed his graduate studies with a MS (1973) and a doctorate (DSc, 1977). After his Postdoctoral studies in high intense sound propagation in ducts at ISVR, University of Southampton, UK, Ramani worked in the USA and Canada in the areas of architectural acoustics, building acoustics, aero-acoustics, noise & vibration control. Ramani has been teaching at Ryerson since 1984 and joined the faculty full time in 2000. Ramani teaches acoustics, light and Building Science courses, and has considerable expertise in the field acoustics and noise control. He has published extensively and serves in a number standard committees. Ramani's M.Arch. student, Ben Gaum, won the prestigious Newman award in 2009 for his architectural acoustics thesis, 'Sound Created Form.'

Areas of Specialization:
- Acoustical modeling
- Noise control
- Architectural acoustics
- Aero-acoustics

Dr. Russell Richman
Courses taught: BL8100, BL8101, BL8204, BL8213

Dr. Richman completed his undergraduate, masters and doctorate degrees at the University of Toronto (Civil Engineer). Dr. Richman has researched in the combined areas of Building Science and Sustainable Buildings since 1998. Dr. Richman heads the Sustainable Buildings Group at Ryerson University. He is pivotal in delivering the Graduate Program in Building Science through the Department of Architectural Science. His research interests include: adapting the Passive House standard to North America's climate, development of a Sustainable Renovation Rating Index and quantifying air-tightness in residential dwellings. As a registered professional engineer (ON), Dr. Richman continues to practice, providing expert opinion on a variety of building envelope related projects in Canada and internationally.

Areas of Specialization:
- Building Science
- Sustainable Buildings
- Low-Energy Housing
- Building Simulation

Additional Core Faculty
Professor Hitesh Doshi
Courses taught: BL8208, BL8210

Prof. Doshi has been a Professor in the Department of Architectural Science since 1994, focusing on working with students interested in the art and craft of making buildings that perform. He has also been a practicing Professional Engineer in Ontario in the area of Building Science, since the mid 1980's with several years in a large firm, and recently on his own undertaking specialized work. In the industry, Hitesh is known for his work on roofs and since 2005 he has been recognized for his work on green roofs. This work has allowed the City of Toronto to win the FCM-CH2MHill award in 2007, and create a welcoming environment for sustainability including the green roof by-law. Hitesh's teaching at Ryerson has focused on structures, building materials, and building performance. Hitesh has also been recognized for his efforts with awards from the Engineering Faculty, Ryerson and the ACSA.

Hitesh's scholarly emphasis intersects areas such as climate change impacts, visualization, value engineering and policy making research as they apply to wall, windows and roofs. He has interest in working on characterizing buildings for use in GIS analysis, green roof construction standards, construction performance guidelines, control of water flow over vertical building surfaces and impact of air pollution on durability of building envelope systems.

Areas of Specialization:
- Green roofing
- Performance and rehabilitation of buildings and durability of building envelope components
- Value engineering, life cycle costing, decision theory and building economic modeling
- Visualization of building envelope details
- Technology and teaching

Professor Jennifer McArthur
Courses taught: BL8201

Prof. McArthur's research interest focuses on the integration of Big Data analytics and visualization within BIM and how this information can better inform projects through the lifecycle (design, construction, and facility management). In addition, I have a strong interest building sustainability and occupant health, and particularly how to integrate these elements along with commercial/financial performance to inform strategic retrofit investment within a building portfolio.

Key areas of research are:
- Re-envisioning BIM in Facility Management
- Integrating Big Data into BIM
- Effective BIM Execution Planning
- Strategic Investment in Building Portfolio Retrofits

Professor Vera Straka
Courses taught: BL8104, BL8207, AR8220

Prof. Straka teaches in the area of building science, including structures and materials, integration studio, building performance and sustainable design at undergraduate and graduate

levels. She has organized many charrettes and extracurricular activities for students with the strong representation from the industry. Her commitment to Ryerson includes supervision of graduate students and work with both teaching and research assistants. She is a recipient of Ryerson University teaching award.

She is a member of CSA TC on Sustainability Buildings which recently published CSA Z783 – Deconstruction of buildings and their related parts. She has been a judge of many architecture competitions and reviewer for many refereed conferences, Canadian masonry, Plea and CSCE. Her research interests are in the following areas: building performance, resource efficiency and sustainable design. Building performance research interests include building envelope performance where the most recent funded research included the water penetration through thinner masonry veneer; post- occupancy evaluation, energy efficiency, benchmarking, occupant comfort and retrofit of existing buildings are currently in progress on multi-unit residential buildings. Previous projects included POE's on schools and office buildings. The multi-unit residential project is in the middle of a two-year funded period. Sustainable building performance has been of interest for number of years.

Areas of Specialization:
- Structural design
- Materials
- Durability
- Sustainability

1.1.31 Supervisory Loads

Given the anticipated enrolment for the Ph.D. in Building Science is 2 students per year, supervisory loading is not expected to be an issue. Professors able to supervise Ph.D. students are expected to engage with candidates prior to the admission process. As such, the small additional loading is the responsibility of the individual supervising professor. For all other aspects of loading, the addition of 2 Ph.D. students per year is anticipated to have negligible effects on the current Graduate Program in Building Science with an annual intake of twenty masters level students. In summary, the current program will be able administer the Ph.D. students with little change to its current operating structure.

1.1.32 Number of Faculty and Support Staff

As noted in Section 2.7.4, the current Graduate Program in Building Science is anticipated to administer the Ph.D. students through its current operating structure. **No additional faculty members or support staff are required to deliver the proposed Ph.D. in Building Science.**

1.1.33 Projected Enrolment

The anticipated enrollment for the Ph.D. in Building Science will be up to 2 incoming students per year, with estimated 8 Ph.D. students at the steady state.

1.1.34 Tuition

Tuition for the Ph.D. in Building Science program will be based on the Faculty of Engineering and Architectural Science's annual domestic full-time fee for PhD programs of $9,283.80 for 2017-2018. Students pay tuition fees per term, as per Ryerson University policy, which is equal to 1/3 of the annual amount.

The process for student flow-through will be based on the existing Master's of Building Science program which benefits from good time to completion rates with an average of 2.0 to 2.4 years to completion (for M.A.Sc.) and 1.0 to 1.4 years (for M.B.Sc.). A similar strategy will be employed over the course of the 4 year doctoral program and will be customised to reflect the anticipated diverse research focus and student population to enhance student flow-through the program.

1.1.35 Student Financial Assistance

As noted in Table 5 (Section 2.7.2), research funding in the Graduate Program in Building Science has increased significantly over the past five years. A significant portion of this research funding is strictly allocated for graduate student supervision. Any incoming Ph.D. student will have a funding package created prior to starting the degree, which will be communicated to them at the time of the admission offer. Given the current landscape in FEAS, we anticipate our funding packages to be competitive against other institutions in order to maintain adequate quality and enrolment. As per new FEAS graduate student funding structure that is being rolled out as of 2018-19 admission cycle, the minimum funding package for research students includes $15,000 on top of tuition & fees, guaranteed for 4 years for PhD, and conditional on satisfactory academic performance and research progress and availability of funds. This support is combination of university and faculty based scholarships, supervisors' stipends and income from GA/TA contracts (that students need to apply for). The full FEAS Grad Students Funding Package document is included in Appendix K.

1.1.36 Library

The current library resources are sufficient to support the proposed Ph.D. in Building Science at this time. It is recommended a start-up amount of $3,000 is allocated to further enhance the existing collection. Further, a based budget of $9,000 is recommended to support the program in order to cover increased costs for existing resources, including graduate program levies and increased FTE. The Library Report is included in Appendix H.

Quality and Other Indicators

1.1.37 Quality Indicator Definitions and Use

The department has built a strong base for SRC activities over the last 10 years. Building Science faculty members actively compete for external research grants at both the provincial and national levels. Against a backdrop of a lower national success rate in NSERC Discovery Grants, due largely to the change of NSERC's funding policies, departmental faculty members have successfully secured research grants from a variety of funding sources such as the Canada Foundation for Innovation, SSHRC, Ontario Power Authority, Ontario Centres of Excellence, MITACS, Ryerson's Centre for Urban Energy, NSERC programs such as Discovery Grants, Engage Grants, and Collaborative Research and Development Grants. Table 16 presents a summary of published papers involving graduate students from the Program over the past six years.

Table 6 Summary of Publications with Students (2010 to 2017)

	2010	2011	2012	2013	2014	2015	2016	2017	Total
Journal Article	4	9	4	4	7	11	10	6	>50
Conference Paper	9	20	12	10	7	6	5	10	>70

In the context of teaching, nine full-time RFA faculty contribute significantly to building science teaching and research. This represents the largest group of dedicated building science professors in any program throughout North America. All nine faculty are experts in their field. The combined experience of the group covers, but is not limited to: materials, wall assemblies, roofing, building level issues, community level issues, sustainability, structure, acoustics, lighting, mechanical systems, energy efficiency, building performance. The ability for a single program to offer teaching expertise in such a wide range of topics within the field of building science is unmatched in North America. In addition, the group has redundancy in order to cover sabbatical terms and administrative secondment (i.e. course release associated with administrative positions).

1.1.38 Intellectual Quality of Student Experience

Currently, the majority of courses offered are taught by full-time tenured and/or tenure track faculty from the program's home department; for example, all the core courses are taught by full-time faculty. This is a strength of the program. In any given year, typically two elective courses are taught by part-time faculty.

The core courses are generally offered with average sizes between 20 and 25. Due to part-time students, and other unforeseen circumstances, core courses at times approach a class size above 25. Elective course size varies from small (i.e. less than 10) to large (i.e. 25), depending on: interest, timing of the last offering and current student enrolment.

Overall, there is a high quality and availability of graduate supervision. Of the 9-core faculty involved with the program, 6 currently hold Ph.D. degrees. This core group of 9 faculty provide

the majority of student supervisions, and they provide a wide variation of expertise allowing support for different graduate research topics. The quality of graduate research output ranks among other graduate programs offering building science, with publications existing in high profile journals and receiving national and international recognition.

Faculty have worked with students to publish peer reviewed research papers in the following journals:
- Architectural Science review
- Building and Environment
- Building Research and Information
- Canadian Journal of Civil Engineering
- Energy
- Energy and Buildings
- Indoor and Built Environment
- International Journal of Building Performance Simulation
- International Journal of Project Management
- International Journal of Scientific Research
- Journal of Architectural Engineering
- Journal of Cleaner Production
- Journal of Green Building
- Journal of Building Physics
- Procedia Engineering
- Science of the Total Environment
- Waste Management

Faculty have also worked with students to publish and present papers at many international conferences, including the representative examples listed below;
- Canadian Conference on Building Science and Technology CCSBT, November 6-8, 2017, Vancouver,
- Acoustical Week of Canada AWC 2017, October 10-13, 2017, Guelph, ON,
- Nordic Symposium on Building Physics (NSB) NSB 2017, June 11-14, 2017, Trondheim, Norway
- 4th European Conference on Behaviour and Energy Efficiency, Coimbra, 8-9 September 2016.
- The Asian Conference on Sustainability, Energy and The Environment, June 9-12, 2016, Kobe, Japan. Behavior, Energy & Climate Change 2015 Conference, University of California. Oct. 18 – 21, Sacramento, Ca.
- Sustainable Built Environments 2016, Toronto, September 2016
- Passive House conference, PHIUS, 2016
- ASHRAE 2016 Annual Conference, June 25-June 29, St. Louis, Missouri
- International Conference on Sustainable Design, Engineering and Construction, 18–20 May 2016, Tempe, United States
- International Conference on Sustainable Design Engineering and Constriction 2015, Chicago

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- International Conference on BIM modelling in Design and Construction and Operations, Bristol UK, 2015
- 6th International Building Physics Conference – IBPC2015, June 14th-17th, 2015, Torino, Italy
- 14th Canadian Conference of Building Science and Technology, 2014
- 10th Nordic Building Physics symposium, Lund Sweden 16 to 19th June, 2014
- World Sustainable Building Conference 2014, Barcelona 29 to 30th October, 2014
- Passive House Conference, PHIUS, 2014
- eSim 2014, Ottawa
- Thermal Performance of the Exterior Envelopes of Whole Buildings XII International Conference, December 1st-5th, 2013, Clearwater, FL
- Sustainable Building Conference 2013, Coventry, UK, July 2013.
- 8th North American Passive House Conference, 2013
- R+R 2013 Reclaim and Remake International Symposium, Washington, DC. 11-13 April 2013
- 5th IBPC (International Building Physics Conference), Kyoto, Japan, May 28-31, 2012
- Smart and Sustainable Built Environments, 2012, Brazil
- International Conference on Energy the Environment and Sustainable Development, Shanghai, 2011
- Sustainable Buildings, conference, Helsinki, Finland, October 2011
- 13th Canadian Conference of Building Science and Technology, 2011
- XII DBMC International Conference on Durability of Building Materials and Components, Porto, Portugal, April 12-15th, 2011
- eSim 2010, Winnipeg
- Thermal performance of exterior envelopes for whole buildings X1 conference 2010
- The 6th IBPSA Canada, Winnipeg,19 May 2010
- 1st High Performance Buildings Conference at Purdue, Purdue University, July 12th – 15th, 2010.
- 10th Asia Pacific conference on the built environment 2009
- CIB115 Construction Materials Stewardship International Conference and annual meeting, University of Twente, Enschede, The Netherlands, June 2009
- Smart and Sustainable Built Environments, Delft, The Netherlands, June 2009.
- 4th International Building Physics Conference, Istanbul, June 2009

The experiential learning activities will provide students to explore further academic and/or professional directions. The choice of at least one of the three activities will allow students to focus their academic experience towards the career trajectory of their choice.

Supervisors will also support students in order to promote pathways to further their academic and/or professional direction. Through teaching opportunities, guest lecturing, attending conferences, industry placements and publishing in peer-reviewed journals, students will be exposed to a variety of post-doctoral opportunities in order to enrich their knowledge when choosing their careers beyond the Ph.D.

APPENDICES

Appendix A: Graduate Degree Level Expectations Table and Curriculum Map

The Doctoral GDLES are listed below are explicit in their design to create high quality Ph.D. students. Table A1 shows how the Doctoral GDLES are met by the 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 including, where appropriate, relevant knowledge outside the field and/or discipline.

2. Research and Scholarship.
    d) 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;
    e) The ability to make informed judgments on complex issues in specialist fields, sometimes requiring new methods; and
    f) The ability to produce original research, or other advanced scholarship, of a quality to satisfy peer review, and to merit publication.

3. Level of Application of Knowledge. The capacity to:
    c) undertake pure and/or applied research at an advanced level; and
    d) contribute to the development of academic or professional skills, techniques, tools, practices, ideas, theories, approaches, and/or materials.

4. Professional Capacity/Autonomy.
    e) The qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex situations;
    f) The intellectual independence to be academically and professionally engaged and current;
    g) The ethical behaviour consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and
    h) The ability to evaluate the broader implications of applying knowledge to particular contexts.

5. Level of Communication Skills. The ability to communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively.

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.

Table A7 Mapping the Program Learning Outcomes Against the Doctoral GDLES

GDLE	Learning Outcomes								
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
1. Depth and Breadth of Knowledge	▓								
2. Research and Scholarship		▓	▓						
3. Level of Application of Knowledge				▓					
4. Professional Capacity/Autonomy					▓				
5. Level of Communication Skills						▓	▓	▓	
6. Awareness of Limits of Knowledge									▓

Appendix B: Comparator Programs

The Table shows the proposed program with the most similar programs in Canada.

Program	Specific/Targeted Program in Building Science	Housed in a Single Department	Multiple Faculty with Expertise in Classical Building Science	Estimated No. of Ph.D.'s Each Year Graduating with Specific Expertise in Building Science	Additional Comments:
Ryerson (proposed program)	Yes	Yes	Yes	2	A discrete program focusing on building science that is housed in a single department and will consistently graduate Ph.D.'s.
Concordia	No	Yes	No	0.5	Building engineering is not specifically building science.
U of T	No	Yes	Yes	0.25	2 building science Ph.D. 's have graduated in the past 8 years.
Waterloo	No	Yes	No	0.1	1 building science Ph.D. has graduated in the past 10 years.
UBC	Yes	No	No	N/A	Faculty members and trainees are based out of their home departments (e.g. engineering, architecture, and physics, etc.)

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Appendix C: SWOT Analysis

The SWOT analysis below focusses on the proposed program as it is perceived from within the department, University and externally from industry and academia. As can be seen, the strengths of the proposed program significantly outweigh the weaknesses. The opportunities represent significant growth for the proposed program. The threats are minimal and they can be addressed.

Strength	Weakness
Human side Potential for high level of student success High percentage of students getting jobs in industry Very positive feedback on our students from employers for a Ph.D. program Multidisciplinary background/diversity of faculty Collegiality and positive environment among existing and incoming students Faculty experts in Building Science Internationally renowned Building Science faculty **Course Side** Unique field of study/program Advanced course is unique in Canada **Extra options** Industry student research collaboration Offering of extracurricular/competitions and collaborations Industrial currency * **Context and Facility** Fact that the PhD is housed in architectural department Concentrated in one building Close relationship with industry Ryerson University Toronto (the city as an academic destination)	**Human side)** Lack of a research centre/cluster in Building Science Lack of recruiting strategy **Course Side** May be limited in course selection if from existing Master's program **Extra options** Difficulty in balancing industry needs and innovative research **Context and Facility** Building Science Laboratory is under development Lack of space in Architecture Building
Opportunities	**Threats**
Human side Guest speakers / lecture series Building science industry connection Highlight student success	**Human side** Retiring Building Science faculty need to be replaced in the next 2-5 years.

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Course Side Ph.D. program **Extra options** Ability to collaborate with local and regional institutions Take advantage of the high level of activity in Toronto Connection with current events Host unique events that will bring industry and academia to raise profile **Context and Facility** Establish a centre of excellence/research cluster Strengthening our lab facility Advertising, recruitment, build a brand Supplemental certification programs Collaboration with professional associations Campus as Lab or Our building as a Lab	**Course Side** None. **Extra options** Other Ph.D. programs in Building Science will follow. Our program needs to stay at the 'front of the pack' **Context and Facility** None.

Appendix D: Program Support

David De Rose   September 26, 2017 at 10:59 PM   DD
RE: Building Science PhD program
To: Russell Richman

📩 Updated contact info found in this email: David De Rose (647) 479-8691   update...   ⊗

As a practitioner, there are plenty of opportunities to help with existing building repairs and to provide advice to design teams constructing new buildings. The growth of the firms that I have worked with during my career has been limited by the number of qualified resources available to step in and support service delivery. Finding skilled practitioners is difficult and expected to get increasingly more difficult with the forecast growth in building construction and repairs.

A PhD program at Ryerson is expected to build more skilled instructors and researchers who could, in turn, build more skilled practitioners to meet industry demands.

David De Rose, M.A.Sc., P.Eng. BSSO

Synergy Partners
3200 Dufferin St., Suite 300
Toronto, ON
M6A 3B2
t: 647-479-8691
c: 416-358-8139
e: dderose@synergypartners.ca

Graham Finch   October 29, 2017 at 4:51 PM   GF
Re: Building Science PhD Program at Ryerson
To: Russell Richman

A Ryerson Building Science PhD program will be of great benefit to the Canadian building science industry. There is a large need for students trained in building science and this program will help to generate future students and professors.

Sound good? See you in a few weeks

Cheers

Graham Finch I Dipl.T, MASc, P.Eng
Principal, Senior Building Science Specialist
RDH Building Science Inc.
T 604 873 1181 x280 I C 604 802 5205

Christian Cianfrone   November 7, 2017 at 8:43 PM   CC
To: Russell Richman   Cc: Matthew Tokarik   Details

Thank Matt for helping me out...

A Building Science Ph.D. program at Ryerson University would directly benefit Morrison Hershfield, and other companies practicing in the building science field.

As buildings become more advanced, designs become more integrated, and understanding of complex physical relationships become more sophisticated, designers and consultants are looking to employ more highly-skilled specialists to maintain competitive advantage. In-house research and development projects are being undertaken to create innovative analytical tools, advance internal technical knowledge, and publish articles and white-papers to demonstrate industry thought leadership. Such tasks demand the understanding of academic rigor, abstract thought synthesis, and effective communication developed during Ph.D. research and dissertation preparation.

Morrison Hershfield employs many alumni of Ryerson's graduate-level Building Science program, and has benefitted from the specialized skillsets they bring. Having seen the unique preparation Ryerson provides, we believe its post-graduate Building Science environment would be an excellent place to establish a Doctoral program.

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Appendix E: Proposed Course Descriptions

A single proposed course for this program is the **Advanced Building Science (BL8105).** This course will address advanced building science topics and prepare students for research in the field of building science. Students will learn how to develop experimental and simulation based research methodologies to answer complex research questions.

The course outcomes will contribute to the developmental understanding of all the learning outcomes for the proposed program. The following outlines the intent of the course:

BL810x – Advanced Building Science

Calendar Description
This course aims to develop students' advanced understanding of building science as it applies to sustainable design issues. The course provides the advanced foundation of technical knowledge for a student's dissertation and research project. It includes the discussion of fundamental understanding and modelling of the present and future climate, discussion of environmental issues, and emphasizes the coupling of heat, air and moisture transfer, in order to meet the resilience of the building environment.

Prerequisites
Enrollment in the building science graduate program and approval by the building science Graduate Program Director and course instructor.

Co-requisites
No co-requisite.

Date, Time and Location of Course
Scheduled Course Hours: 3 hour/ week

Course information

Course Summary
This course studies advanced building science principles as they apply to built environment. Focus is placed on developing a deep understanding of the dynamic 1d, 2d and 3d aspects of the interactions between the changing natural environment and the built environment.

Course objectives and intended learning outcomes
At the end of this course, students will have the ability to analyze advanced building science questions. Through focussing on research investigation approach, students will be able to break complex problems to the fundamental level and build it back up to form a solid solution.

Texts and Reading Lists
Hens, H., Building Physics – Heat, Air and Moisture: Fundamentals and Engineering Methods with Examples and Exercises, Ernst & Sohn, Germany, 2016.

Teaching Methodology
Theory, lectures, in-class discussions, research work and applications of learned material through assignments. In addition, students' written communication skills will be furthered through report writing. In addition to classroom time, students are encouraged to attend above mentioned industry exhibitions and seminars, where they will have an opportunity to interact with professionals, researchers and manufacturers of components.

Assignments / tests / exams and other work and weighting of each

No.	Title	Individual	Value
1	I Assignment: Seminar report paper	Individual	25%
2	II Assignment: Seminar report paper	Individual	25%
3	III Assignment: Seminar report paper	Individual	25%
4	Final Oral Presentation	Individual	25%

Appendix F: Course Synopsis

See below

Appendix G: Faculty CVs

1.1.39 Dr. Mark Gorgolewski

BSc, MSc, Dip Arch, PhD, LEED AP (BD+C)
Professor
Chair
Department of Architectural Scienc
Faculty of Engineering and Architectural Science
Ryerson University
350 Victoria Street, Toronto Ontario M5B 2K3, Canada
Telephone   1-416-979-5000 extension: 6494
Email mgorgo@ryerson.ca

Summary

Dr Mark Gorgolewski lectures and researches issues of sustainability, design and building science at Ryerson University, Toronto, where he was the founding program director of the graduate programme in the building science.

Mark has worked for many years as an architect, researcher and environmental consultant to the construction industry. He is a LEED Accredited Professional, past director of the Canada Green Building Council (CaGBC), past chair of the Association for Environment Conscious Building in the UK and active member of the International Institute for a Sustainable Built Environment (IISBE). He has received funding from many public and private institutions to investigate issues of sustainable construction. Over 20 years he has published over 60 refereed papers and 6 books, and has managed over $1.5m in research funds.

Mark completed his undergraduate degree and diploma in Architecture at University College, London, a M.Sc. in energy efficient design at Cranfield University, and a Ph.D. in energy efficient housing at Oxford Brookes University. He is a registered architect (ARB UK) in the UK. Mark's research interest is in the area of closed-loop systems applied to the built environment. This includes strategies to enhance the sustainability of construction materials, building products, buildings as well as urban environments. His work addresses the integration of energy, water, materials and urban food systems.

Currently areas of research include building performance evaluation, sustainable housing, reuse of components and materials, and design for urban agriculture. His most recent publication with co-authors June Komisar and Joe Nasr is *Carrot City: Creating Places for Urban Agriculture*, and he co-curated the *Carrot City* exhibition in Toronto, New York, Paris and is now travelling to various locations around the world.

Mark has coordinated several winning teams in sustainable design competitions including the CMHC Equilibrium Housing Competition to design a sustainable, net zero energy housing development, and the Urban Harvest team that won the grand award at the 2014 US DOE

Challenge Home Student Design Competition. He is also co-recipient of the 2007-2008 ACSA/AIA Housing Design Education Award, recipient of the 2012 H.A. Krentz Research Award from the CISC, and recipient of the CMHC 2013 Excellence in Education Award.

Education

1995   Doctorate, Doctor of Philosophy, Architecture and Energy Efficiency,Oxford Brookes University

1993   Master of Science, Energy in Buildings, Cranfield University

1985   Diploma (Master's Equivalent), Architecture, University College London

1983   Bachelor's Honours, Bachelor of Science, Architecture, University College London

Credentials

2004   LEED Accredited Professional, Green Building Certification Institute, Leadership in Energy and Environmental Design Accredited Professional - LEED AP (BD&C)

1993   Architects Registration Board (UK) – licenced architect.

1993   RIBA Professional Practice part 3, Royal Institute of British Architects

1985-1985   RIBA professional qualification part 2, Royal Institute of British Architects

1983-1983   RIBA professional qualification part 1, Royal Institute of British Architects

Recognitions

2013   CMHC Excellence in Education Award from the Canada Mortgage and Housing Corporation

2012   H.A. Krentz Award, from the Canadian Institute of Steel Construction

2009   ACSA/AIA Housing Design Education Award, American Institute of Architects Award for InHabit Sustainable Housing project jointly received with Dr. Ian McBurnie

Employment

2015–2016   Interim Associate Chair for the Graduate Program in Building Science

2008–2013   Program Director for the Graduate Program in Building Science

2008–2016   Professor, Department of Architectural Science, Ryerson University

2003–2008   Associate Professor, Department of Architectural Science, Ryerson University

1995–2003   Principal Architect & Environmental Consultant, Steel Construction Institute

1995–1999   Project architect, Rickaby Thompson Associates

1994–2003   Sessional, Lecturer, School of Architecture, Oxford Brookes University

1989–1992   Project architect, Alex Corfield Architects

Research Funding

2015-2016   Social Sciences and Humanities Research Council (SSHRC) Knowledge Synthesis Grants
Exploring continued prosperity in the face of tests to the resilience of Canadian communities
Co-investigators Richard Shaker & Mark Gorgolewski
Funding - $25,000

2015-2016   Natural Sciences and Engineering Research Council of Canada (NSERC) Engage
Measuring occupancy patterns in buildings using cell phone connectivity
Principal Investigator - Mark Gorgolewski
Co-investigators – Vince Hui, Jenn McArthur, Umberto Berardi
Funding - $25,000

2015   Natural Sciences and Engineering Research Council of Canada (NSERC) Engage
How to better use building energy modelling to predict actual building performance
Principal Investigator - Mark Gorgolewski
Funding - $24,630

2014 - 2015   Natural Sciences and Engineering Research Council of Canada (NSERC) Collaborative Research and Development (CRD) grant
Building performance evaluation of leading Canadian green buildings
Principal Investigator - Mark Gorgolewski
Co-investigators - Shauna Mallory Hill (UM), Murray Hodgson (UBC), Mohamed Issa (UM)
Funding - $82,000

2014   Mitacs Accelerate
Designing for Urban Agriculture in a smart community
Funding - $25,000

2013   Connect Canada and CUE
Developing a multi-tool building performance protocol for 6 Canadian green buildings
Funding - $10,000

2013   Connect Canada and CUE
The Toronto 2030 District
Funding - $10,000

2013   Connect Canada and CUE
Developing a multi-tool building performance protocol for 6 Canadian green buildings
Funding - $10,000

2013 - 2014   Ontario Power Authority (OPA) Conservation Fund
Building Performance Assessment Using Occupant Questionnaires and Energy Data
Principal Investigator - Mark Gorgolewski

Funding - $61,958

2012 - 2014   Social Sciences and Humanities Research Council of Canada (SSHRC) Insight
Development Grant
The impact of occupant behaviour on green building performance
Principal Investigator - Mark Gorgolewski
Co-investigator – Alastair Goodwill
Funding - $46,000

2012 - 2013   Steel Structures Education Foundation Grant
Life Cycle Assessment of Steel-Framed, Multi-Unit Residential Construction
Principal Investigator - Mark Gorgolewski
Funding - $15,000

2012 - 2013   FEDEV ARC
***The effect of occupant behaviour and satisfaction in the optimal energy performance of high-
rise condo towers in Toronto***
Principal Investigator - Mark Gorgolewski
Funding - $18,500

2012 - 2013   FEDEV ARC
Connecting the Ecospex product database with the LEED green building rating
Principal Investigator - Mark Gorgolewski
Funding - $34,500

2011   MITACS Accelerate
Multi-Criteria Rating of Advanced Envelope Typologies
Funding - $15,000

2010 - 2011   Steel Structures Education Foundation
Comparing carbon emissions from constructing a steel and concrete frame building
Co-investigators: Mark Gorgolewski & Vera Straka,
Funding - $15,000

2010 – 2011   MITACS Accelerate
A study of green building rating systems for existing buildings in Canada
Funding - 15,000

2010   MITACS Accelerate
Low-energy envelope design on Toronto high-rise apartments
Co-investigators: Zaiyi Liao & Mark Gorgolewski
Funding - $15,000

Graduate supervisions

Completed		Ongoing
PhD	1	1
MASc	6	1
MBSc	13	3
MArch	10	1

Courses taught

Graduate

Course Title: Ecological and resource efficient design
Course Code: BL8102
Term taught: W2009, W2010, W2011, W2012, F2012, F2013, F2014, F2015,

Course Title: Buildings Design Seminar/Studio
Course Code: BL8104
Term taught: W2014, W2015, W2016

Course Title: Studio in Critical Practice
Course Code: AR8101
Term taught: F 2007, F2008, F2011

Course Title: Intensive Research Studio and Seminar
Course Code: AR8105
Term taught: SS 2009

Course Title: Designing with Green Building Ratings
Course Code: AR8220
Term taught: F2007

Undergraduate

Course Title: Sustainable Practices
Course Code: ASC 200
Term taught: W 2008, W2009, W2014, W2015

Course Title: Advanced Envelopes/Components
Course Code: BSC822
Term taught: W2015

Course Title: Option Studio
Course Code: ASC 720
Term taught: F2012, F2013

Course Title: Third year Integration Studio

Course Code: ASC 520
Term taught: F2014

Course Title: Sustainable Housing
Course Code: ASC 501
Term taught: W2005 W2006 W2007 W2008

Course Title: Designing with green building ratings
Course Code: ASC 855
Term taught: F2007

Course Title: Third year Studio
Course Code: AR031A/B
Term taught: W2004, W2005, F2006, W2007

Course Title: Designing with LEED
Course Code: ASC 905
Term taught: F2005, F2006

Course Title: Architecture Thesis
Course Code: ARC 041A ARC 031A/B
Term taught: F2003, F2004, F2005, F2006

Course Title: Systems II
Course Code: ASF 200
Term taught: F2003, F2004, F2005, F2006

Course Title: Building Science Components
Course Code: BSC 505/605
Term taught: F2003, W2004, F2004, W2005

Program administration

2009-2013   Program Director, Graduate Program Building Science, School of Architecture,
2015-20165   Interim Associate Chair Graduate Studies: Building Science

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Publications
Refereed Journal Articles

Brown, C., Gorgolewski, M.T., (2015) Using physical, behavioural, and demographic variables to explain suite-level energy use in multi-residential buildings, *Building and Environment*, Vol. 89, pp 308-317.

Ergun, D, & Gorgolewski, M.T., (2015). Inventorying Toronto's Single Detached Housing Stocks to Examine the Availability Of Clay Brick For Urban Mining. *Waste Management*, Vol 45., pp180-185.

Brown, C., Gorgolewski, M.T., (2015) Understanding the role of inhabitants in Innovative mechanical ventilation strategies, *Building Research & Information*, Vol. 43 (Issue 2) pp.210 - 221.

Qasass, R., Gorgolewski, M.T., & Ge, H., (2014) Timber framing factor in Toronto residential house construction, *Architectural Science Review,* Volume 57 (Issue3) pp.159-168.

Brown, C., Gorgolewski, M.T., (2014) Assessing occupant satisfaction and energy behaviours in Toronto's LEED Gold high-rise residential buildings, *International Journal of Energy Sector Management*, Vol. 8 (Issue 4), pp. 492 – 505.

Ferdous, T. & Gorgolewski, M.T., (2014) Determining the effect of building geometry on energy use patterns of office buildings, *Journal of Green Building* , Vol. 9, No. 2, pp. 124-144.

Roos, R., & Gorgolewski, M.T., (2011) The Effectiveness of BOMA BESt and LEED Canada EB:O&M in Greening Commercial Buildings, *Journal of Green Building* , Vol. 6, Issue 3.

Ng, K. L. R., Gurunlian, L., Gorgolewski, M.T., & Liao, Z., (2011) Design of a low-energy envelope system for an apartment building through an integrated design process: a case study, *Journal of Green Building* Vol. 6, Issue 3.

Gorgolewski, M.T.,(2010) Urban Salvation, Alternatives Journal, Vol. 36, No.4.

Nasr, J., Komisar, J. & Gorgolewski, M.T., (2009) Designing for Food and Agriculture: Recent Explorations at Ryerson University *Open House Journal* , Vol. 34, No.2.

Gorgolewski, M.T., Straka, V., Edmonds, J. & Sergio, C., (2008) Designing Buildings using Reclaimed Steel Components *Journal of Green Building,* Vol. 3, No. 3.

Gorgolewski, M.T., (2008) Designing with reused building components: some challenges, *Building Research & Information,* Vol. 36, Issue 2, pp175-188.

Gorgolewski, M.T., (2007) Developing a simplified method of calculating U-values in light steel framing, *Building and Environment* , Vol. 42, issue 1,.

Gorgolewski, M.T., (2006) The Role Of Prefabrication In Housing In The Natural City, in the *International Journal of Ekistetics.*

Gorgolewski, M.T., (2006) The implications of reuse and recycling on design of steel buildings, *Canadian Journal of Civil Engineering,* Vol. 33, No. 4.

Gorgolewski, M.T., (2006) Learning how buildings work is crucial to better green design, *Journal of Green Building*,Vol.1, no 1, pp19-28.

Gorgolewski, M.T., (2005) The development of a simplified U-value calculation method for twin skin metal cladding systems, *Architectural Science Review*, Vol. 48 No. 1, pp17-23.

Gorgolewski, M.T., (1998) Transparent Insulating Materials: steady state model for assessing the thermal performance, *Building Services Engineering Research and Technology* Vol. 17, no. 3, pp. 141 – 146.

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Rickaby, P.A. & <u>Gorgolewski, M.T.</u> (2000) A classification system for services in nondomestic buildings, *Environment and Planning B: Planning and Design* Vol. 27(5) pp 695 – 708,
<u>Gorgolewski, M.T.,</u> (1995) Optimising Renovation Strategies for Energy Conservation in Housing, *Building and Environment*, Vol. 30, No. 4, pp. 583 - 589.
<u>Gorgolewski, M.T.,</u> Grindley C. & Probert, S.D., (1993) Energy Efficient Renovation of High-Rise Housing, *Applied Energy*, Vol. 53.

Refereed Conference Papers
Bartlett, K., Brown,C., <u>Gorgolewski, M.T.</u>, et al (2014) Do our green buildings perform as intended? World Sustainable Building Conference WSB14, Barcelona 29 to 30th October.
Vickers, A., & <u>Gorgolewski, M.T.,</u> (2014) The energy performance of urban rooftop greenhouses, Nordic Building Sciences conference, Lund Sweden.
Ergun, D., & <u>Gorgolewski, M.T.</u>, (2014) Inventorying Toronto's single-detatched housing stocks to examine the availability of clay brick for urban mining, Second Symposium on Urban Mining, SUM2014, Bergamo, Italy.
Brown, C., & <u>Gorgolewski, M.T.,</u> (2013) Post occupancy evaluation (POE) of multi-unit residential buildings and the contribution of residents to actual energy consumption, Sustainable Building Conference 2013, Coventry, UK,
Ergun, D., & <u>Gorogolewski, M.T.,</u> (2013) Quantification and Characterization of Materials Suitable for Reuse in Toronto's Wartime Housing, R+R 2013 Reclaim and Remake International Symposium, Washington, DC.
Earle, J.,, Hao, J.,, & <u>Gorgolewski, M.T.,</u> (2013) Markets for used building materials in Ontario, R+R 2013 Reclaim and Remake International Symposium, Washington, DC.
<u>Gorgolewski, M.T.,</u> & Ergun, D., (2013) Closed-Loop Materials Systems, SB13 Conference, Coventry, UK.
<u>Gorgolewski, M.T.</u>, Komisar, J. & Nasr, J., (2012) Urban agriculture as ordinary urban practice: challenges and lessons, Global Gateways and Local Connections: Cities, Agriculture, and the Future of Food Systems, NYC,
Pinto, I., <u>Gorgolewski, M.T.,</u> & Straka, V., (2011) Life cycle assessment of Canadian steel building design and case studies comparison limitations , Sustainable Buildings Conference, SB11, Helsinki, Finland.
<u>Gorgolewski, M.T.,</u> (2011) Carrot City: The Impact Of Food Security On The Design Of Cities And Buildings, Sustainable Buildings Conference , SB11, Helsinki, Finland.
Roos, R., & <u>Gorgolewski, M.T.,</u> (2011) Multi-Criteria Assessment of High Performance Residential Building Envelope Typologies in Canada, Sustainable Buildings Conference, SB11, Helsinki, Finland.
Ng, K.L.R., Liao, Z., <u>Gorgolewski, M.T.,</u> Gurunlian, L., (2010) Low-energy envelope systems for an apartment building in cold climate, The 6th IBPSA Canada Conference, Winnipeg.
Horvat, M., <u>Gorgolewski, M.T.,</u> & Cuciureanu, A., (2009) Operational and Embodied Impact Placed in Context. 4th International Building Physics Conference, Istanbul.
<u>Gorgolewski, M.T.,</u> (2009) Designing the carrot city: food security and the design of sustainable buildings and cities, Smart and Sustainable Built Environments, Delft, The Netherlands.

Gorgolewski, M.T., (2009) The problems of zero energy housing in urban locations, Smart and Sustainable Built Environments, Delft, The Netherlands,.

Gorgolewski, M.T. & Morettin, L. (2009) The process of designing with reused building components, CIB115 Construction Materials Stewardship International Conference and annual meeting, University of Twente, Enschede, The Netherlands.

Straka, V. & Gorgolewski, M.T., Design of net zero energy housing, Central Europe towards Sustainable Building (CESB 07) international conference, Prague, September 2007.

GorgolewskiI, M.T. & Straka, Designing buildings from reclaimed components, Pacific Structural Steel Conference 2007, Wairakei, NZ, March 2007.

Gorgolewski, M.T., Maximising steel reuse, Rethinking Sustainable Construction conference, 19-22 September 2006, Sarasota, Florida.

Gorgolewski, M.T., Liao, Z., & Clarida, R., Thermal mass in office buildings, 3rd International Building Physics Conference, Montreal, August 2006

Straka, V. & Gorgolewski, M.T., Adaptive Building Reuse and Component Reuse, 1st International Structural Specialty Conference, Canadian Society of Civil Engineering Calgary, Alberta, Canada, May 23-26, 2006

Gorgolewski, M.T., Understanding how buildings evolve, paper accepted for the Sustainable Buildings 05, Tokyo, September 2005.

Gorgolewski, M.T., Prefabrication and Sustainability, in UK housing, accepted for the Buildings IX conference, Clearwater, Florida, December 2004.

Gorgolewski, M.T., Architecture, sustainability and prefabrication, conference of the Association of Collegiate Schools of Architecture (ACSA) western division, University of BC, Vancouver, Canada, October 2004.

Gorgolewski, M.T., The importance of Post Occupancy Evaluation for education of construction professionals, Conference of the Chartered Institute of Building Services Engineers (CIBSE), London, UK, September 2004

Gorgolewski, M.T., More Communication, Less HVAC - Achieving Sustainability through Improved Communication, Proceedings of the World of Construction Project Management conference, Toronto, Canada, May 2004.

Gorgolewski, M.T., Construction Processes – How Prefabrication can Contribute to Sustainability, Proceedings of the World of Construction Project Management conference, Toronto, Canada, May 2004.

Gorgolewski, M.T., The relevance of post occupancy evaluation to architectural education - Using of the experience of occupants to improve the knowledge base of students, Proceedings of Close the Loop conference, Windsor, UK, May 2004.

Gorgolewski, M.T., Prefabrication in UK Housing to improve sustainability, Sustainable Building 2002, Oslo, Norway, October 2002.

Gorgolewski, M.T. & Doran, S., International Iron and Steel Calculating u-values in light steel framing - development of a simplified method ,Institute (IISI) World Congress, Luxemburg, May 2002.

Kosny, J. Childs, P. & Gorgolewski, M.T., Making steel framing as thermally efficient as wood most current developments from ORNL, International Iron and Steel Institute (IISI) World Congress, Luxemburg, May 2002.

Gorgolewski, M.T., Recycled Building Materials, Performance of Exterior Envelopes of Whole Buildings Conference, Clearwater, Florida, 2001.

Gorgolewski, M.T., Thermal and Acoustic Performance of Light Steel Framing, Sustainable Building 2000 conference, Maastricht, Netherlands, October 2000.

Gorgolewski, M.T., & Sansom, M. The Recycled Building Project, Sustainable Building 2000 conference, Maastricht, Netherlands, October 2000.

Gorgolewski, M.T., More Communication, Less HVAC – achieving high performance in commercial buildings through improved design processes, Conference of the Chartered Institute of Building Services Engineers (CIBSE), Harogate, UK, October 1999.

Ogden, R., Kendrick, C., Gorgolewski, M.T. & Birtles, A., Using Fabric Thermal Storage to Provide Passive Cooling in Steel Framed Commercial Buildings, Green Building Challenge 98, Vancouver, Canada, October 1998

Gorgolewski, M.T. & Eaton, K., Amato, A. & Birtles, A., Using Life Cycle Assessment as a Tool for Quantifying Green Buildings, Green Building Challenge 98, Vancouver, Canada, October 1998.

Gorgolewski, M.T. & Eaton, K., Environmental Impact of Steel Piling, Sustainable Steel Construction Conference, Orlando, USA, March 1998

Phillips, D. & Gorgolewski, M.T. Tests of the Thermal and Acoustic Performance of Lightweight Steel Framed Demonstration Building, Sustainable Steel Construction Conference, Orlando, USA, March 1998

Books

Gorgolewski, M.T., Komisar, J. & Nasr, J, C, (2011) Carrot City: Creating Places for Urban Agriculture, Monacelli Press, NY.

Gorgolewski, M.T., Milner, M. & Ross, K., (2002) Off-site produced housing - A briefing guide for Housing Associations, Building Research Establishment.

Gorgolewski, M.T., (2001) Thermal performance of light steel frame housing, International Iron and Steel Institute.

Gorgolewski, M.T., Grubb, P.J. & Lawson, R.M., (2001) Modular Construction using Light Steel Framing - Design of Residential Buildings, Steel Construction Institute, SCI publication, 302.

Grubb, P.J., Gorgolewski, M.T. & Lawson, R.M., (2001) Light Steel Framing in Residential Construction, Steel Construction Institute, SCI publication, 301.

Chapters in Books

Gorgolewski, M.T. & Straka, V., (2016 – forthcoming) Integrating rooftop agriculture into urban infrastructure, in Rooftop *Agriculture*, edited Orsini, F., Dubbeling, M., & Gianquinto, G.

Gorgolewski, M.T., Komisar, J.& Nasr, J., (2016) Resilient City = Carrot City: Urban Agriculture Theories and Designs, in *Integrated Urban Agriculture Precedents, Practices, Prospects* Edited by Robert L. France, Karen Landman, Luc Mougeot, Libri Publishing

Gorgolewski, M.T., Komisar, J.& Nasr, J. (2014) Urban agriculture as ordinary urban practice: trends and lessons in *Second Nature Urban Agriculture designing productive cities*, Edited by Andre Viljoen and Katrin Bohn, Routledge

Earl, J., Ergun, D. and Gorgolewski, M.T., (2012) Construction Waste in Canada in *Construction Waste Reduction around the World*, Edited by Gilliam Hobbs, published by the International Council for Building Research Studies and Documentation (CIB

Gorgolewski, M.T., (2009) The Process of Designing with Reused Building components, in *Lifecycle Design of Buildings, Systems and Materials*, edited by Elma Durmisevic, published by International Council for Building Research Studies and Documentation (CIB)

Gorgolewski, M.T., Using waste materials, in *Green Building Bible 2008*, Edited by Keith Hall, Green Building Press, forthcoming in 2008

Gorgolewski, M.T., General material selection, in Green Building Bible 2008, Edited by Keith Hall, Green Building Press, forthcoming in 2008

Gorgolewski, M.T., Design for Deconstruction, in *Green Building Bible 2008*, Edited by Keith Hall, Green Building Press, forthcoming in 2008

Gorgolewski, M.T., Building using Rubbish, in *Green Building Bible 2006*, Edited by Keith Hall, Green Building Press, 2006

Gorgolewski, M.T., Design for Deconstruction, in Green *Building Bible 2006*, Edited by Keith Hall, Green Building Press 2006

Gorgolewski, M.T., Material selection, chapters 4 in *Green Building Bible 2005*, Edited by Keith Hall, Green Building Press 2005

Gorgolewski, M.T., Recycle and Reuse, chapter 9 in *Green Building Bible 2005*, Edited by Keith Hall, Green Building Press 2005

Gorgolewski, M.T., The potential for prefabrication in UK housing to improve sustainability, chapter in *Smart and Sustainable Built Environment* edited by Yang, J, Brandon, P.S. & Sidwell, A.C., Blackwell Publishing, forthcoming in February 2005.

Lawson, R.M., Pedreschi, R. Falkenfleth, I. & Popo-Ola, S.O., *Over-Cladding of Existing Buildings* using *Light Steel*, Steel Construction Institute, SCI P 247, 1998, , Contributor: M.T. Gorgolewski, P.J. Grubb

Clough, R., Specifying *Dwellings with Enhanced Sound Insulation - a guide,* Building Research Establishment, 2000, Contributors: G Pitts, L Fothergill, J. Seller, M.T. Gorgolewski.

Other
I have published many articles in various publications and technical reports for industry groups over the last 20 years. If necessary I can provide additional information.

Other SRC
Carrot City: Creating Places for Urban Agriculture was curated with June Komisar and Joe Nasr and originally shown at the Design Exchange in Toronto in 2008. Since that time, the exhibit has been expanded and revised several times and shown in many locations including: Bangkok Berlin, Bologna, Casablanca, Manchester, Montreal, New York, Paris, Strasbourg, Toulouse, Vienna.

Race to Zero – I have coordinated teams of Ryerson students to participate in the US DOE Race to Zero Competition for 3 years. In 2014, the Ryerson team one the overall grand award in this competition.

Vivarium – Was an entry to the NYC Sky Condo idea competition in 2015. Vivarium aimed to envision a mixed-use project integrating vertical farming, residential and commercial uses on a parking lot along the High Line. The project received an honorable mention. I was part of a team led by Leila Farah.

Team North – I participated in the creation of Team North, a collaboration of students and faculty at three Canadian Universities to research, design and build a solar powered house that

was built and transported to Washington DC to participated in the Solar Decathlon 2009 competition.

Ryerson exhibition at Sustainable Building 2007 *Toronto* - I coordinated an exhibition of work of faculty and students from Ryerson University at this major international conference.

Sustainable Urbanism Initiative - I was the coordinator of a team that was selected as a winner of the Canada Mortgage and Housing Corporation (CMHC) national Equilibrium Housing competition, for a net zero energy Davenport Townhouse project.

Inhabit, competition entry jointly with Dr. Ian MacBurnie and a team of students to the Design Exchange/TRCA Architype housing competition, Toronto 2006. Our entry was exhibited at the Design Exchange in June 2006, and was awarded the 2007-2008 ACSA/AIA Housing Design Education Award.

Other activities

2012-2016   Member of the editorial board for Journal of Green Building

2010 - 2016   International Initiative for a Sustainable Built Environment (IISBE) Canada team World Sustainable Building Challenge member (and technical committee chair since 2013)

2016   Sustainable Built Environment Conference SBe16 Toronto - Chair of the Scientific Committee

2008 - 2016   OAA Sustainable Built Environment Committee - Member

2007 - 2013   Canada Green Building Council Board - Director

2013   Sustainable Buildings, SB 13 Conference, Coventry, Technical Committee

2012   Urban Agriculture Summit, Toronto - Steering Committee

2009   Shifting into the Mainstream conference, Canada Green Building Council, Steering Committee Member,

2009   Smart and Sustainable Built Environments, Conference SASBE 2009, Delft - Technical Committee Member

References

Dr. Ray Ogden Ph.D.
Professor and Associate Dean: Research and Knowledge Exchange
Tata Steel Europe Chair of the Building Envelope
Faculty of Technology, Design and Environment
Oxford Brookes University, Oxford, UK
Tel: 44 (0)1865 483208   Mobile: 07771 601660
Email: rgogden@brookes.ac.uk

Dr. Miljana Horvat, M.Arch, Ph.D. (Bldg.Eng.)
Interim Associate Dean, Graduate Studies
Faculty of Engineering and Architectural Science
Ryerson University
Tel: 1 416 979 5000, ex. 3161
E-mail: mhorvat@ryerson.ca

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Coolearth Architecture Inc.
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Email: sharp@coolearth.ca

Dr. Shauna Mallory-Hill, PhD, M. Arch, B.E.S., LEED AP BD+C
Assistant Professor
Faculty of Architecture
University of Manitoba
Winnipeg, MB
Tel: +011.204.474.7442
Email: S_Mallory-Hill@umanitoba.ca
Also, Board of Directors, Environmental Design Research Association (EDRA)

1.1.40 Professor Hitesh Doshi

CURRICULUM VITAE – HITESH DOSHI

1. NAME AND CONTACT INFORMATION

Hitesh Doshi
Professor
Department of Architectural Science
Room ARC321, Architecture Building
Ryerson University
350 Victoria Street
Toronto, Ontario M5B 2K3
Canada

Tel: 416-979-5000 x6502
Email: hdoshi@ryerson.ca

2. DEGREES AND EDUCATION

1983-1985	*Master of Applied Science (Civil Engineering)*, University of Toronto, Toronto, Canada
1978-1983	*Bachelor of Technology (Civil Engineering),* Indian Institute of Technology, Mumbai, India

3. EMPLOYMENT HISTORY

ACADEMIC

2008-Pres.	Full Professor, Dept. of Architectural Science, Faculty of Engineering and Architectural Science, Ryerson University
2001-2008.	Associate Professor, Dept. of Architectural Science, Faculty of Engineering and Architectural Science, Ryerson University
2000-2003	*Assistant Chair and Program Director,* Department of Architectural Science, Ryerson University.
1994-2001	Assistant Professor, Dept. of Architectural Science, Faculty of Engineering and Architectural Science, Ryerson University
1988-1992	*Part-time Faculty,* Humber College, Technology Division. Taught: Building Science, Building Diagnostic, Structures for Architectural Students, and AUTOCAD.

PROFESSIONAL

1994-Pres.	*Sole Proprietor,* Certificate of Authorization to Practice Engineering. Provide architectural engineering, building science and structural engineering services related to building performance, building durability, product development, and failure assessment, code consulting and related services. Involved with the design and evaluation of walls, windows, and interior separators.

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1985-1994   *Progressively increasing positions of responsibility from junior engineer to Department Head and Associate,* Trow Consulting Engineers Limited (Presently exp)
Provided Engineering Advice – design, testing, construction and rehabilitation of building envelope systems. Administered and managed rehabilitation projects. Developed business, managed technical competency and supervised staff.

Carried out over 150 projects involving building envelope systems. Completed engineering investigations, construction inspection and testing, rehabilitation design, contract administration, preventative maintenance inspections and building code consulting.

1985-1986   *Building Science Research Consultant,* Self Employed
Provided advice on computer applications for building related issues, developed testing guidelines for evaluating performance of building systems, analysed data and prepared reports.

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4. RESEARCH/TECHNOLOGY DEVELOPMENT CONTRIBUTIONS

This section provides details on research or technology development contributions. It includes:
- the most significant contributions to research/technology development (refereed articles, monographs, books, patents, copyright, products, services, technology transfer, other forms of research output),
- the significance in terms of influence and impact on the target community for the most important contributions; and
- other activities that show the impact of the work, such as research training, awards, consulting, contributions to professional practice or public policy, and membership on committees, boards, or policy-making bodies.

2003-PRESENT – GREEN ROOF POLICY DEVELOPMENT – CITY OF TORONTO

In 2009 The City of Toronto passed a bylaw requiring green roofs on certain types of buildings. The bylaw has been reviewed several times since then and continues to evolve along with the applicable technical standards. My contribution to the work behind the making of policy decisions surrounding the by- law has been a long term process which started in 2003 and resulted in a report on the costs and benefits of green roof technology in 2005 and continues today with the evolution of technical standards.

At that time, and until the by-law was passed in 2009, the original report was the only guide of its kind worldwide that provided a methodology to determine benefits of green roofs to assist policy makers in terms of aggregating the benefits of green roof technology at an urban scale. Since then this report continues to be widely used globally as a model for similar work. The work that emanated from the report, continues to this date in terms of evolution of Construction Standards for green roof technology which were first developed in 2009, the supplementary guidelines first developed in 2012 and with the most recent work resulting in the development of a standard for testing the resistance of green roof technology against wind-uplift in 2014. This standard has now been developed through Canadian Standards Association (CSA)

CURRICULUM VITAE - HITESH DOSHI

2008-2012 – CONSTRUCTION PERFORMANCE GUIDELINES FOR NEW HOME WARRANTY

I have played a very significant role as part of two teams that developed two separate but related documents produced by Tarion Corporation. These documents form the basis for new home warranty claims in Ontario. These documents were produced as Construction Performance Guidelines for Houses and Condominiums. These documents are widely used in Ontario by new all home builders, home owners, condominium board of directors, engineers and architects and internally by the Tarion Corporation in matters relating to the warranty claims on new homes and condominiums.

2007-PRESENT – GREEN ROOF POLICY AND CMHC

I have been involved with series of documents involving green roof policy development first for CMHC and presently culminating in papers developing framework for high level estimation of the economic benefits of various contributions to the environment of green roof technology.

    Green Roof Resource Manual for Municipal Policy Makers
    Monetary Value of Soft Benefits of Green Roofs
    Estimating green roof benefits

2014 – CONSULTING TO TARION ON POLICY FRAMEWORK FOR BUILDER EDUCATION.

I provided an opinion to Tarion Corporatiion in the development of policy framework for Builder Education. The Tarion Corporation has now implemented a Builder Education program for all new home builders.

2013-PRESENT – GUIDELINES FOR RESERVE FUND STUDIES AND PERFORMANCE AUDITS

I am member of the Professional Standards Committee of the Professional Engineers Ontario to develop Guidelines for Engineers Conducting Reserve Fund Studies and Performance Audits. This guideline will provide directions to professional engineers who are providing services to condominium corporations.

2006-PRESENT - MEMBER AND VICE CHAIR OF CONDOMINIUM MANAGERS STANDARDS COUNCIL OF THE ASSOCIATION OF CONDOMINIUM MANAGERS OF ONTARIO

As part of a team we have developed quality standards for the management of condominium corporations in Ontario. The team is also involved in reviewing the information from property management companies who wish to comply with the quality standards. This work is setting a high bar in terms of property management of condominium corporations.

CURRICULUM VITAE - HITESH DOSHI

5. HONOURS

2010 – Wood Product Design Award	**Canadian Wood Council Wood Product Design Award** I was the faculty advisor for Ryerson teams that received honourable mention
2009 – Wood Product Design Award	**Canadian Wood Council Wood Product Design Award** I was the faculty advisor for Ryerson teams that the award
2008 – Wood Product Design Award	**Canadian Wood Council Wood Product Design Award** I was the faculty advisor for Ryerson one team that placed first for developing the picnic shelter design
2007 FCM-CH2M Hill Sustainable Community Awards to City of Toronto for Wastewater	**City of Toronto wins the 2007 FCM-CH2M Hill Sustainable Community Awards for their green roof work** Ryerson report on green roof edited and co-authored by Hitesh Doshi receives mention in the 2007 FCM-CH2M Hill Sustainable Community Awards to the City of Toronto.
2007 Nominated for Leadership in Teaching Award	**Ministry of Education, Ontario, Leadership in Faculty Teaching Award (LIFT)** I was nominated by students for this award that was announced for the first time. The outcome was not favourable but the nomination itself is considered an honour.
2002-2003 Teaching Excellence Award – Faculty Level	**Faculty of Engineering and Applied Science Teaching Excellence Award, Ryerson University – Awarded Fall 2003** This award recognizes teaching excellence in the Faculty of Engineering and Applied Science and is awarded by the Dean's Office. It was received in the in the inaugural year of the award.
2001 ACSA Fellowship	**Association of Collegiate School of Architecture (ACSA) Fellowship** This award was for academic excellence and presentation of a research paper at the annual ACSA Technical Conference.
2000 Teaching Award	**GREET Teaching Award, Ryerson University** This award recognizes teaching excellence throughout Ryerson and is awarded through the office of the Vice-Provost. It is a University wide award.
1998 Certificate of Appreciation from NACE	Certificate of appreciation from NACE (National Association of Corrosion Engineers) for outstanding contributions as reviewer of the Corrosion/99 Symposium
1997 Recognition for Generating $20,000 for CSCE Building Science Scholarship Fund	As the chairperson of the 7th Building Science and Technology Conference I led the efforts to generate $20,000 in scholarship funds.
1997 William A. Trow Second Prize for Best Paper	**William A. Trow Paper Competition** Received the second prize in the William A. Trow paper competition. Paper on corrosion under roof insulation was judged consistently high in the three categories of technical significance, uniqueness and originality and writing style.
1997 City of Toronto Urban Design Awards	**City of Toronto Urban Design Awards** Part of the team that won the 1997 City of Toronto Urban Design Awards for the Rooftop Garden Design of Maurice Cody Public School, Toronto.

CURRICULUM VITAE - HITESH DOSHI

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6.   PROFESSIONAL MEMBERSHIP AND INVOLVEMENT

PEO	Professional Engineers of Ontario – Member and CofA
ACSA	Association of Collegiate Schools of America – (Active - through DAS)
RCI	Roof Consultant Institute (Active)– Past Chair Education Committee, Past member Code Committee
CCI	Canadian Condominium Institute (Active)
ACMO	Association of Condominium Managers of Ontario – Standards Council (Active)
NRC-IRC	National Research Council BELCAM Research Project Member (Past)
GRHC	Green Roof for Healthy Cities, member of policy and research committee (Past)
CMHC	Committee on Innovation in High-Rise Residential Construction (Past)
NACE	Ntl. Assoc. of Corrosion Engrs. – Past Chair of Cold Region Corrosion Committee 1997-1999
OBEC	Ontario Building Envelope Council - Director 1997-1998

7.   STUDENT SUPERVISION INCLUDING DESIGN JURIES AND DESIGN REVIEWS

Name	Start Date	End Date	Nature of Responsibility	Student Program	Student Institution
Smith, Roger	1-Jan-07	30-Apr-07	GA	Civil Engineering	Ryerson
Joyce, Timothy	1-Jan-07	30-Apr-07	GA	Civil Engineering	Ryerson
Cheng, Vivian	1-Sep-07	31-Dec-08	Advisor	ENSCIMAN	Ryerson
Rallis, Timothy	1-Sep-07	31-Aug-08	Advisor	Spatial Analysis	Ryerson
Hahn, Kristen	30-Sep-07	15-Jun-09	Advisor, Examiner	ENSCIMAN	Ryerson
Dukovcic, Joseph	1-Sep-08	31-Dec-08	Advisor	MBSc	Ryerson
Montanaro, Daniel	1-Apr-09	11-May-10	Supervisor	MBSc	Ryerson
Panopoulos, David	1-May-09	31-Aug-10	Supervisor	MArch	Ryerson
Shahryar, Ahrestani	30-May-09	1-Aug-10	External Advisor	Environmental Management	of New South Wales
Benjamin, Susan	1-Sep-09	15-Dec-09	Graduate Assistant	MBSc	Ryerson
Patel, Maulik	1-Sep-09	1-Sep-13	Advisor	MBSc	Ryerson
Benjamin, Susan	30-Sep-09	15-May-10	Advisor	MBSc	Ryerson
Bednarek, Luke	30-Sep-09	15-May-10	Advisor	MBSc	Ryerson
Benjamin, Susan	1-Jan-10	30-Aug-10	Second Reader	MBSc	Ryerson
Lefler, Jorden, John Stan	16-May-10	30-Aug-11	Supervisor	MArch	Ryerson
Rowland, Lindsay	1-Sep-10	31-Mar-11	Advisor	MBSc	Ryerson
Braden, Johnson	1-Sep-10	1-Sep-13	Advisor	MBSc	Ryerson

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Fereidooni, Navid	15-Sep-10	15-Dec-10	GA	MArch	Ryerson
Dabkowski, Alexandra	1-Mar-11	31-Aug-11	Supervisor	MBSc	Ryerson
Hussain, Tofayel	30-Apr-11	15-Jan-14	Supervisor	MBSc	Ryerson
Vickers, Andrea	1-Sep-12	15-Jan-13	Advisor	MBSc	Ryerson
Mykytyak, Viktoriya	1-Sep-12	1-Dec-12	Advisor	MBSc	Ryerson
Joshi, Anil	1-Sep-12	31-Dec-12	Advisor	MBSc	Ryerson
Rosada, Michael	1-Sep-12	31-Dec-12	GA	MArch	Ryerson
Sarkis, Karl	1-Sep-12	31-Dec-12	GA	MArch	Ryerson
Colucci, Andrew	13-Nov-12	10-Jan-13	Examiner	MASc	Ryerson
Townsend, Scott	1-Mar-13	15-Apr-14	GA	March	Ryerson
Mehta, Cherag	30-Mar-13	30-Aug-13	Second Reader	MBSc	Ryerson
Mehta, Cherag	15-Sep-13	15-Dec-13	GA	MBSc	Ryerson
Cunha, Antonio	15-Jan-14	15-Apr-14	GA	MArch	Ryerson
Rosada, Michael	15-Jan-14	15-Apr-14	GA	MArch	Ryerson
Johnson, Braden	30-Apr-14	15-Oct-15	Advisor	MBSc	Ryerson
Murad, Chafik	26-May-14	30-Sep-15	Supervisor	MBSc	Ryerson
Shum, Stephaine	2-Sep-14	31-Aug-15	Second Reader	March	Ryerson
Laidlaw, Cameron	2-Sep-14	31-Aug-15	Advisor & Supervisor	MBSc	Ryerson
Tsang, Rebecca	2-Sep-14	15-Dec-14	GA	MArch	Ryerson
Mahbub, Nadia	2-Sep-14	31-Jan-16	Advisor	MBSc	Ryerson
Wasfy, Moataz	2-Sep-14	31-Dec-15	Advisor	MBSc	Ryerson
Fialkov, Lindsay	2-Sep-14		Advisor	MBSc	Ryerson
Mykytyak, Viktoriya	1-Mar-15	31-Aug-15	Supervisor	MBSc	Ryerson

Name	Date	Involvement	Level
Joyce, Timothy	09/06-04/07	TA supervisor	Master's
Smith, Roger	09/06-04/07	TA supervisor	Master's
Percy, Benjamin	09/06-04/07	TA Supervisor	U/G
Ichban, Christel	09/06-04/07	Thesis co-supervisor	U/G
Santa, Daniel	09/06-04/07	Thesis co-supervisor	U/G
Gamracy, Bishop	09/06-04/07	Thesis co-supervisor	U/G
Luciani, Peter	01/06-06/06	Research supervisor	Master's going to Ph. D.
Verrati, Michael	05/04-04/05	Research co-supervisor	Master's
Currie, Beth Anne	05/04-04/05	Research co-supervisor	Master's
Au, Angela	05/04-04/05	Research co-supervisor	Master's
Maleki, Afarin	05/05-04/06	Thesis co-supervisor	U/G
Yoo, Caroline	05/05-04/06	Thesis co-supervisor	U/G
Anthony Pannolino	April 2005	Thesis Jury	U/G
Smith, Adam	April 2005	Thesis Jury	U/G

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Reichert, Lindsay	05/05-08/05	Research Supervisor	RA
Reichert, Lindsay	01/05-05/05	TA Supervisor	U/G
Benninger, Anne	01/05-05/05	TA Supervisor	U/G
Li, Olwen	01/05-05/05	TA Supervisor	U/G
Chan, Jennifer	01/05-05/05	TA Supervisor	U/G
Chirstidis, Chris	01/05-05/05	TA Supervisor	Master's
Aldulaymi, Zahir	01/05-05/05	TA Supervisor	Master's
Al-Hashimy, M.	01/05-05/05	TA Supervisor	Master's
Benninger, Anne	09/04-04/05	Thesis Supervisor	U/G – Ranked 2nd
Burling, Tara	09/04-04/05	Thesis Supervisor	U/G
Chau, Emily	09/04-04/05	Thesis Supervisor	U/G
Clemmensen, Mark	09/04-04/05	Thesis Supervisor	U/G
Hodder, John	09/04-04/05	Thesis Supervisor	U/G
Prot, Amanda	09/04-04/05	Thesis Supervisor	U/G
Qutob, Mona	09/04-04/05	Thesis Supervisor	U/G
Raudoy, Chris	09/04-04/05	Thesis Supervisor	U/G
Saneinejad, Saba	09/04-04/05	Thesis Supervisor	U/G – Ranked 1st Research paper
Thompson, Peter	09/04-04/05	Thesis Supervisor	U/G –
Cancellier, Carla	09/03-04/04	Thesis Supervisor	U/G
Carter, Paul	09/03-04/04	Thesis Supervisor	U/G
Chapman, Vicki	09/03-04/04	Thesis Supervisor	U/G
Dhani, Anita	09/03-04/04	Thesis Supervisor	U/G
Hans, Ravinder	09/03-04/04	Thesis Supervisor	U/G
Mackinlay, Adam	09/03-04/04	Thesis Supervisor	U/G – Ranked 1st
Hong, Jonathan	09/03-04/04	Thesis Supervisor	U/G
Moore, Nicholas	09/03-04/04	Thesis Supervisor	U/G
Owsicka, Milena	09/03-04/04	Thesis Supervisor	U/G
Smolarska, Agnes	09/03-04/04	Thesis Supervisor	U/G
VanEsse, Jason	09/03-04/04	Thesis Supervisor	U/G
Gosh, Alaka	09/03-04/04	TA Supervisor	Master's
Davodi, M	09/03-04/04	TA Supervisor	Master's
Kwan, Wilma	09/03-04/04	TA Supervisor	Master's
Nosworthy, Lucas	05/01-04/02	Research Supervisor	RA
Tait, Ryan	09/01-03/02	Research Supervisor	RA
Williams, Michael	09/01-03/02	Research Supervisor	RA
Sabo, Julie	09/01-04/02	Thesis co-supervisor	U/G
Patel, Raj	01/02-04/02	TA supervisor	Master's
Androus, Anwar	01/02-04/02	TA supervisor	Master's
Pourmatin, Roham	09/99-04/00	Thesis Supervisor	U/G
Perricone, Massimo	09/99-04/00	Thesis Supervisor	U/G
Serravite, Domenic	09/99-04/00	Thesis Supervisor	U/G
Woo, Jeff	09/99-04/00	Thesis Supervisor	U/G
Costa, Eldon	09/99-04/00	Thesis Supervisor	U/G
Pourmatin, Roham	01/00-04/00	Independent Study	U/G
Chau, Elaine	09/97-04/98	Thesis Supervisor	U/G – Ranked 2nd
Dixon, Edward	09/97-04/98	Thesis Supervisor	U/G
Kim, Jim	09/97-04/98	Thesis Supervisor	U/G
Kryz, Koziak	09/97-04/98	Thesis Supervisor	U/G

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Lam, Anita	09/97-04/98	Thesis Supervisor	U/G
Lee, Sung	09/97-04/98	Thesis Supervisor	U/G
Lembke, Mike	09/97-04/98	Thesis Supervisor	U/G – Ranked 1st
Monardo, Anthony	09/97-04/98	Thesis Supervisor	U/G
Barmi, Jay	05/98-08/99	Research Supervisor	RA
Cheung, Ian	08/98-05/99	Thesis Supervisor	U/G
DiIorio, Adam	08/98-05/99	Thesis Supervisor	U/G
Hugh, Clinton	08/98-05/99	Thesis Supervisor	U/G
McMullen, Gary	08/98-05/99	Thesis Supervisor	U/G
Garcia, Andrew	08/98-05/99	Thesis Supervisor	U/G
Voikos, Don	08/98-05/99	Thesis Supervisor	U/G
Chimienti, John	09/97-04/98	Thesis supervisor	U/G
Devido, Peter	09/97-04/98	Thesis supervisor	U/G
Furgiuele, Roberto	09/97-04/98	Thesis supervisor	U/G
Gowing, Wesley	09/97-04/98	Thesis supervisor	U/G
Lavigne, Aaron	09/97-04/98	Thesis supervisor	U/G
Moore, Dave	09/97-04/98	Thesis supervisor	U/G Ranked 2nd
Mott, Janet	09/97-04/98	Thesis supervisor	U/G
Taraborelli, Marco	09/97-04/98	Thesis supervisor	U/G
Lyte, Allen	09/96-04/97	Thesis supervisor	U/G
Crewson, Paige	09/96-04/97	Thesis supervisor	U/G
Humber, Troy	09/96-04/97	Thesis supervisor / Research Supervisor	U/G – RA / Research Paper
Hewis, Steve	09/96-04/97	Thesis supervisor	U/G
Elliott, Sarah	09/96-04/97	Thesis supervisor	U/G
Ali, Rahim	09/95-04/96	Thesis supervisor	U/G
Siddiqui, Yasmeen	09/95-04/96	Thesis supervisor	U/G
Gill, Gurpreet	09/95-04/96	Thesis supervisor	U/G
Vlahakis, Tom	09/95-04/96	Thesis supervisor	U/G
Guyro, Anthony	09/95-04/96	Thesis supervisor	U/G / Research Abstract
Day, Brent	09/94-04/95	Thesis supervisor	U/G Ranked 1st / Research Paper
Chan, Eric	09/94-04/95	Thesis supervisor	U/G
Barr, Chris	09/94-04/95	Thesis supervisor	U/G

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8. RESEARCH FUNDING (INTERNAL AND EXTERNAL – PLEASE NOTE THAT THIS LISTING DOES NOT INCLUDE NUMEROUS SMALL GRANTS THAT WERE PROCURED INTERNALLY AND EXTERNALLY THAT RELATE TO TRAVEL SUPPORT SUCH AS FROM THE DEAN AND THE CHAIR AND FUNDING AGENCIES)

Title:	Computer Controlled Router in Wood Design
Year:	2011-2012
Source:	Ministry of Northern Development Mines and Forestry Matched by Ryerson University (Ontario Wood Promotions Capital Equipment Assistance)
Status	Completed
Amount:	$100,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	Grant to purchase equipment for wood design
Impact	This equipment has been one of the workhorses in the DAS workshop. It has been used extensively for SRC and teaching.

Title:	Development of on-line supplementary material for textbook on building construction fundamentals
Year:	2009-2010
Source:	John Wiley and Sons
Status	Completed
Amount:	$3,500
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	Grant to develop resource material and case study material for teaching of fundamentals of building construction
Impact	This material has been available on the textbook website to be used by students and faculty using that book to teach.

Title:	Evaluation of Water-Shedding Effectiveness of Flashing
Year:	2008
Source:	Ryerson Internal Funding
Status	Completed
Amount:	$7,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	Development of test method to determine the water-shedding effectiveness of flashing
Impact	This has resulted in publications and some seminal work which has now been adopted by the industry for testing of flashing

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Title:	Determining economic value of soft benefits of green roofs
Year:	2008-2009
Source:	CMHC, ERP
Status	Completed
Amount:	$25,000
Principal Invest.	Steven Peck, Green Roofs for Healthy Cities
Other Invest.	**Hitesh Doshi**, Ray Tomalty
Purpose:	Development of methodology to determine the soft benefits of green roofs
Impact	A report was produced describing the methodology and to be used by policy planners in determining the economic value of green roofs

Title:	Developing the Green Roof Infrastructure Industry in Canada
Year:	2006-2007
Source:	Infrastructure Canada, KOA - External
Status:	Completed
Amount:	$125,000 – External (Amount to Ryerson Investigator was $10,000)
Principal Invest.	Steven Peck, Green Roofs for Healthy Cities
Other Invest.	**Hitesh Doshi**, Ray Tomalty
Impact:	Development of green roofs tree of knowledge. It is now available on-line at http://greenroofs.org/grtok/ This is going to create a very rapid dissemination of research results related to green roofs.

Title:	Modelling green roof cost benefit at municipal level
Year:	2004-2008
Source:	CRESTech (Now OCE)
Status:	Completed
Amount:	$130,000 – External (Includes in-kind contributions)
Principal Invest.	**Hitesh Doshi**
Other Invest.	James Li, Paul Missios, Doug Banting
Purpose:	Development of model for environmental and social benefits of green roof technology for municipalities.
Impact	This project has had a very significant impact. The work was used to formulate a green roof policy at the City of Toronto for which it has received an award. Several green roofs have been installed as a result of this policy and it has led to further work on sustainability being carried out by the City.

Title:	Green roof policy survey
Year:	2005-2006
Source:	CMHC - External
Status:	Completed
Amount:	$45,000 (Amount to Ryerson investigator was $10,000)
Principal Invest.	Gail Lawlor
Other Invest.	**Hitesh Doshi**, Ireen Wieditz, Beth Anne Currie
Purpose:	Researching policies related to green roof policies throughout the world and preparing a report and framework for developing policies in Canada.
Impact	This has resulted in a publication that has been widely distributed by CMHC

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Title:	Developing international collaboration for green roof research
Year:	2005-2007
Source:	Ryerson International Research Grant - Internal
Status:	Completed
Amount:	$22,000
Principal Invest.	James Li
Other Invest.	**Hitesh Doshi**, Doug Banting
Purpose:	Developing international collaboration to pursue research related to green roof technology.
Impact:	The work has been synergistic with other green roofing work and is being spearheaded by Dr. Li who has been working with Hong Kong researchers.

Title:	Air quality impacts on building materials
Year:	2003-2004
Source:	Environment Canada - External
Status:	Work Completed
Amount:	$22,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	Development of model to further study to impact on building components due to air quality
Impact	A major report resulted in policy guidelines related to climate change and their impact on buildings. This study was also disseminated through the publication of paper in peer-reviewed conference proceeding.

Title:	Effectiveness of learning object
Year:	2002-2003
Source:	Ryerson RA Program – Internal
Status:	Completed
Amount:	$1,500
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To test the effectiveness of animated construction details
Impact:	Completed work and is being used in teaching. Several learning objects have been produced and included as electronic resource with the textbook.

Title:	Air quality impacts on building materials
Year:	2002-2004
Source:	Environment Canada - External
Status:	Work Completed
Amount:	$4,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	Development of preliminary model to further study to impact on building components due to air quality
Impact	The work was completed and led to additional work to study further impact.

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Title:	Development of guide to teach wood frame construction detailing
Year:	2002-2003
Source:	Canada Mortgage and Housing Corporation – External
Status:	Completed
Amount:	$22,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To develop case study based guide to teach wood frame construction detailing to professionals
Impact:	Completed work and has been successful used in teaching. A course on detailing was also developed to be taught at Ryerson.

Title:	Durability and service life prediction
Year:	2001-2002
Source:	Ryerson RA Program – Internal
Status:	Completed
Amount:	$1,500
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To carry out a survey of Ryerson roofs
Impact:	Completed and report produced.

Title:	Construction detail animation
Year:	2001-2002
Source:	Ryerson RA Program – Internal
Status:	Completed
Amount:	$1,500
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To test the effectiveness of animated construction details
Impact:	Completed work and is being used in teaching. Several learning objects have been produced and included as electronic resource with the textbook.

Title:	Construction detail animation
Year:	2000-2001
Source:	Canada Mortgage and Housing Corporation – External
Status:	Completed
Amount:	$10,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To test the effectiveness of animated construction details
Impact:	Completed work and is being used in teaching. Several learning objects have been produced and included as electronic resource with the textbook.

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Title:	Durability and service life prediction
Year:	2000-2003
Source:	NSERC CRG (Collaborative Research Grant) - External
Status:	Completed
Amount:	Total Grant for team was $500,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	Collaborative project with NRC, UBC, Dalhousie University, Concordia)
Purpose:	Investigation of the service life of roofing components
Impact:	This project led to several investigations of roofs and development of standards related to durability of roofing. Several reports and papers resulted from this work

Title:	Digital course resources
Year:	May 1999
Source:	Digital Media Projects Office – Internal in-kind
Status:	Completed
Amount:	$1,500 In-kind
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To develop digital tools for course delivery
Impact:	Completed work to assist in teaching

Title:	Workshop on MicroRoofer
Year:	May 1999
Source:	National Research Council - External
Status:	Completed
Amount:	$1,800
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To research different software for use in survey of roofing and to prepare a training program on one of them
Impact:	A paper was co-authored and published and it also led to NSERC Grant.

Title:	Durability of Building Envelope
Year:	1998-1999
Source:	Ryerson Research Assistant Program
Status:	Completed
Amount:	$4,800
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	Research into the durability of roofing
Impact:	This work involved the development of literature review on roofing which was useful for future research

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Title:	Durability of Building Envelope
Year:	1998
Source:	Construction Specifications Canada
Status:	Pending
Amount:	$6,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To carry out research on a mutually agreeable area related to building envelope durability
Impact:	This work has not been started

Title:	Dean's Seed Grant
Year:	1995-1997
Source:	Dean's Seed Grant - Internal
Status:	Work completed
Amount:	$8,000
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To develop capacity for roofing related research
Impact:	Equipment was purchased to carry out preliminary research into the moisture impact on flat roofing. This work lead to research studies and further grants.

Title:	Federal Summer Assistant Program
Year:	1996 Summer
Source:	Federal Summer Assistant Program - External
Status:	Work completed
Amount:	$2,500
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	Hire Research Assistant to work on projects during summer
Impact:	This grant allowed the hiring of summer research assistant to help with ongoing projects

Title:	Seed Funding for Environmental Considerations in Roof Design
Year:	1994-1995
Source:	NSERC GRG (General Research Grant) - Internal
Status:	Work completed
Amount:	$2,500
Principal Invest.	**Hitesh Doshi**
Other Invest.	
Purpose:	To conduct research to develop a framework that could be used by designers to assess the environmental aspects of roofing design
Impact:	A paper based on this work was prepared and published.

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9. PUBLICATIONS AND CREATIVE WORKS

9.1 LIFETIME SUMMARY

Item	Number
Chapters in books	3
Technical reports	10
Papers in refereed journals	9
Papers in refereed conference proceedings	30
Films, videos, radio documentaries, interviews	2
Reviews and Architectural Criticism	2
Other presentations	55

9.2 FULL CITATIONS, (*R) NEXT TO A CITATION INDICATES A REFEREED WORK

CHAPTERS IN BOOKS

Research in Building Physics and Building Engineering – Fazio, Ge, Rao and Desmaris,(eds), 2006, Taylor and Francis Group, London, ISBN 0-415-41675-2, *Test Method to study the water shedding effectiveness of drip edge flashing* (*R)

Sample test bank, presentation deck, and animation published on-line with the Fourth Edition of textbook by Edward Allen "Fundamentals of Building Construction, Materials and Methods", John Wiley and Sons Ltd., December 2003. ISBN 0-471-21903-7, Material available on-line at http://www.wiley.com/constructioneducation.

Building Code and Standards Roofing Reference Guide – Roof Consultant Institute, 1997, RCI, Raleigh, NC, Chapter on *Canadian Building Codes* (*R)

TECHNICAL REPORTS AND HANDBOOKS

Tarion Corporation – Consturction Performance Guidelines for New Homes and Condominium Units, January 2013
http://www.tarion.com/Warranty-Protection/Documents/CPG%203rd%20Edition%20Jan%201.pdf

Tarion Corporation – Condominium Common Elements Construction Performance Guidelines, 2013. http://www.tarion.com/Warranty-Protection/Documents/CE%20CPGs%20Final.pdf

City of Toronto – Toronto Green Roof Standards Supplementary Guidelines, 2009
https://www1.toronto.ca/city_of_toronto/city_planning/zoning__environment/files/pdf/GreenRoof-supGuidelines.pdf

Lawlor, G., Currie, B.A., Doshi, H., Wieditz, I, *Green roofs-A resource manual for policy makers*, CMHC, Research Report, 2006 (Peer Reviewed Report) (*R) http://www.cmhc-schl.gc.ca/odpub/pdf/65255.pdf?lang=en

Doshi H., Banting D., Li J., Missios P., *Report on the Environmental Benefits and Costs of Green Roof Technology for the City of Toronto*, September 2005, CRESTech/City of Toronto. (Peer Reviewed Report) (*R)

CURRICULUM VITAE - HITESH DOSHI

https://www1.toronto.ca/city_of_toronto/city_planning/zoning__environment/files/pdf/fullreport103105.pdf

Doshi, H., *Economic Valuation Final Report, Estimating the Value of Reduced Sulfur Deposition on Materials Corrosion for the Air Quality Valuation Model*, Prepared for Environment Canada, March 8, 2004, Toronto, Ontario

Doshi, H., Literature Review Summary Report, *Estimating the Value of Reduced Sulfur Deposition on Materials Corrosion for the Air Quality Valuation Model*, Prepared for Environment Canada, September 10, 2003.

Doshi, H., *Economic Valuation Summary Report Estimating the Value of Reduced Sulfur Deposition on Materials Corrosion for the Air Quality Valuation Model*, Prepared for Environment Canada, August 22, 2003.

Doshi, H., *Construction of a national inventory of materials stocks-at-risk from air pollution and weathering in Canada*, Prepared for LECG Inc. for Environment Canada, March 28, 2003.

Doshi H., Leong P., *Certified Reserve Fund Analyst Criteria*, Canadian Condominium Institute, 1997.

PAPERS IN REFEREED JOURNALS

Murad C., Doshi H., Ramakrishnan R., *Impact of Insulated Concrete Curb Balcony Slab*, Procedia Engineering, Vol. 118, 2015 pp. 1030-1037. **(*R)**
http://www.sciencedirect.com/science/article/pii/S1877705815022006

Oberndorfer, E., Lundholm, J., Bass, B., Koffman, R., Doshi, H., Dunnett, N., Gaffin, S., Koehler M., Liu, K., Rowe, B., *Functional Ecology of Green Roofs: Mitigating the Effects of Urbanization*, Bioscience, November 2007 **(*R)**
http://bioscience.oxfordjournals.org/content/57/10/823.full.pdf+html

Saneinejad, S., Doshi, H., Testing *of Metal Flashing for Water Shedding Effectiveness*, Journal of the Roof Consultant Institute, Volume 24, No. 9, September 2006 pp. 24-32. **(*R)** http://www.rci-online.org/interface/2006-09-saneinejad-doshi.pdf

Doshi H., *A review of North American Conference on Roofing Technology Proceedings*. Review published in RCI Interface, Journal of Roof Consultants Institute, November 1999, Vol. XVII, No. 11, pp. 4-7 in RCItems. **(*R)**

Doshi, H., *Assessing Risk of Condensation in Low Sloped Roofs*, Journal of Roof Consultant Institute, April 1999, Volume XVII, No. 4, pp. 6-12.

Doshi H., Vanier D., Kyle B., Marcellus R., *Maintenance Software Review*, Journal of Roof Consultant Institute, March 1998, Vol. XVI, No. 3, pp. 10-18. **(*R)**

CURRICULUM VITAE - HITESH DOSHI

Doshi H., Stritesky V., Lanni P., *Corrosion of Structural Steel Deck Under Roof Assemblies with Non-Foam Insulation*, Journal of Roof Consultant Institute, October 1997, Vol. XV, No. 10, pp.5-17. **(*R)**

Doshi H., *Life Cycle Cost Implications of roofing decisions*, Journal of Roof Consultant Institute, February 1997 Vol. XV, No. 2, pp. 7-13. **(*R)**

Doshi H., *Roofing and the Canadian Building Code*, Journal of Roof Consultant Institute, October 1996, Vol. XIV, No. 10 pp. 17-18**(*R)**

PAPERS IN REFEREED CONFERENCE PROCEEDINGS

Doshi, H., The economics of green roof technology, Proceedings of the Grey to Green Infrastructure Conference, Toronto, On, May 2013

Doshi H., Peck, S.- Estimating economic public benefits from regional implementation of green roof technology, Proceedings of the CitiesAlive Conference on Green Infrastructure, Chicago, IL, November 2012.

Benjamin S., Straka, V., Doshi, H., Sustainability vs. performance - Impact of reducing thickness of brick in veneer walls, Proceedings of the Architectural Research Centres Consortium (ARCC), Detroit, MI, 2011. **(*R)**

Doshi H., Role of coatings in cool roof applications, Cool Roof Summit, Toronto, ON, 2010

Doshi H., A review of Toronto Green Roof Standard and By-Law, International Skyrise Greening Conference, Singapore, 2010.

Doshi, H., Green roofs and urban housing, Conference Presentation - 2010 Toronto-Frankfurt Colloquium: Urbanism and Housing, Toronto, ON, 2010

Doshi, H., *Water Shedding Design of Metal Flashing*, Proceedings of the Canadian Symposium on Roofing Technology", Calgary, Alberta, June 2007. **(*R)**

Doshi, H., *Using GIS to Rank Potential Sites Based on Green Roof Impact*, Proceedings of the Fifth Annual Greening Rooftops for Sustainable Communities Conference, April 30, 2007, Minneapolis, Minnesota.**(*R)**

Maleki, A., Ramakrishnan, R., Doshi, H., *Impact of Sealant on the Water Shedding Performance of Metal Flashing*, Proceedings of the 11th Conference on Building Science and Technology , Banff, Alberta, March 13, 2007. **(*R)**
http://www.nbec.net/documents/THESTUDYOFIMPACTOFCAULKINGONTHEWATERSHED
DINGPERFORMANCEOFMETALFLASHING-AFARINMALEKI.pdf

Doshi H., *Benefits of Green Roof on a City Scale*, Proceedings of the Conference on Greening Rooftops for Sustainable Communities, Boston, MA, May 12, 2006. **(*R)**

CURRICULUM VITAE - HITESH DOSHI

Doshi H., *Rain Water on Building Cladding: Two Case Studies*, 10th Canadian Conference on Building Science and Technology, Building Science and the Integrated Design Process 2005, May 12-13, 2005, Ottawa, Ontario pp. 116-126 **(*R)**

Doshi H., *Constructing an inventory of materials at risk from air pollution damage in Canada*, Proceedings of the CIB World Congress, Toronto, Ontario, May 1-7, 2004 **(*R)**

Doshi H., *Life Cycle Cost Implications of Building Envelope Decisions*, Association of Collegiate Schools of Architecture, Technology Conference, Austin, Texas, July 2001. **(*R)**

Doshi H., *On-Line Distance Education in Building Science - A Review of Current State of Art and Case Study*, 8th Conference on Building Science and Technology, Toronto, Ontario, February 2001. **(*R)**

Doshi H., *Impact of moisture in low sloped roofing on the structural serviceability of supporting steel deck*, ISCORD 1997, ASCE International Symposium on Cold Region Development, May 1997 pp.199-202. **(*R)**

Doshi H. and Stritesky V., *Corrosion of Deck in Insulated Roof Systems*, March 1996 NACE Conference, Paper No. 356, Houston, Texas **(*R)**

Doshi H. and Stritesky V., Design Issues Pertaining to *Corrosion of Steel Deck in Metal Roofs*, April 1996 Proceedings of the Architectural Research Centers Consortium (ARCC) Annual Conference, Tucson, Arizona**(*R)**

Doshi H. and Brent D., *Environmental Impact of Roofing Systems*, in the Ontario Eco-Architecture, Proceedings of the Conference on Architecture and the Environment May 1995. **(*R)**

Doshi H. and Culliton J., *Systematic Evaluation of In-Service Performance of Low Slope Roofs*, Proceedings of the Fifth Conference on Building Science and Technology, March 1990. **(*R)**

Doshi H., *Hazard-I Fire Model - Case Studies*, Conference on the use of Hazard I at NIST, US, 1990. **(*R)**

Burnett, E. and Doshi, H., *Stone Veneer Wall Systems - Two Case Histories*, Proceedings of the Fourth Conference on Building Science and Technology, February 1988. **(*R)**

FILMS, VIDEOS, RADIO DOCUMENTARIES AND INTERVIEWS

Discovery TV Series Curious and Unsual Deaths – Episode related to death of a person falling through a window in a Toronto building, 2009.

Television Interview for Global TV, *Ice and Architecture, Expert Opinion about Ice Formation on CN Tower*, Winter March 6, 2007

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CURRICULUM VITAE - HITESH DOSHI

REVIEWS AND ARCHITECTURAL CRITICISM

Book Review of *Applied Structural Steel Design* for Prentice Hall - December 1997.

Adaptation review of book proposal on "Design in Structural Steel for Prentice Hall – Jan. 1998

OTHER PRESENTATIONS AND CREATIVE ACTIVITIES

Doshi, H., Formative assessments in large lecture based course: Considerations for successful learning outcomes, Ryerson Faculty Conference, May 22, 2014

Doshi H., Peck S., Estimating Green Roof Benefits – A guide to attributing economic values to public green roof policy and investment, Volume 15, Issue 2, Summer 2013

Doshi, H., Altman, K., Emond, M., Halliday, C., Accommodation and core academic standards: access centre engages tension (or, How to stay unbiased), Presentation, Ryerson Faculty Conference May 16, 2013, Toronto.

Doshi, H., Design and construction of green roofs to meet Toronto Green Roof Construction Standards, Toronto Building Training Workshop, Toronto, ON, 2010.

Doshi H., Animated construction details, Unpublished.

Doshi, H., Tomalty R., Green Roof Tree of Knowledge, an interactive database of current research on green roof, http://greenroofs.org/grtok/, July 2007.

Doshi H., and students of ASF26, Exhibitions of photographs of canopies showing the interaction between the structure and the architecture, May 2007, Ryerson University.

Doshi, H., Invited Lecture on *Green Roofs* during Charette on the Environment, Ryerson, February, 2, 2007.

Doshi, H., Invited lecture on *Green Community-Green Campus, Environmental Issues at Ryerson*, November 15, 2006, Toronto, Ontario.

Doshi, H., Invited lecture on *Greening from Above: Roofs as an Environmental Infrastructure Resource*. Keynote presentation made to the Environmental Advisory Forum, October 30, 2006, Kingston, Ontario.

Doshi, H., Presentation made to the City of Toronto Roundtable on the Environment special public meeting on green roof benefits, November 23, 2005

Doshi H., *Environmental Benefits of Green Roofs on a City Scale: An Example of the City of Toronto*, September 2005, World Green Roof Congress, Basel Switzerland.

Doshi, H., Presentation made to the City of Toronto Roundtable on the Environment on green roof strategies, June 8, 2005.

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CURRICULUM VITAE - HITESH DOSHI

Delivered seminar on Preventative Maintenance of Buildings, October 24-26, 2005, Petawawa, Ontario on behalf of EPIC.

Doshi, H., *Lessons Learnt from Using Fully Digital Assignment Submission in a Traditional Lecture Based Course*, May 2005, Faculty Conference, Ryerson, Toronto, Ontario.

Doshi, H., *New Skills for the New Digital World*, Learning and Teaching Office at Ryerson Faculty Conference, May 18, 2004, Toronto, Ontario.

Doshi, H., *Little Things that Make a Big Difference*, Invited Lecture at the New Faculty Orientation by Learning and Teaching Office, December 7th, 2004, Toronto, Ontario

Doshi H., *Managing roofing systems*, two day course presentation, EPIC, Mississauga, February 16-17, 2004.

Doshi H., *Enhancing Student Learning Using On-Line Quizzes*, The GREET Exchange, Fall 2003, pp 14-15.

Doshi H., *Tips on bringing Test Response System Data Into Spreadsheets*, The GREET Exchange, Fall 2003, pp. 15

Doshi H., *Putting Together a Teaching Dossier*, Learning and Teaching Office, November 5, 2003, Ryerson University.

Doshi H., *On-Line Quizzes as Learning Tool*, presented at the McGraw-Hill Ryerson Teaching, Learning and Technology Conference, November 24 and 25, 2003, Ryerson University, Toronto.

Doshi H., *Mutiple Choice Tests Using Ryerson Bubble Sheets*, Learning and Teaching Office, October 8, 2003, Ryerson University.

Doshi H., *Managing a Facilities Maintenance Program*, 2 day course presentation, Department of National Defense, Petawawa, September 2003.

Doshi H., moderator of panel discussion *Student Views of and Effective Professor*, Learning and Teaching Office at the New Faculty Orientation, August 6, 2003, Ryerson University.

Doshi H., moderator of panel discussion *Working with Academic Assistants, Challenges and Opportunities*, on behalf of the Learning and Teaching Office and the Professional Affairs Committee of the RFA, February 19, 2003, Ryerson University.

Doshi H., *Working with Academic and Teaching Assistants – Opportunities and Challenges, A summary of panel discussion*, The GREET Exchange, Spring 2003, pp 4-5.

Doshi H., *The joy of chalkboards*, The GREET Exchange, Spring 2003, pp. 6-7.

Doshi H., *Retaining New Faculty and Staff – Survey of New Faculty Concerns*, invited talk at the Chair/Director's and Senior Administrator's Orientation and Renewal Program, November 21, 2002, Ryerson University.

CURRICULUM VITAE - HITESH DOSHI

Doshi H., *New Faculty Survey, Findings That May Help Plan For Faculty Retention*, November 2002, Ryerson University, Toronto, Ontario.

Doshi H., *Experimenting in On-Line Teaching*, The GREET Exchange, Fall 2002, pp. 4-5

Britnell J., Doshi H., Gunn F., Sniderman P., Charette: *Constructed Knowledge Through Campus and Community Experience*, presented at the STLHE Annual Conference, June 13, 2002, McMaster University, Hamilton, Ontario.

Doshi H., *Getting and Keeping the Edge, Role of the Learning and Teaching Office*, invited talk at the Faculty of Business post-exam, post-marking gathering, May 7, 2003, Ryerson University.

Doshi H., *Conducting Facility Audits*, Invited to make a presentation at EPIC seminar, May 2001

Invited by Education Program Innovation Centre, to be the chair and key speaker at the seminar on roofing - Nov. 1999.

Invited by National Research Council to co-ordinate the annual meeting of BELCAM research consortium and deliver an advanced seminar on MicroRoofer program - May 15, 1999.

Invited by Education Program Innovation Centre, to give a lecture on inspecting Building Envelope Components -March 2000, and September 1998.

Chairman of the 7th Conference on Building Science and Technology, March 1997

Doshi H., *Building Envelope and Corrosion*, Presented at the CSC Seminar, May 1997.

Doshi, H., *Basic and Advanced Reserve Fund Study Course*, Toronto Chapter of CCI, 1994.

Chairman, Seminar on Impact of Envelope on Building Quality and Performance, Organized by EPIC and University of Toronto Continuing Education, November 6 and 7, 1995.

Doshi H., *Infrared Thermography and Roof Maintenance*, Plant Engineering and Maintenance, vol. 19, #5, November 1995.

Doshi, H. *Importance of Reserve Fund and Technical Audit*, Presented at the National Condominium Conference, October 27, 1995.

Doshi H., *Why and How to Evaluate Your Roof?*, Plant Engineering and Maintenance, vol. 18, #2, April 1995.

Building Restoration and Construction Deficiencies, Seminar Chairperson, at the Property Management Exposition and Conference, December 1994.

Doshi H., *Is Your Roof Ready for Winter Weather?*, Plant Engineering and Maintenance, vol. 17, #5, September 1994.

CURRICULUM VITAE - HITESH DOSHI

10. Professionally Completed Projects

List of Representative Projects Professional and Education Related	Profile : Hitesh has been involved with many building science projects varying in fees from $1,000 to $700,000 representing construction value of $10,000 to several million dollars.
Design and contract administration related projects Preparation of drawings, specifications and contract documents for retrofit, rehabilitation or maintenance work, design document review for architects and owners on new construction projects	Klaus Dunker Architect Residence - Roofing and thermal design Toronto International Airport - Roof replacement and asbestos abatement. Centennial Stadium - Design of structural joints of precast members Travel Lodge - Exterior cladding retrofit Royal Ontario Museum - Skylight replacement City of Mississauga - Old Grammar School - Building Envelope Restoration Hillcrest Mall - roof replacement - $2,000,000 over 4 years Peel Condominium Corporation #77 - concrete and masonry repairs
Construction quality control On-site inspection of soils, concrete, steel, fireproofing, curtainwall/windows, precast panels, exterior wall, roofing, & other similar components	Brampton Hydro building, Brampton Bank of Canada building, Mississauga Terminal III, Mississauga Several non-profit housing projects - Peel Region Several Schools - Peel Board and Dufferin Peel Separate School Board
Building system evaluation and testing Evaluations of existing buildings to determine the present condition and develop plans for future maintenance and repair. Laboratory and field testing of building systems	City of Etobicoke City Hall - Limestone cladding evaluation Canrise non-profit housing cooperative - window evaluation Toronto Congress Centre - roofing evaluation 1 and 3 Duplex - Exterior envelope evaluation North York General Hospital - Roofs Royal Ontario Museum - Wall and skylight Exchange Tower - Exterior curtain wall and air barrier Gardiner Museum of Ceramic Arts - Exterior stucco system YWCA of Canada, Toronto Headquarters - Exterior masonry Erindale College, Mississauga - Exterior caulking
Building evaluation-environmental Building Surveys for asbestos, hazardous wastes and soil contamination	Toronto International Airport Beth Emeth Yehuda Synagogue 24 Industrial and Commercial buildings over 5 million sq. ft.
Building failure investigation Studies undertaken to assess the reasons and extent of damage generally to resolve disputes relating to construction claims	Due to confidential nature of these projects they are not listed here. Further information can be provided upon request.
Special Projects	

- Evaluation of failure of roofing systems on several buildings - Private Client
- *Education Manuals* - Roof Consultant Institute
- *Structural testing of architectural wood columns* - private contractor
- *Evaluation of insulated basement system* - Celfortec, Owens Corning Corporation.
- *Study of effectiveness of reflective ceiling in ice rinks* - City of Markham.
- *Development of a computerized Building Code Assessment Framework* to analyze proposed changes to the Building Code for the Ministry of Housing - As a project manager I successfully managed consulting fees of $700,000 involving the production of software, 5 volumes of manuals, and coordinating work amongst 30 professionals from different companies
- *Compilation of a database on insulation materials* used in the building industry for Building Products of Canada. The document was to provide directions for the development of new insulation products.
- *Development of a computer model to assess the air barrier requirements* under different environmental conditions - CMHC research project.
- *Preparation of a Building Conservation & Maintenance Management Manual* for Ministry of Housing. Provided technical assistance to project manager in developing a user manual.

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NSERC CRSNG

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Date Submitted: 2016-04-05 17:44:00
Confirmation Number: 525109
Template: NSERC_Researcher

Professor Jennifer Jane McArthur
Previous Family Name: Motuz
Correspondence language: English
Sex: Female
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Language Skills

Language	Read	Write	Speak	Understand	Peer Review
English	Yes	Yes	Yes	Yes	Yes
French	Yes	Yes	Yes	Yes	No
Hindi	Yes	No	Yes	Yes	No

Degrees

- 2003/6	Master's Thesis, Mechanical Engineering, University of Waterloo
	Supervisors: Dr. Duane Cronin, 2001/5 - 2003/6; Dr. Michael J. Worswick, 2000/5 - 2003/6
- 2003/4	Certificate, University Teaching, University of Waterloo
- 2001/6	Bachelor's Honours, Mechanical Engineering, University of Waterloo

Recognitions

2015/1 - 2015/12	Luminary Award CoreNet Global Prize / Award The Luminary Award recognizes the attainment of 'eminence' and 'inspiration' amongst our speakers and moderators. It is a symbol of excellence, presented to those achieving performance ratings in the top 10% of all moderators and speakers at each Summit.

User Profile

Research Disciplines: Architecture and Design, Civil Engineering, Mechanical Engineering

Areas of Research: Buildings, Evaluation, Analysis and Project Management, Energy Conservation, Information Systems, Solar and Wind Energy

Fields of Application: Energy, Construction, Economic Policies, Environment

Employment

2014/8	Assistant Professor Architectural Science, FEAS, Ryerson University Full-time, Term, Assistant Professor Tenure Status: Tenure Track Teaching (lectures & studio courses specializing in project management), research and service

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2012/4 - 2014/7	Associate	Project Manager Buildings Practice, Arup A regional board-approved promotion to the leadership of the firm, this role included a continuation of my previous responsibilities as well as the following new roles: - supervision of Senior Engineer/Consultants as well as mechanical team - establishment and leadership of the Existing Buildings Consulting Practice; - Project manager for a range of existing building and commercial real estate portfolio projects to assess existing buildings, identify strategic investment opportunities within the portfolio and develop and implement corporate sustainability and energy management projects; - leading internal R&D efforts to develop roadmap for high performance renovation (presented at OAA conference) and advancing the development of the AssetMAP tool and tailor it to the Canadian context - peer review of both new and existing building projects at a regional level
2013/8 - 2013/12	Project Management Instructor Architectural Science, FEAS, Ryerson University Part-time, Sessional, Lecturer Tenure Status: Non Tenure Track Developed curriculum for core 3rd year project management course for Architectural Science students. Developed and delivered weekly lectures. Provided out-of-class extra help to students and pre-exam tutorial sessions. Set and marked mid-term and final exams; developed project course.
2010/1 - 2012/3	Sr. Engineer	Supervisor Buildings Practice, Arup Started the mechanical team (grown from 2 to 16 people under my leadership) and helped to start the Buildings Practice in Toronto. Lead mechanical engineer/ engineer of record for several large projects in Toronto including VMC and York University Subway Stations, Pan Am Games Stadia, Billy Bishop Pedestrian Tunnel, ESCLRT Station design and York University Engineering Building. International projects included Nairobi Chancery renovation (Kenya), IQ Tower (Qatar) and Asian Women's College Design Competition (Bangladesh). Team management role included staff recruitment, project resourcing, supervision/evaluation and training/mentoring of staff at intern (undergraduate), junior (new graduate) and intermediate (up to 5 yrs) levels.
2009/2 - 2009/11	Sr. Mechanical Engineer	Department Manager Design Department, MP Leo Kivisalo Led a team of 8 engineers and designers in the Indian Operations office for this Finnish Multi-national firm to deliver custom equipment designs for clients in Finland. Projects included boiler design, LED light bulb heat sink development, Finite Element Analysis for piston stress analysis and custom manufacturing equipment.
2004/10 - 2009/1	Engineering Consultant	Project Manager Emmanuel Hospital Association Provided technical guidance for 21 hospitals, 25 community health centres and a Disaster Management Unit to identify and manage strategic hospital improvement projects with focus on energy conservation and improving resilience in existing hospital buildings. Projects include building energy audits and site services (energy, water, sanitation) and resilience assessments for hospitals across North India, development of energy & water master plans, developed grant applications and managed resulting projects from design through construction and operations. Provided technical assistance for disaster relief efforts (Kashmir Earthquake 2005, Tsunami rebuilding 2006-2008 and South Asia (Bihar) floods, 2006 and 2007). Research focused on identifying best practices for energy and water conservation in hospitals which were published in two manuals which were distributed across India and have been re-printed multiple times and updated to a 2nd edition.

2003/7 - 2004/9	Associate (Management Consultant) Management Consulting, Carol Motuz & Company Inc. Monitored and documented the pilot projects for AID Environment in West Africa (Senegal), including developing relationships with WHO, UNICEF and diplomatic officials. Assisted with the preparation of Risk-Based Audit Framework and Results-Based Management Accountability Framework documents to support CIDA funding of the Biosciences East and Central Africa Centre.
2001/5 - 2003/6	Research Assistant for Dr. Michael J. Worswick and Dr. Duane S. Cronin Mechanical Engineering, University of Waterloo Full-time, Term Tenure Status: Non Tenure Track NSERC PGS A and Materials and Manufacturing Ontario Scholarship-funded MASc (Thesis) student. Developed numerical models of blast-structure interaction calibrated based on experimental data as well as materials characterization. Research resulted in publication in the International Journal of Shock and Vibration (Volume 10 (2003), Issue 3, Pages 179-186, Refereed) and presentation at the 72nd Shock and Vibration Symposium, Sandestin, FL, November 12-16, 2001.
2001/5 - 2003/4	De-mining Director Engineers Without Borders Liaised with Mines Action Canada in 2002/03 to help run the 2003 De-mining Technology Competition. This involved visiting de-mining stakeholders in Bosnia-Herzegovina to identify key needs, promote the competition and raise awareness regarding anti-personnel landmines; provide intermediate feedback and coaching for student teams halfway through the competition and speaking at various student conferences and events.
2000/9 - 2001/4	Undergraduate Research Assistant Mechanical Engineering, University of Waterloo, University of Waterloo Part-time, Term Tenure Status: Non Tenure Track Continuation of the work begun during my USRA and leading into my MASc. thesis in May 2001.
2000/5 - 2000/8	NSERC USRA Research Student Mechanical Engineering, University of Waterloo, University of Waterloo Full-time, Term Tenure Status: Non Tenure Track Research student (undergraduate) developing numerical models of landmine explosion calibrated with experimental data. This research was accepted for publication and presentation at the 19th International Symposium on Ballistics, Interlaken Switzerland, 2001.

Research Funding History

Awarded [n=6]

2015/10 - 2017/12 Principal Investigator	Ryerson Building Monitoring and Occupancy Study, Grant **Funding Sources:**

2015/10 - 2017/12	Ryerson University (Toronto, ON) Provost Discretionary Fund Total Funding - 1,500,000 Portion of Funding Received - 1,500,000 Funding Competitive?: No

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2016/2 - 2016/6 Co-applicant	Ontario Energy Analytics - Integrating Facility Management Data into Building Information Models, Grant

Funding Sources:

2016/2 - 2016/2	Ontario Research Fund (ORF) Centre of Excellence: BRAIN ALLIANCE Total Funding - 20,000 Portion of Funding Received - 10,000 Funding Competitive?: Yes

Co-applicant : Dr. Marin Litiou

2015/7 - 2016/4 Principal Applicant	TalentEdge Internship Program: Sustainable Building Material Alignment, Grant

Funding Sources:

2015/7 - 2016/4	Ontario Centres of Excellence TalentEdge Internship Programme Total Funding - 15,000 Portion of Funding Received - 10,000 Funding Competitive?: Yes

2015/9 - 2016/4 Principal Applicant	2015-2016 Fall/Winter Work Study Research Assistant Program, Grant

Funding Sources:

2015/9 - 2016/4	Ryerson University (Toronto, ON) 2015-2016 Fall/Winter Work Study Research Assistant Program Total Funding - 4,000 Portion of Funding Received - 0 Funding Competitive?: Yes

2015/7 - 2016/4 Principal Investigator	EcoSpex Sustainable Material Verification System Alignment and Scaling Methodology Development and Implementation, Grant

Funding Sources:

2015/9 - 2016/4	EcoSpex OCE VIP1 (industry contribution) Total Funding - 5,000 Portion of Funding Received - 5,000 Funding Competitive?: No
2015/9 - 2016/4	Ontario Centres for Excellence Voucher for Innovation and Productivity (VIP1) Total Funding - 20,000 Portion of Funding Received - 10,000 Funding Competitive?: Yes

2015/9 - 2015/9 Principal Investigator	Dean's Travel Fund, Grant

Funding Sources:

2015/9 - 2015/9	Ryerson University (Toronto, ON) Dean's Travel Fund Total Funding - 1,000 Portion of Funding Received - 1,000 Funding Competitive?: Yes

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Completed [n=9]

2015/3 - 2015/12 Principal Investigator	Building Information Management (BIM) Model Integration into Architectural Science Curriculum: A toolkit for Third Year and Foundation for Future Integration, Grant

Funding Sources:

2015/1 - 2015/12   Ryerson University (Toronto, ON)
Learning and Teaching Enhancement Fund
Total Funding - 10,000
Portion of Funding Received - 10,000
Funding Competitive?: Yes

2015/10 - 2015/12 Principal Investigator	Chair Travel Grant, Grant

Funding Sources:

2015/10 - 2015/12   Ryerson University (Toronto, ON)
Chair Travel Fund
Total Funding - 1,000
Portion of Funding Received - 0
Funding Competitive?: No

2015/5 - 2015/12 Principal Investigator	Best Practices for BIM Execution Planning in P3 projects, Grant

Funding Sources:

2015/5 - 2015/12   Ove Arup and Partners, Ltd.
External Collaborative Research Grants
Total Funding - 10,000
Portion of Funding Received - 10,000
Funding Competitive?: Yes

2015/3 - 2015/5 Principal Applicant	Dean's Travel Fund, Grant

Funding Sources:

2015/3 - 2015/5   Ryerson University (Toronto, ON)
Dean's Travel Grant
Total Funding - 1,500
Portion of Funding Received - 1,500
Funding Competitive?: Yes

2014/9 - 2015/5 Principal Applicant	Chair Travel Grant, Grant

Funding Sources:

2014/9 - 2015/5   Ryerson University (Toronto, ON)
Chair Travel Fund
Total Funding - 1,000
Portion of Funding Received - 1,000
Funding Competitive?: No

2014/9 - 2015/3 Principal Investigator	Corporate Real Estate Existing Building Needs Analysis, Grant

Funding Sources:

2014/9 - 2015/2   Arup
Americas Region Funding (in-kind)
Total Funding - 6,250
Portion of Funding Received - 6,250
Funding Competitive?: Yes

2014/5 - 2014/6 Principal Investigator	Recommended Best Practices for Historic Building Renovation in Canada, Grant

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Funding Sources:

2014/5 - 2014/6   Arup
Investing in Arup (Internal Research Funding)
Total Funding - 5,000
Portion of Funding Received - 3,500
Funding Competitive?: Yes

Collaborator : Lazarus, Deborah

2014/1 - 2014/4   International Sustainability Ratings Systems Comparison, Grant
Principal Investigator   **Funding Sources:**

2014/1 - 2014/3   CoreNet Global
External Research
Total Funding - 20,000
Portion of Funding Received - 10,000
Funding Competitive?: Yes

2011/3 - 2012/4   Development of a Solar Tri-generation System (Phase I - Feasibility), Grant
Principal Investigator   **Funding Sources:**

2011/4 - 2012/3   Arup
External Collaborative Research Grant
Total Funding - 13,500
Portion of Funding Received - 13,500
Funding Competitive?: Yes

Student/Postdoctoral Supervision

Bachelor's Honours [n=19]

2015/9 - 2016/4   Khaja, Ali (In Progress) , Ryerson University
Principal Supervisor   Student Degree Expected Date: 2016/4
Thesis/Project Title: Virtual Campus Model Development
Present Position: Architectural Science Student

2015/9 - 2016/6   Bortoluzzi, Brandon (In Progress) , Ryerson University
Principal Supervisor   Student Degree Expected Date: 2016/4
Thesis/Project Title: Automated BIM model development and data transfer for facility
management applications
Present Position: Architectural Science Student

2015/9 - 2016/4   Seo, Jaeduk (In Progress) , Ryerson University
Principal Supervisor   Student Degree Expected Date: 2018/4
Thesis/Project Title: Metadata Manipulation using BIM
Present Position: Computer Science Student

2015/9 - 2016/4   Suresh Kumar, Shivathmikha (In Progress) , Ryerson University
Principal Supervisor   Student Degree Expected Date: 2016/4
Thesis/Project Title: Exploring the impact of data-driven design on architectural form and
function
Present Position: B. Arch. Sci. Student

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2015/8 - 2016/3 Principal Supervisor	Azizi, Abdul Khaliq (In Progress) , Ryerson University Student Degree Expected Date: 2016/4 Thesis/Project Title: Evaluation of performance requirements for sustainable building materials in international commercial and residential sustainability rating systems and Canadian energy codes. Present Position: B. Arch. Sci student
2015/6 - 2016/3 Principal Supervisor	Mann, Adrian (In Progress) , Ryerson University Student Degree Expected Date: 2016/4 Thesis/Project Title: Green Product Certificate (GPC) alignment with sustainability rating systems and energy codes in Canada Present Position: B. Arch. Sci student
2015/5 - 2015/8 Principal Supervisor	Suresh Kumar, Shivathmikha (In Progress) , Ryerson University Student Degree Expected Date: 2016/4 Thesis/Project Title: Building Information Modeling (BIM) curriculum development Present Position: B. Arch. Sci. Student
2015/1 - 2015/4 Principal Supervisor	Suresh Kumar, Shivathmikha (In Progress) , Ryerson University Student Degree Expected Date: 2016/4 Thesis/Project Title: Exploring the use of Agile Project Management methods on the development of Building Information Models during the design process. Present Position: B. Arch. Sci. Student
2014/10 - 2015/8 Principal Supervisor	Komyshenko, Maksym (Completed) , Ryerson University Thesis/Project Title: Building Information Management (BIM) in Operations: Institutional and Corporate Real Estate Pilot Projects (Note that Maksym was HQP on a research project; this is unrelated to his capstone project) Present Position: Architect, MA Architects
2014/5 - 2014/8 Co-Supervisor	Laanvere, Michael (Completed) , University of Waterloo Thesis/Project Title: Existing Building Retrofits: Energy Conservation and Thermal Comfort Investigations Present Position: Mechanical Engineer, Arup
2014/1 - 2014/4 Principal Supervisor	McMaster, Matt (Completed) , University of Waterloo Thesis/Project Title: International Sustainability Ratings System: Energy and Water Credit Comparison Present Position: MASc. candidate (University of Waterloo)
2013/9 - 2013/12 Principal Supervisor	Blommers, Ryan (Completed) , University of Waterloo Thesis/Project Title: Project #1 (60%): Detailed design to expand the cooling system of a building already under construction Project #2 (40%): Development of detailed energy models in EE4, IES (interfaced with Revit), eQuest and TRACE to support the buildings practice (Regional and local projects) Present Position: Mechanical Engineer, VRM Consulting
2013/1 - 2013/4 Principal Supervisor	Laanvere, Michael (Completed) , University of Waterloo Thesis/Project Title: HVAC system design for the Pan Am Games York University Subway Station Present Position: Mechanical Engineer, Arup
2012/5 - 2012/8 Principal Supervisor	Iqbal, Sanee (Completed) , University of Waterloo Thesis/Project Title: Mechanical and electrical design development and coordination using BIM for the Billy Bishop Pedestrian Tunnel Present Position: Technical Program Manager, Google

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2012/1 - 2012/12 Principal Supervisor	Ghosh, Aakriti (In Progress) , University of Waterloo Student Degree Expected Date: 2016/4 Thesis/Project Title: 1st co-op term: January-April 2012 Assisted with mechanical design using BIM for Billy Bishop Pedestrian Tunnel detailed design and Pan Am Games stadium (pursuit) 2nd co-op term: Sept-Dec 2012 R&D: "Development of an Energy Modeling Guidance Document comparing requirements for LEED and TGS compliance modeling of a variety of buildings" Present Position: BASc. student
2011/8 - 2011/12 Principal Supervisor	Si Tu, Tian You (Tyrone) (Completed) , University of Waterloo Thesis/Project Title: Energy modeling and HVAC design for the York University Subway Station Present Position: Energy Analyst, Crossey Engineering Ltd.
2011/5 - 2011/8 Principal Supervisor	Tam, Samson (Completed) , University of Waterloo Thesis/Project Title: 2nd Co-op term with Arup: Plumbing and fire protection design for the pursuit phase of the Billy Bishop Pedestrian Tunnel Present Position: Mechanical Engineer, WSP
2011/1 - 2011/4 Principal Supervisor	Iqbal, Sanee (Completed) , University of Waterloo Thesis/Project Title: Project 1 (80%) - Coordination of building services with architecture and structural elements at Vaughan Municipal Centre Subway Station Project 2 (20%) - Contract administration for Corksdown Commons park including HVAC and plumbing coordination with structural, electrical and architecture Present Position: Technical Program Manager, Google
2010/9 - 2010/12 Principal Supervisor	Tam, Samson (Completed) , University of Waterloo Thesis/Project Title: Two co-op terms: 1st term (Sept-Dec 2010): Contributed to overall mechanical design of the the York University subway station, including leading the HVAC design of one standalone section. Present Position: Mechanical Engineer, WSP

Master's Thesis [n=13]

2015/9 - 2016/9 Academic Advisor	Van Ooteghem, Danielle (In Progress) , Ryerson University Student Degree Expected Date: 2017/8 Thesis/Project Title: To be determined; my role is to guide the student in developing their topic of exploration and identify the appropriate supervisor and second reader for this work. (This is a unique characteristic of the Masters of Architecture program) Present Position: M.Arch Student
2015/9 - 2016/8 Academic Advisor	Onyenokwe, Nwamaka (In Progress) , Ryerson University Student Degree Expected Date: 2016/8 Thesis/Project Title: decongestion: Embracing space Present Position: M.Arch Student
2015/9 - 2016/8 Academic Advisor	Tsang, Rebecca (In Progress) , Ryerson University Student Degree Expected Date: 2016/8 Thesis/Project Title: Explorations in Digital Fabrication... Present Position: M.Arch Student
2015/9 - 2016/9 Academic Advisor	Mendiola, Nathaniel (In Progress) , Ryerson University Student Degree Expected Date: 2017/8 Thesis/Project Title: To be determined; my role is to guide the student in developing their topic of exploration and identify the appropriate supervisor and second reader for this work. (This is a unique characteristic of the Masters of Architecture program) Present Position: M.Arch Student

2015/9 - 2016/8 Academic Advisor	Mozheyko, Julia (In Progress) , Ryerson University Student Degree Expected Date: 2016/8 Thesis/Project Title: Digital Fabrication Explorations in Design Present Position: M.Arch Student
2015/9 - 2016/8 Principal Supervisor	Gelowitz, Matthew (In Progress) , Ryerson University Student Degree Expected Date: 2016/8 Thesis/Project Title: Evaluating the impact of Environmental Product Declarations (EPDs) on sustainable building material selection and green building rating systems in Canada. Present Position: M.A.Sc. (Building Science) Student
2015/4 - 2015/8 Academic Advisor	Itsubo, Moe (Completed) , Ryerson University Thesis/Project Title: Investigation of the Energy Performance Gap of Residential Homes in Southern Ontario
2015/1 - 2016/8 Principal Supervisor	Sun, Xi (In Progress) , Ryerson University Student Degree Expected Date: 2016/8 Thesis/Project Title: Best Practices for Integrating Energy Analysis into Building Information Modeling (BIM) over the project lifecycle Present Position: M.A.Sc. (Building Science) Student
2014/12 - 2015/6 Principal Supervisor	Lazar, Shiloh (In Progress) , Ryerson University Student Degree Expected Date: 2016/8 Thesis/Project Title: BIM for Corporate Real Estate Management, Facility Operations and Sustainability (Note that Shiloh is HQP on a research project; this is unrelated to his thesis) Present Position: Research Assistant / M.Arch Student
2014/9 - 2015/9 Co-Supervisor	Turcato, Adrian (Completed) , Ryerson University Thesis/Project Title: Building performance evaluation of leading Canadian green buildings Present Position: Building Scientist, Transsolar
2014/8 - 2015/8 Co-Supervisor	Mitchell, Jeffrey (Completed) , Ryerson University Thesis/Project Title: DESIGN FOR THE CYCLE (Designing buildings to facilitate future retrofit and change of use) Present Position: Architect, Diamond Schmitt Architects
2014/8 - 2015/8 Academic Advisor	Pallett, LeeAnn (Completed) , Ryerson University Thesis/Project Title: SOAK: Water collection and stewardship in Hiawatha First Nation Present Position: Intern Architect, Kirkor Architects and Planners
2014/8 - 2015/12 Academic Advisor	Cunha, Antonio (In Progress) , Ryerson University Thesis/Project Title: The Delight of Complexity & The Complexity of Delight: Exploring Latent Aesthetic Potential in Computational Design Present Position: Designer/Revit Specialist, SRP Architects

Event Administration

2015/9 - 2016/9	Technical Committee, Sustainable Built Environment Regional Conference 2016 (SBE16), Conference, 2016/9 - 2016/9
2015/4 - 2016/6	Conference Chair, International Symposium on BIM in Campus Operations (ISBCO), Conference, 2016/6 - 2016/6
2015/5 - 2015/10	Technical Committee Member; Peer-Review & Session Chair, Big Data and Smart Cities (part of the Smart Cities 360 Conference), Conference, 2015/10 - 2015/10

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2014/9 - 2015/6	Technical Committee (Programming and Peer-Review), Building Lasting Change: Canadian Green Building Council Conference 2015, Conference, 2015/6 - 2015/6
2015/1 - 2015/5	Session Chair + Peer Review, International Conference on Sustainable Design, Engineering & Construction 2015, Conference, 2015/5 - 2015/5

Knowledge and Technology Translation

2010/1 - 2014/7	Technical Lead, Consulting for Industry Group/Organization/Business Serviced: Public Transit Body Target Stakeholder: General Public Outcome / Deliverable: Design and Construction Administration (Mechanical engineering and overall coordination) of the Vaughan Municipal Centre and York University Subway Stations. Researched impact of including insulation (typically omitted) in walls separating non-public from public spaces and found this to reduce heat losses by 80%. TTC has indicated they will make this mandatory for future projects Evidence of Uptake/Impact: These stations are currently under construction References / Citations / Web Sites: https://www.ttc.ca/Spadina/Stations/Vaughan_Metropolitan_Centre_Station/index.jsp https://www.ttc.ca/Spadina/Stations/York_University_Station/index.jsp Activity Description: Led design of the mechanical systems at this station (heating, cooling & ventilation, plumbing and fire protection). Coordinated mechanical design with electrical, structural and architectural.
2014/1 - 2014/4	Primary Author and Team Leader, R&D Collaboration with Industry Group/Organization/Business Serviced: CoreNet Global Target Stakeholder: Industrial Association/Producer Group Outcome / Deliverable: Report and interactive document on "International Sustainability Systems Comparison" to compare major international rating systems (LEED, BREEAM, Green Mark, Green Star, BEAM, NABERS and Energy Star) with a particular focus on relative requirements of energy and water credits between systems. Also included in this report was a decision-making tool to identify which rating system(s) to pursue for a new building project and extensive country-specific market research to inform project managers on regional differences that affect this decision. Evidence of Uptake/Impact: This report has been distributed to 8900 members of the CoreNet Global (Corporate real estate) organization. Since its publication, I have been approached by BREEAM (UK) and the Emirates Green Building Council as well as commercial real estate industry members in Spain, the UK, USA and Australia for copies of this report. References / Citations / Web Sites: http://www.building4change.com/article.jsp?id=2406#.U8h-R_IdXJ4 http://www.fm-world.co.uk/news/fm-industry-news/green-ratings-report-published/ www.arup.com/... www2.corenetglobal.org/... Activity Description: Collected data from global Green Building Councils, reviewed and summarized credit requirements in each system, conducted a literature review to identify published data on relative performance requirements and adoption rates, development of decision-making tool, interviewing sustainability experts in 14 countries to obtain market research data for countries where sponsor had high percentage of members, identified and documented case studies for each system and developed the report in both print and online (interactive) formats.

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2012/11 - 2014/3　　　Project Leader, Technology Transfer and Commercialization
Group/Organization/Business Serviced: Commercial real estate market
Target Stakeholder: Industry/Business (>500 employees)
Outcome / Deliverable: Expanded upon Arup AssetMAP tool to incorporate risk
management, commercial market dynamics, valuation and tie in with other proprietary
tools to enhance the projected energy savings and life cycle costing of existing building
retrofits.
Evidence of Uptake/Impact: Completion of a successful pilot project. Arup was engaged
for a follow-up project and recommendation from client to other Corporate Real Estate
clients.
References / Citations / Web Sites: AssetMAP is described on Arup's website here: http://
www.arup.com/projects/assetmap.aspx Local adaptation reports are not available as they
are property of the client
Activity Description: Phase 1: Adaptation of the tool to the Canadian context and
development of a delivery plan for a pilot project; partnering with other consultants and
identification of client for demonstration project. Phase 2: Pilot (demonstration) project was
undertaken in April-May 2013, consisting of a detailed investigation of an existing building,
evaluation of a series of potential retrofit/renovation bundles; relative evaluation of
commercial impact of renovation and life cycle cost and risk and evaluation assessment.
Phase 3: Gap analysis to identify weaknesses in pilot project delivery and inform future
work Phase 4: Delivery of an additional AssetMAP project, bringing in stronger regional
data to support this work. Note: An ongoing area of research is to strengthen the database
driving the engine for this tool with Canadian building data.

International Collaboration Activities

2015/4 - 2016/6　　　Organizing Committee ChairCanada
I am currently organizing an International Symposium on BIM in Campus Operations
(June 13-15, 2016), which has attracted interest from attendees from Canada, USA, UK,
Italy, Australia, South Africa and Korea. This will build upon an NSERC Connect event
held in early 2016 (which I will attend) to develop a virtual network of researchers involved
with BIM applications at the campus scale and is expected to form the basis for future
collaborations.

Committee Memberships

2015/9 - 2016/8　　　Committee Member, Lectures and Events Committee, Ryerson University
Coordinates speakers for invited lecture series held within the Department of Architectural
Science. I am currently also coordinating a lunchtime brown bag lecture series.

2015/9 - 2016/4　　　Committee Member, Master of Architecture Graduate Degree Learning Outcomes and
Period Program Review (GDLS/PPR) Committee, Ryerson University
This committee evaluates the current Master of Building Science Graduate Program and
proposes Learning Outcomes to form the degree program targets to support the strategic
plan. This activity contributes to periodic program review and accreditation requirements.

2015/9 - 2016/4　　　Committee Member, Master of Building Science Graduate Degree Learning Outcomes
Committee, Ryerson University
This committee evaluates the current Master of Building Science Graduate Program and
proposes Learning Outcomes to form the degree program targets to support the strategic
plan. This activity contributes to periodic program review and accreditation requirements.

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2014/8 - 2016/4	Committee Member, Awards Committee, Ryerson University Reviews student applications for scholarships and ranks students for each; plans Awards Night.
2012/10 - 2014/7	Committee Member, Membership Committee, Canadian Green Building Council - Greater Toronto Chapter, Canadian Green Building Council (Still active) Developing a survey to identify why some members renew and others do not; development of renewal / event on-site registration simplification to facilitate member recruitment and currently leading the initiative to provide wider chapter support to student recruitment by the Emerging Green Builders committee.

Other Memberships

2009/6 - 2019/7	Member (P. Eng), Professional Engineers Ontario Licensed Professional Engineer in good standing; volunteer with Licensure Assistance Programme 2013/14
2014/8 - 2018/8	Member (PMP), Project Management International (PMI) Chapter member of PMISOC (Project Management International Society) -Greater Toronto Area. Obtained Project Management Professional (PMP) Certification in August 2015.
2012/6 - 2015/6	Member (Certified Energy Manager), Association of Energy Engineers Certified Energy Manager and Member in good standing
2013/4 - 2015/4	Member (P. Eng), Association of Professional Engineers and Geoscientists BC Licensed Professional Engineer in good standing
2010/2 - 2015/2	Member (MASHRAE), American Society for Heating Refrigeration and Air-Conditioning Engineers Full Member of ASHRAE (Upgraded from Associate Member in 2012)

Presentations

1. (2015). Sustainable Material Considerations in LEED v4. Canadian Green Building Council Materials Summit, Toronto, Canada
    Main Audience: Decision Maker
    Invited?: Yes, Keynote?: No

2. (2015). Building Information Modeling (BIM): Tips, Tricks and Tools for the AEC Industry. PSMJ Industry Summit, San Francisco, United States
    Main Audience: Knowledge User
    Invited?: No, Keynote?: No

3. (2015). Integrating Experiential Learning into Lecture Courses: Reflections and Lessons Learned from a Project Management Course. Ryerson Faculty Conference, Toronto, Canada
    Main Audience: Researcher
    Invited?: No, Keynote?: No

4. Doherty D, Lozano J. (2015). Advanced Solutions in Contract Management and Information Sharing. Western Canada Infrastructure Project Owners' Forum, Calgary, Canada
    Main Audience: Decision Maker
    Invited?: Yes, Keynote?: No

5. (2014). Making it Count: Selecting the Sustainability Certification Targets with the Greatest Project Benefit. Washington DC Summit 2014 (CoreNet Global), Washington DC, United States
    Main Audience: Knowledge User
    Invited?: Yes, Keynote?: No

6. Walsh-Cook M, Vattay S. (2014). Best Practices for High-Performance Building Renovation. Ontario Association of Architects Conference, Montreal, Canada 2014, Montreal, Canada
    Main Audience: Knowledge User
    Invited?: No, Keynote?: No

7. (2014). Best Practices for Managing the Fit-Out of Commercial Office Space. Sun Life Financial Internal Training Seminar, Toronto, Canada
    Main Audience: Knowledge User
    Invited?: Yes, Keynote?: Yes

8. (2012). Energy Conservation and Renewable Energy Opportunities for Existing Residential Building Retrofits. Renewable Energy Workshop Series: Solar Energy Workshop II, Mississauga, Canada
    Main Audience: Knowledge User
    Invited?: Yes, Keynote?: No

9. Wallace M. (2012). Solar Power & Sustainability for Households: Examples of energy solutions carried out by Sustainability Professionals in their homes. Renewable Energy Workshop Series – Solar Energy Workshop II, North York, Canada
    Invited?: Yes, Keynote?: No

10. (2010). In the Field: The Reality of Managing Development and Relief Projects in the Developing World. Arup Lunchtime Presentation Series, Toronto, Canada
    Main Audience: General Public
    Invited?: Yes, Keynote?: Yes

Text Interviews

2014/11/01	Green Machine (Corktown Commons Project Article), Civil Engineering magazine (publication of the American Society of Civil Engineers)
2014/07/23	Michael van Valeknburgh's New Toronto Park is a Stormwater Treatment Plant in Disguise, Architect's Newspaper
2014/06/04	An overview of the Arup/CoreNet Global International Sustainability Rating Systems report and its value to the Corporate Real Estate Industry, Croner-i Environment and Sustainability - a UK-based online sustainability website
2013/08/01	Schematic design of an energy and water self-sufficient clinic and creche in rural Democratic Republic of Congo, Canadian Consulting Engineer

Publications

Journal Articles

1. Sun X, McArthur J. (2016). Planning Project Execution with Building Information Modeling in Public-Private-Partnerships: Success Factors for P3 project delivery using BIM. International Journal of Project Management.
    Submitted
    Refereed?: Yes

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2.   McArthur J, Jofeh C. (2016). Portfolio retrofit evaluation: a methodology for optimizing a large number of building retrofits to achieve triple-bottom-line objectives.Sustainable Cities and Society.
     In Press
     Refereed?: Yes, Open Access?: No

3.   McArthur J, Jofeh C, Aguilar A. (2015). Improving Occupant Satisfaction and Wellness in Buildings through Energy Conservation Retrofits. Buildings. 5(4): 1171-1186.
     Published
     Refereed?: Yes, Open Access?: Yes

Books

1.   Brandt M, Warden C, Sosa J, Barrett et al. (2016). Building Resilience: Practical Guidelines for the Retrofit and Rehabilitation of Buildings in Canada. 1: 151.
     Published, Federal Provincial Territorial Historic Places Collaboration
     Refereed?: Yes

Book Chapters

1.   McArthur J. (2016). Achieving holistic sustainability: considering wellness alongside resource use in buildings. Clements-Croome D. Creating the Productive Workplace. 3rd: TBD.
     Submitted, Taylor & Francis
     Refereed?: Yes

Reports

1.   McArthur J. (2015). Views from the Top: Challenges and Opportunities for Existing Buildings in the Canadian Commercial Real Estate Market. 14. Arup Canada Incorporated.

2.   McArthur J, Sun X. (2015). Building Information Modeling (BIM) Project Execution Planning Guide for Public-Private-Partnership Projects. 49. Arup Canada Incorporated.

3.   McArthur J, O'Brien J. (2014). AssetMAP Filter 2 Report: (Confidential Building). 159. Triovest Asset Management.

4.   McArthur J, Laanvere M*. (2014). Existing Building Condition and HVAC System Assessment: FC150 Milton. 15. Sun Life Financial.

5.   McArthur J, Laanvere M*. (2014). Existing Building Condition and HVAC System Assessment: FC57 Peterborough. 12. Sun Life Financial.

6.   McArthur J, Herrera N, Mantha P. (2014). International Sustainability Ratings System Comparison. 70. CoreNet Global.

7.   McArthur J. (2013). Natural disasters – Saving Lives Today, Building Resilience for Tomorrow. 47. Institution of Mechanical Engineers.

8.   McArthur J, O'Brien J. (2013). AssetMAP Filter 2: Pilot Study Report (Confidential). 105. Triovest Asset Management.

9.   McArthur J. (2013). 5-minute Guide to HVAC Canada. 8. Arup.

10. McArthur J, Savage A. (2013). Existing Building Condition and HVAC System Assessment: FC85 Waterloo. 15. Sun Life Financial.

11. McArthur J, Alspach P, Duggan A. (2013). Four Great Ideas for (Confidential Building Name). 12. Oxford Properties.

12. Talby R, McArthur J, Keliar M. (2012). Caledonia LRT Station - 30% Design Report. 300. Metrolinx.

13. Chalaris N, McArthur J, Kartinen R. (2012). Keele LRT Station - 30% Design Report. 300. Metrolinx.

14

14.   Greville K, Ellis D, McArthur J. (2011). York University Station – 100% Design Report. 1200. Toronto Transit Commission.

15.   Andriessen R, Ellis D, McArthur J. (2011). Vaughan Corporate Centre Station – 100% Design Report. 1800. Toronto Transit Commission.

Manuals

1.   Dickenson J, et al. (2016). Canadian Practice Manual for BIM. 1(2)(3)
     Accepted, buildingSmart Canada

2.   Dickenson J et al. (2015). Canadian Practice Manual for BIM. 1(3)(3)
     Accepted, buildingSmart Canada

Conference Publications

1.   Azizi A*, McArthur J, Gelowitz M*. (2016). Development of a Sustainable Material Alignment Framework. 2016 Sustainable Built Environment, Toronto, Canada (0-0)
     Conference Date: 2016/9
     Paper
     Submitted
     Refereed?: Yes, Invited?: No

2.   Sun X*, McArthur J. (2016). Facilitating Early Stage Energy Modeling Using BIM. 2016 Sustainable Built Environment, Toronto, Canada (0-0)
     Conference Date: 2016/9
     Paper
     Submitted
     Refereed?: Yes, Invited?: No

3.   Khaja, A*, Seo, J*, McArthur, J. (2016). Optimizing BIM Metadata Manipulation Using Parametric Tools. International Conference on Sustainable Design, Engineering and Construction, Tempe, United States (1-8)
     Conference Date: 2016/5
     Paper
     In Press
     Refereed?: Yes, Invited?: No

4.   Gelowitz M*, McArthur J. (2016). Investigating the Effect of Environmental Product Declaration Adoption in LEED® on the Construction Industry: A Case Study. International Conference on Sustainable Design, Engineering and Construction 2016, Tempe, United States (1-8)
     Conference Date: 2016/5
     Paper
     In Press
     Refereed?: Yes, Invited?: No

5.   Bortoluzzi, B*, McArthur, J. (2015). Root Cause Analysis of Occupant Complaints using Building Information Modeling. International Conference of Sustainable Design, Engineering, and Construction 2016, Tempe, United States (N/A)
     Conference Date: 2016/5
     Abstract
     Accepted
     Refereed?: Yes, Invited?: Yes

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Professor Jennifer McArthur

6.   Lazar S*, McArthur J.J.(2015). BIM for Corporate Real Estate Data Visualization from Disparate Systems.
       Proceedings of the Smart 360 Conference. Big Data and Smart Cities (BigDASC) conference, Toronto,
       Canada (N/A (electronic))
       Conference Date: 2015/10
       Paper
       Published
       Refereed?: Yes, Invited?: No

7.   McArthur J, Sun X*. (2015). Best practices for BIM Execution Plan development for a P3 (PFI) design-
       build-finance-operate-maintain project. WIT Transactions on the Built Environment. First International
       Conference on Building Information Modelling (BIM) in Design, Construction and Operations (BIM 15),
       Bristol, United Kingdom (119-130)
       Conference Date: 2015/9
       Paper
       Published
       Refereed?: Yes, Invited?: No

8.   Suresh Kumar S*, McArthur J. (2015). Streamlining BIM model creation using Agile Project Management.
       WIT Transactions on the Built Environment. First International Conference on Building Information
       Modelling (BIM) in Design, Construction and Operations (BIM 15), Bristol, United Kingdom (229-240)
       Conference Date: 2015/9
       Paper
       Published
       Refereed?: Yes, Invited?: No

9.   McArthur J. (2015). Integrating Experiential Learning into Lecture Courses: Reflections and Lessons
       Learned from a Project Management Course. Ryerson Faculty Conference, Toronto, Canada (0-0)
       Conference Date: 2015/5
       Abstract
       Accepted
       Refereed?: Yes, Invited?: No

10.   McArthur J. (2015). A building information management (BIM) framework and supporting case study
       for existing building operations, maintenance and sustainability. Procedia Engineering. International
       Conference on Sustainable Design, Engineering and Construction - ICSDEC 2015, Chicago, United States
       (1104-1111)
       Conference Date: 2015/5
       Paper
       Published
       Refereed?: Yes, Invited?: No

11.   McArthur J, Jofeh C. (2015). Strategic retrofit investment from the portfolio to the building scale: a
       framework for identification and evaluation of potential retrofits. Procedia Engineering. International
       Conference on Sustainable Design, Engineering and Construction - ICSDEC 2015, Chicago, United States
       (1068-1076)
       Conference Date: 2015/5
       Paper
       Published
       Refereed?: Yes, Invited?: No

1.1.42 Dr. Russell Richman

Date Submitted: 2015-01-29 15:17:18
Confirmation Number: 349250
Template: SSHRC

Dr. Russell Corey Richman
Correspondence language: English
Sex: Male
Date of Birth: 8/08

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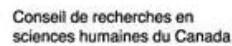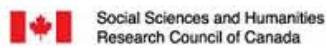
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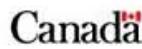
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Dr. Russell Richman

Language Skills

Language	Read	Write	Speak	Understand	Peer Review
English	Yes	Yes	Yes	Yes	Yes

Degrees

2003/9 - 2008/5	Doctorate, Ph.D Civil Engineering, Building Science, Sustainable Engineering, University of Toronto Degree Status: Completed Thesis Title: The Solar Dynamic Buffer Zone Curtain Wall – Validation and Design Supervisors: Pressnail, Kim
1999/9 - 2002/11	Master's Thesis, M. A.Sc. Civil Engineering, Building Science, Construction Management, Environmental Engineering, University of Toronto Degree Status: Completed Thesis Title: Using the Inverse Method to Predict Air Flow in Buildings Supervisors: Pressnail, Kim
1995/9 - 1999/5	Bachelor's Honours, B.A.Sc. Civil Engineering, Civil Engineering, University of Toronto Degree Status: Completed Thesis Title: The Reduced Gradient Approach Applied to a House Museum Supervisors: Pressnail, Kim

Credentials

2003/1	Member, American Society of Heating Refrigeration and Air-conditioning Engineers
2002/6	Professional Engineer, Professional Engineers of Ontario
1999/1	Member, OBEC

Recognitions

2007/6	Civil Engineering Chair's Award for Excellence in Research University of Toronto Prize / Award
2006/6	Department of Civil Engineering Bronze Faculty Teaching Award Ryerson University Prize / Award
2005/5	CSCE General Conference Paper Award Canadian Society for Civil Engineering Prize / Award

User Profile

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Dr. Russell Richman

Research Specialization Keywords: Buildings, Building Science, Reduction of Energy Consumption, Sustainable Buildings

Temporal Periods: 1950 AD - 2012 AD

Geographical Regions: Central Canada, Western Canada, Atlantic Provinces

Countries: Canada, United States

Employment

2011/10	Founding Member PHIUS Technical Committee
2011/8	Co-founder Passive Buildings Canada
2009/9	Adjunct Professor in the Department of Civil Engineering Civil Engineering, University of Toronto Part-time, Lecturer Tenure Status: Non Tenure Track
2008/8	Assistant Professor Architectural Science, Ryerson University Full-time, Assistant Professor Tenure Status: Tenure Track
2005/11	President Russell Richman Consulting
2005/9 - 2010/4	Course Co-ordinator Civil Engineering, University of Toronto Part-time, Lecturer Tenure Status: Non Tenure Track
2007/9 - 2008/5	Co-Instructor for CIV425Y (Design Studio) Civil Engineering, University of Toronto Full-time, Lecturer Tenure Status: Non Tenure Track
2004/9 - 2006/12	Course Instructor for CIV101 (statics) Civil Engineering, University of Toronto Part-time, Lecturer Tenure Status: Non Tenure Track
2004/1 - 2005/12	Project Manager/Curtain Wall Specialist Yolles Partnership Inc.
2000/9 - 2003/9	Intermediate Engineer/Building Envelope Specialist Yolles Partnership Inc.
2000/9 - 2000/12	Research Assistant for Professor Kim Pressnail. Civil Engineering, University of Toronto Part-time Tenure Status: Non Tenure Track
1999/9 - 1999/12	Research Assistant for Professor Doug Hooton. Civil Engineering, University of Toronto Part-time Tenure Status: Non Tenure Track
1999/4 - 1999/9	Surveyor/Rodman City of Toronto
1998/4 - 1998/9	Engineer in Training Morrison Hershfield Consulting Engineers

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Dr. Russell Richman

Research Funding History

Awarded [n=5]

2014/3 - 2019/3 Principal Applicant	Research and Development to Support an Ultra-Energy-Efficient Residential Building Stock in Ontario, Grant

Funding Sources:
Natural Sciences and Engineering Research Council of Canada (NSERC)
discovery Grant
Total Funding - 100,000

2009/4 - 2014/3 Principal Investigator	A Framework to Evaluate Sustainable Renovation Techniques to Address the Energy and Environmental Inefficient Housing Stock, Grant

Funding Sources:
Natural Sciences and Engineering Research Council of Canada (NSERC)
Discovery Grant
Total Funding - 115,000

2013/8 - 2014/1 Principal Applicant	Validation of an Enhanced Heat Pump Variable Refrigerant Flow (VRF) System Performance in a Cold Climate Using Measured Field Data and Simulation, Grant

Funding Sources:
Natural Sciences and Engineering Research Council of Canada (NSERC)
Engage Grants
Total Funding - 25,000

2013/7 - 2013/12 Principal Applicant	Towards a Standardization of Building Envelope Performance Evaluation Terminology, Grant

Funding Sources:
Mathematics of Information Technology and Complex Systems (MITACS)
Technical Problem Solving Light
Total Funding - 36,000

2012/9 - 2013/2 Principal Investigator	Validating the Performance of Closed-Cell Spray-Applied Polyurethane Foam Insulation Applied to the Interior of Solid Brick Masonry Walls to Achieve Super-Insulated Levels, Grant

Funding Sources:
Natural Sciences and Engineering Research Council of Canada (NSERC)
Engage Grants
Total Funding - 25,000

Completed [n=3]

2012/3 - 2013/11 Principal Investigator	Development and Validation of a Residential Grey Water Recovery System, Grant

Funding Sources:
Natural Sciences and Engineering Research Council of Canada (NSERC)
Engage Grants
Total Funding - 25,000

2013/3 - 2013/9 Principal Applicant	Durability, Cost and Structural Analysis of a Novel Re-Roofing System, Grant

Funding Sources:
Natural Sciences and Engineering Research Council of Canada (NSERC)
Engage Grants
Total Funding - 25,000

2012/1 - 2012/8 Principal Applicant	Analysis of High Performance Windows, Grant

Funding Sources:
MITACS
Accelerate

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Dr. Russell Richman

Total Funding - 15,000

Program Development

2009/9   Co-developer, Architectural Science, Ryerson University
                Program Title: Graduate Program in Building Science
                Course Level: Graduate

Student/Postdoctoral Supervision

Principal Supervisor	Denver Jermyn, Master's Thesis (In Progress) Student Degree Expected Date: 2014/9
Principal Supervisor	Cassandra Kani-Sanchez, Master's Thesis (In Progress) Student Degree Expected Date: 2014/9
Principal Supervisor	Matthew Tokarik, Master's Thesis (In Progress) Student Degree Expected Date: 2014/9
Principal Supervisor	Madeleine Craig, Master's Thesis (In Progress) Student Degree Expected Date: 2014/9
Principal Supervisor	Tanveer Syed, Doctorate (In Progress) Student Degree Expected Date: 2016/9
Principal Supervisor	Patrick Andres, Master's Thesis (In Progress) Student Degree Expected Date: 2014/9
Principal Supervisor	Peta-Gaye Ebanks, Master's Thesis (In Progress) Student Degree Expected Date: 2014/5
Principal Supervisor	Nicholas So, Master's Thesis (In Progress) Student Degree Expected Date: 2014/1
Principal Supervisor	Blair Williams, Master's Thesis (In Progress) Student Degree Expected Date: 2013/12
Principal Supervisor	David Hawkins, Master's Thesis (In Progress) Student Degree Expected Date: 2013/12
Academic Advisor	Das, Runa, Doctorate (In Progress) Student Degree Expected Date: 2014/9
Co-Supervisor	Blaine Attwood, Master's non-Thesis (Completed)
Principal Supervisor	Zimhelt, Hayes, Master's Thesis (Completed)
Principal Supervisor	Andrea Mucciarone, Master's non-Thesis (Completed)
Principal Supervisor	Brazukas, Loretta, Master's non-Thesis (In Progress)
Principal Supervisor	Dybinsky, Pavel, Master's Thesis (In Progress) Student Degree Expected Date: 2014/1
Principal Supervisor	Stahlbrand, Ian, Master's Thesis (Completed)
Principal Supervisor	Ivo Markiel, Master's non-Thesis (Completed)
Principal Supervisor	Siddiqui, Yasmeen, Master's non-Thesis (Completed)
Principal Supervisor	Bowick, Matthew, Master's Thesis (Completed)
Principal Supervisor	Fix, Stuart, Master's Thesis (Completed)
Principal Supervisor	Dixon, Erin, Master's Thesis (Completed)

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Dr. Russell Richman

Principal Supervisor   Blaszak, Katarzyna, Master's non-Thesis (Completed)

Principal Supervisor   Phillips, Chris, Master's non-Thesis (In Progress)
Student Degree Expected Date: 2013/9

Event Administration

Administrator, Energy Plus Workshop, Workshop, 2013-01-09 - 2013-01-11

Co-administrator, Parametric Modeling Workshop, Workshop, 2011-09-06 - 2011-09-09

Co-organizer, Certified Passive House Training, Workshop, 2010-07-01 - 2010-09-01

Journal Review Activities

2011/4 - 2011/4	, Journal of Building Simulation Number of Works Reviewed / Refereed: 2

Research Funding Application Assessment Activities

2014-02-01 - 2014-03-31	External Reviewer, NSERC Discovery Grant Program, Funder, Academic Reviewer, Ryerson University, NSERC
2013-01-01 - 2013-01-30	External Reviewer, Leaders of Opportunity Fund, Funder, Academic Reviewer, Quebec Industrial Research Centre

Community and Volunteer Activities

2003/9	Special Lecturer- Gifted High School Student Conference, University of Toronto
2003/9	Representative, University of Toronto
2001/3	Small domestics care-giver, Toronto Humane Society
1995/3	Coordinator, Withrow Park Ball Hockey League

Knowledge and Technology Translation

2006/3 - 2014/1	Prime Consultant, Consulting for Industry Group/Organization/Business Serviced: various companies Target Stakeholder: Industry/Business-Small (<100 employees) Outcome / Deliverable: Typical outcomes include: expert opinion and expert reports
2013/6 - 2013/6	Trainer, Consultation Service Group/Organization/Business Serviced: PHIUS Target Stakeholder: General Public Outcome / Deliverable: Delivery of the 2013 Certified Passive House Training Curriculum in Toronto

Presentations

1. Bowick, M; Richman, R. (2010). Towards an Innovative Method to Quantify the Impact of Residential Building Design Choices. International Conference on Building Envelope Systems and Technologies, Vancouver, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No

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2.　Richman, R; Kirsh, A; Pressnail, K. (2009). Low-Energy Homes for Moderating the Impact of Sustained Energy Interruptions. Passive Low Energy Architecture International Conference, Quebec City, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No

Text Interviews

2014-01-09	Title: "Victorian home on UofT campus gets a radical, engineering-heavy makeover" Topic: the first constructed example of a Gemini NTED house from the Gemini NTED research program, Globe and Mail (national circulation)
2013-06-27	ecoHouse 3 - Nested Design (Gemini NTED tm), SAB Magazine (online) - 2013 Canadian Green Building Awards Winning Projects
2013-02-05	Next Generation Engineers, Toronto Star (National Coverage)
2013-01-08	Nested Envelope Design Could Slash Heating Costs, Earth Techling (online)
2012-12-10	Thermal Envelope Design Could Save 80 Percent on Energy Costs, Architecture Magazine (online)
2012-12-07	Ryerson University researchers take a look at energy-saving home designs, Daily Commercial News (Online)
2012-11-27	RYERSON UNIVERSITY RESEARCH EXPLORES FEASIBILITY OF "HOUSE WITHIN A HOUSE" DESIGN New findings suggest that home construction design could result in up to 80% energy savings, Ryerson Press Release
2012-10-18	Renovation2050- An Introduction to Renovation2050 and the Sustainable Renovation Rating Index, Toronto Star

Publications

Journal Articles

1.　Robin Urquhart, Russell Richman, Graham Finch. (2015). The effect of an enclosure retrofit on air leakage rates for a multi-unit residential case-study building. Energy and Buildings. 86(1): 35-44.
Co-Author
Published
Refereed?: Yes, Open Access?: No

2.　Richman, R.C., Munroe, J., Siddiqui, Y.. (2014). A Pilot Neighborhood Study Towards Establishing a Benchmark for Reducing Electromagnetic Field Levels Within Single Family Residential Dwellings. Science of the Total Environment. 466-467(1): 625-634.
First Listed Author
Published
Refereed?: Yes, Open Access?: No

3.　Richman, R.C., Zirnhelt, H., Fix, S.. (2014). Large-scale Building Simulation Using Cloud Computing for Lifecycle Energy Consumption. Canadian Journal of Civil Engineering. 41(3): 252-262.
First Listed Author
Published
Refereed?: Yes, Open Access?: No

4.　Syed, T., Richman, R.C., Fung, A.. (2013). Least Cost Residential Upgrades: A Case Study Toronto, Canada. Energy and Buildings.
First Listed Author
Submitted
Refereed?: Yes, Open Access?: No

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5. Yip, A., Richman, R.C.. (2013). Reducing Ontario Residential Heating Energy Consumption by 80% by 2030: A Tiered Framework of Performance Targets and Preliminary Implementation Strategy. Energy and Buildings.
    Co-Author
    Submitted
    Refereed?: Yes, Open Access?: No

6. Zimhelt H, Richman R. (2013). The Potential Energy Savings from Residential Passive Solar Design in Canada. Energy and Buildings.
    Co-Author
    Revision Requested
    Refereed?: Yes, Open Access?: No

7. Bowick M, Richman R. (2012). Residential Batch Environmental Assessment Tool (Res-BEAT) - A Batch Assessment and Building Stock Life Cycle Assessment Tool for Canadian Housing. Energy.
    Co-Author
    Submitted
    Refereed?: Yes, Open Access?: No

8. Blaszak K, Richman C. (2012). A Prioritizing Method for Retrofitting Toronto's Single Family Housing Stock. Journal of Architectural Engineering.
    Co-Author
    Published
    Refereed?: Yes, Open Access?: No

9. Stahlbrand I, Richman R. (2012). Simulation of a Convective Loop for the NTED Low Energy House. International Journal of Building Physics. 36(1): 57-82.
    Co-Author
    Published
    Refereed?: Yes, Open Access?: No

10. Dixon E, Richman R, Pressnail K. (2012). NTEDTM: Achieving Significant Reductions in Heating Energy Use. Energy and Buildings. 54: 215-224.
    Co-Author
    Published
    Refereed?: Yes, Open Access?: No

11. Bristow D, Richman R, Kirsch A, Kennedy C, Pressnail K. (2011). Hour-by-Hour Analysis for Increased Accuracy of Greenhouse Gas Emissions for a Low-Energy Condominium Design. Journal of Industrial Ecology. 15(3): 381-393.
    Co-Author
    Published
    Refereed?: Yes, Open Access?: No

12. Richman R, O'Malley L, Pressnail K, Liebenow N. (2011). The Reduced Gradient Approach (RGA): An Alternative Method to Optimizing Humidity Conditions in House Museums in Cold Climates. International Journal of Architectural Heritage. 5(1): 48-59.
    First Listed Author
    Published
    Refereed?: Yes, Open Access?: No

13. Richman R, Cianfrone C, Pressnail K. (2010). More Sustainable Masonry Façades: Preheating Ventilation Air Using a Dynamic Buffer Zone (DBZ). Journal of Building Physics. 34(1): 27-41.
    First Listed Author
    Published
    Refereed?: Yes, Open Access?: No

14. Richman R, Pressnail K. (2010). Laboratory Testing to Quantify Performance of the Solar Dynamic Buffer Zone (SDBZ) Curtain Wall. Energy and Buildings. 42(4): 522-533.
    First Listed Author
    Published
    Refereed?: Yes, Open Access?: No

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15. Richman R, Pasqualini P, Kirsch A. (2009). Life Cycle Analysis of Roofing Insulation Levels for Cold Storage Buildings. Journal of Architectural Engineering. 15(2): 55-61.
First Listed Author
Published
Refereed?: Yes, Open Access?: No

16. Richman R, Pressnail K. (2009). A More Sustainable Curtain Wall System: Analytical Modelling of the Solar Dynamic Buffer Zone (SDBZ) Curtain Wall. Building and Environment. 44(1): 1-10.
First Listed Author
Published
Refereed?: Yes, Open Access?: No

Reports

1. Co-Author. Wright, G., Swietlick, B., Richman, R.C.. (2012). Spray Foam Insulations and Passive Houses. 20. Passive House Institute US

2. First Listed Author. Richman, R.C., Cohen, A.. (2012). Radiation Balance in the PHPP. 10. Passive House Institute US

3. Co-Author. Williams, B. Richman, R.. (2012). Effects of Interior Spray Foam Application to Historic Solid Load Bearing Masonry Walls. 16. BASF

4. First Listed Author. Richman, R. C.. (2011). Analysis of Integrating Velo into Renovation2050. 10. Zerofootprint

5. Co-Author. Fix, S., Richman, R.C.. (2009). Viability of Rammed Earth Building Construction in Cold Climates. 25. Ryerson University

Working Papers

1. Co-Author. Rowe D, Richman R, Bowick M. (2012). Life Cycle Analysis of Canadian Roofing Assemblies. : 12.

Conference Publications

1. (2014). THE RELATIONSHIP BETWEEN FLOW EXPONENTS AND FLOW VALUES AND ASSOCIATED IMPLICATIONS FOR AIR LEAKAGE TESTING USING FAN (DE)PRESSURIZATION METHODOLOGY.. 14th Canadian Conference on Building Science and Technology (1-10). CCBST
Paper
Co-Author
Published
Refereed?: Yes, Invited?: Yes

2. (2014). Reducing Ontario Residential Heating Energy Consumption by 80% by 2030: A Tiered Framework of Performance Targets and Preliminary Implementation Strategy. 14th Canadian Conference on Building Science and Technology (1-10). CCBST
Paper
Co-Author
Published
Refereed?: Yes, Invited?: Yes

3. (2014). A Life Cycle Assessment Tool for Canadian Roofing on Buildings. 14th Canadian Conference on Building Science and Technology (1-10). CCBST
Paper
Co-Author
Published
Refereed?: Yes, Invited?: Yes

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Dr. Russell Richman

4. (2013). Four Suitable Wall Assemblies for Passive House Modular Construction in Toronto, Canada. 8th Annual North American Passive House Conference (1-5). PHIUS
    Abstract
    Co-Author
    Accepted
    Refereed?: Yes, Invited?: Yes

5. (2012). Applying Lean Thinking to the Passive House Process. 7th Annual North American Passive House Conference (1-6). PHIUS
    Paper
    Co-Author
    Published
    Refereed?: Yes, Invited?: No

6. (2012). An Interactive Workbench for Monitoring, Identification and Calibration of Building Energy Models. Simbuild2012 5th National Conference of IBPSA-USA (1-10). Simbuild2012 5th National Conference of IBPSA-USA
    Paper
    Co-Author
    Published
    Refereed?: Yes, Invited?: No

7. (2012). Energy Literacy and Perceptions of Energy Consumption in Multi-Unit Residential Buildings. SASBE 2012 (1-10). SASBE 2012
    Paper
    Co-Author
    Published
    Refereed?: Yes, Invited?: No

8. (2012). Assessing Metrics for Energy Performance in Canadian Residential Buildings. SASBE2012 (1-10). SASBE2012
    Paper
    Co-Author
    Published
    Refereed?: Yes, Invited?: No

9. (2011). Rainscreens and Radiation Balance. 6th Annual North American Passive House Conference (1). PHIUS
    Abstract
    First Listed Author
    Published
    Refereed?: No, Invited?: Yes

10. (2011). Evaluating the Potentials of Variable Air Volume Systems in North American Houses. 10th Asia Pacific Conference on the Building Environment (1-10). 10th Asia Pacific Conference on the Building Environment
    Paper
    Co-Author
    Published
    Refereed?: Yes, Invited?: No

11. (2011). Residential Passive Solar Design for Canadian Cities: Assessing the Potential. ISES SWC 2011 (1-10). ISES SWC 2011
    Paper
    Co-Author
    Published
    Refereed?: Yes, Invited?: No

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Dr. Russell Richman

12.   (2011). NTEDTM: Applicability of an Innovative Low-Energy Home Design to Northern Climates. 13th Canadian Conference on Building Science and Technology (1-10). 13th Canadian Conference on Building Science and Technology
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

13.   (2011). Toward Sustainability: Prioritizing Retrofit Options for Toronto's Single-Family Homes. 13th Canadian Conference on Building Science and Technology (1-10). 13th Canadian Conference on Building Science and Technology
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

14.   (2011). Overcoming the Challenges of Energy Retrofitting an Historic 1870's Solid Masonry Home: A Case Study. 13th Canadian Conference on Building Science and Technology (1-10). 13th Canadian Conference on Building Science and Technology
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

15.   (2011). An Innovative Approach to Retrofitting Multi-Unit Residential Buildings Using a Nested Thermal Envelope DesignTM. 9th Nordic Symposium on Building Physics (1-10). 9th Nordic Symposium on Building Physics
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

16.   (2010). Gemini House: An Innovative Design Using Nested Thermal Envelopes to Achieve Significant Reductions in Energy Use. Thermal Performance of the Exterior Envelopes of Whole Buildings XI International Conference (1-10). Thermal Performance of the Exterior Envelopes of Whole Buildings XI International Conference
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

17.   (2010). Design and Construction of an Effective Window Wall System in High Rise Condominiums: A Case Study. 7th International Conference on Tall Buildings (1-10). 7th International Conference on Tall Buildings
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

18.   (2010). Life Cycle Energy Use and Greenhouse Gas Emissions of Residential Dwellings. International Conference on Building Envelope Systems and Technologies (1-10). International Conference on Building Envelope Systems and Technologies
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

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Dr. Russell Richman

19. (2010). Using Solar Dynamic Buffer Zone Walls to Increase Performance of Air Source Heat Pumps in Cold Climates. Building Enclosure Science and Technology II (1-10). Building Enclosure Science and Technology II
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

20. (2009). Hour by Hour Analysis of Greenhouse Gas Emissions for a Near-Zero Carbon Condominium Design. International Society for Industrial Engineering 2009 Conference (1-10). International Society for Industrial Engineering 2009 Conference
Paper
Co-Author
Published
Refereed?: Yes, Invited?: Yes

21. (2009). Evaluating the Performance of a Double Façade in a Cold Climate: A Case Study. 12th Canadian Conference on Building Science and Technology (CCBST) (1-10). 12th Canadian Conference on Building Science and Technology (CCBST)
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

22. (2009). A Study of Thermal Insulation Practices in the Arctic of Canada. 12th Canadian Conference on Building Science and Technology (CCBST) (1-10). 12th Canadian Conference on Building Science and Technology (CCBST)
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

23. (2009). Moderating the Impact of Sustained Energy Interruptions by Designing and Constructing Low Energy Homes. 2009 Passive and Low Energy Architecture International Conference (1-10). 2009 Passive and Low Energy Architecture International Conference
Paper
First Listed Author
Published
Refereed?: Yes, Invited?: No

24. (2009). Low Energy Homes: The Economic Case for Building More Responsibly Now. 12th Canadian Conference on Building Science and Technology (CCBST) (1-10). 12th Canadian Conference on Building Science and Technology (CCBST)
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

25. (2009). Brute Force Optimization: Combining Mass Energy Simulation and Life Cycle Analysis to Optimize Building Design. 13th Canadian Conference on Building Science and Technology (1-10). 13th Canadian Conference on Building Science and Technology
Paper
Co-Author
Published
Refereed?: Yes, Invited?: No

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Dr. Russell Richman

26. (2009). An Innovative Approach to Low-Energy Building Performance Using Nested Thermal Envelopes.
     12th Canadian Conference on Building Science and Technology (CCBST) (1-10). 12th Canadian
     Conference on Building Science and Technology (CCBST)
     Paper
     Co-Author
     Published
     Refereed?: Yes, Invited?: No

27. (2009). More Sustainable Masonry Façades: Preheating Ventilation Air Using a Dynamic Buffer Zone
     (DBZ). 12th Canadian Conference on Building Science and Technology (CCBST) (1-10). 12th Canadian
     Conference on Building Science and Technology (CCBST)
     Paper
     First Listed Author
     Published
     Refereed?: Yes, Invited?: No

Intellectual Property

Trademarks

1. Gemini Nested Thermal Envelope Design
    Pending
    Filing Date: 2011-10-25

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1.1.43 Dr. Zaiyi Liao

NSERC CRSNG

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Protected when completed

Date Submitted: 2015-10-29 16:00:17
Confirmation Number: 443130
Template: NSERC_Researcher

Dr. Zaiyi Liao
Correspondence language: English
Sex: Male

Contact Information

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Protected when completed

Dr. Zaiyi Liao

Language Skills

Language	Read	Write	Speak	Understand	Peer Review
Cantonese	Yes	Yes	Yes	Yes	Yes
English	Yes	Yes	Yes	Yes	Yes
Mandarin Chinese	Yes	Yes	Yes	Yes	Yes

Degrees

- 2004/2   Doctorate, Engineering Science, University of Oxford

     Supervisors: Auther L Dexter, 2001/9 - 2004/7

- 2001/9   Doctorate, Building Services Engineering, Hong Kong Polytechnic University

     Supervisors: Jianlei NIE, 1988/9 - 2001/7

- 1990/7   Master's Thesis, Building Services Engineering, Tsinghua University

     Supervisors: Qisen Yan, 1988/9 - 1990/7

- 1988/7   Bachelor's, Building Services Engineering, Tsinghua University

     Supervisors: Yi Jiang, 1987/9 - 1988/7

Recognitions

2014/2 - 2014/6   Dean's Teaching Award - 2,000
Ryerson University
Prize / Award
Ryerson University, Faculty of Engineering and Architectural Science, Dean's teaching award 2014

2011/6 - 2015/6   Chutian Scholarship - 31,000
Department of Education, Hubei Province, China
Prize / Award
Chutian Scholarship program funded by the Provincial government of Hubei, China.
Research team is established to work on building energy efficiency and waste control.

User Profile

Research Specialization Keywords: Acoustic Emission Technology, Building Automation, sensor, algorithm, Computational modelling of building performance, Fuzzy-logic, Instrumentation, Waste-water treatment

Research Disciplines: Mechanical Engineering, Electrical Engineering and Electronic Engineering, Architecture and Design, Water and Environment

Areas of Research: Buildings, Construction Technologies, Control System, Liquid and Gaseous Waste Treatment

Fields of Application: Construction, Energy, Environment

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Dr. Zaiyi Liao

Employment

2012/9	Professor Architectural Science, Engineering and Architectural Science, Ryerson University Full-time, Professor Tenure Status: Tenure Teaching, Research, Services
2003/4	Technical Director Fuelstretcher Ltd URL: http://www.fuelstretcher.co.uk
2011/6 - 2014/5	Visiting Professor School of Hydraulic and Environmental Engineering, China Three Gorges University Part-time, Visiting Professorship, Professor Tenure Status: Non Tenure Track
2004/8 - 2012/8	Associate Professor Department of Architectural Science, Ryerson University Full-time, Associate Professor Tenure Status: Tenure Teaching, Research, Services
2009/5 - 2011/4	Visiting Professor School of Architecture and Art, Hefei University of Technology Part-time, Visiting Professorship, Professor Tenure Status: Non Tenure Track Collaborative Teaching and Research
2009/9 - 2010/8	Director Architectural Science, Ryerson University Part-time, Term, Associate Professor Tenure Status: Tenure Building Science Master Program
1999/9 - 2004/7	Scientist Building Research Establishment
1994/12 - 1999/8	Technician and Research Associate Department of Architecture, Chinese University of Hong Kong Full-time Tenure Status: Non Tenure Track
1995/5 - 1998/8	Senior Product Design Consultant CIPONIC Ltd URL: http://www.ciponic.com
1990/9 - 1994/11	Senior Engineer and Division Manager Beijing Tsinghua Tong Fang D. Laio was involved in the design of ten national standard laboratories for testing the performance of HVAC systems.

Research Funding History

Awarded [n=3]

2015/11 - 2016/10 Co-applicant	Optimal Charging Scheduling for Electrical Vehicles with Smart Grid, Grant

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Dr. Zaiyi Liao

Funding Sources:

2015/11 - 2016/11   Ontario Center of Excellence (OCE)
Voucher for Innovation and Productivity
Total Funding - 40,800
Portion of Funding Received - 20,000
Funding Competitive?: Yes

Co-applicant : Lian Zhao

2015/9 - 2016/8   Emission Reduction for Green Transportation - Stage II, Grant
Co-applicant

Funding Sources:

2015/8 - 2016/8   Ryerson University (Ontario)
FEAS Dean Research Fund
Total Funding - 15,000
Portion of Funding Received - 7,500
Funding Competitive?: Yes

Principal Applicant : Lian Zhao

2011/6 - 2016/6   Special matching fund for Chutian Professor by China Three Gorges University, Grant
Principal Applicant

Funding Sources:

2011/6 - 2016/5   The China Three Gorges University
Matching Fund for Chutain Scholarship Visiting Professor
Total Funding - 40,000
Portion of Funding Received - 40,000
Funding Competitive?: Yes

Completed [n=7]

2011/9 - 2013/3   NN-based Vehicle Class Identification, Grant
Principal Investigator

Funding Sources:

2007/7 - 2009/6   MITACS
Accelerate
Total Funding - 40,000
Portion of Funding Received - 40,000
Funding Competitive?: Yes

2010/9 - 2011/8   Automatic Vehicle Classification, Grant
Co-investigator

Funding Sources:

2010/9 - 2011/8   Mathematics of Information Technology and Complex Systems
(MITACS)
Acceleration
Total Funding - 40,000
Portion of Funding Received - 20,000
Funding Competitive?: Yes

Co-investigator : L Zhao

2008/4 - 2011/3   Ryerson SRC Fund, Grant
Principal Investigator

Funding Sources:

2008/4 - 2010/3   Ryerson University (Ontario)
SRC Funding
Total Funding - 30,000
Portion of Funding Received - 30,000
Funding Competitive?: Yes

2006/4 - 2011/3   Inferential Sensors and Inferential Control Schemes for Building Automation, Grant
Principal Investigator

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Dr. Zaiyi Liao

Funding Sources:

2006/4 - 2011/3   Natural Sciences and Engineering Research Council of Canada (NSERC)
Discovery Grant Program
Total Funding - 85,000
Portion of Funding Received - 85,000
Funding Competitive?: Yes

2008/4 - 2010/3   Self-contained Air-registers for Residential Applications, Grant
Principal Investigator
Funding Sources:

2008/4 - 2010/3   Ontario Partnership of Industrialization and Commercialization
Total Funding - 25,000
Portion of Funding Received - 25,000
Funding Competitive?: Yes

2007/4 - 2010/3   Development of New Generation of AE Technology, Grant
Principal Investigator
Funding Sources:

2007/4 - 2010/3   Ontario Center of Excellence (OCE)
Total Funding - 112,000
Portion of Funding Received - 65,000
Funding Competitive?: Yes

2008/4 - 2010/3   Intelligent Vehicle Techology, Grant
Principal Investigator
Funding Sources:

2008/4 - 2010/3   Ministry of Transportation, Ontario
Total Funding - 38,500
Portion of Funding Received - 20,000
Funding Competitive?: Yes

Student/Postdoctoral Supervision

Master's Equivalent [n=1]

2014/1 - 2017/6   Xiaoshuang Li (In Progress) , The China Three Gorges University
Academic Advisor   Student Degree Expected Date: 2017/6
Thesis/Project Title: To be determined but in the area related to the study of watershed and environmental design

Master's non-Thesis [n=5]

2012/9 - 2015/6   Neshat Bayat (Completed) , Ryerson University
Principal Supervisor   Thesis/Project Title: The Effects on lighting retrofits on Energy Consumption

2011/9 - 2013/8   Francis Lapare (Completed) , Ryerson University
Principal Supervisor   Thesis/Project Title: The Green Room Method: Incorporating Green Facades into Whole Building Energy Models

2011/9 - 2013/8   Shawn Ruff (Completed) , Ryerson University
Principal Supervisor   Thesis/Project Title: Analysis of Thermostat Design for Vertical Fan Coil Units Within Modern Window-Wall Condominium Suites

2010/9 - 2012/8   Bomani Khemet (Completed) , Ryerson University
Principal Supervisor   Thesis/Project Title: Evaluating Opportunities For Increased HVAC Energy Efficiency For A Ryerson University Building With eQuest Energy Modeling
Present Position: Ryerson University PhD Candidate

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Dr. Zaiyi Liao

2010/9 - 2014/8 Principal Supervisor	Christine Chow (In Progress) , Ryerson University Student Degree Expected Date: 2014/8 Thesis/Project Title: Application of low-carbon design strategies in current design practice Present Position: Research associate

Master's Thesis [n=8]

2013/9 - 2015/8 Co-Supervisor	Yan Li (Completed) , China Three Gorges University Thesis/Project Title: Application of Building Information Model (BIM) in Construction Process
2013/9 - 2015/8 Principal Supervisor	Philip McKeen (In Progress) , Ryerson University Student Degree Expected Date: 2013/8 Thesis/Project Title: Modelling the development and movement of fire in buildings Present Position: Research associate
2012/9 - 2014/8 Principal Supervisor	Edmund Konroyd Bolden (Completed) , Ryerson University Thesis/Project Title: Research on the thermal performance of windows and new generation of insulation layers for windows with high R-value Present Position: Research associate
2011/9 - 2013/12 Principal Supervisor	Afrooz Ravanfar (In Progress) , Ryerson University Student Degree Expected Date: 2013/12 Thesis/Project Title: Simulation and Optimization of the?> Solar-assisted Ventilation in a?> Chimney-dependent Solarium
2010/9 - 2012/9 Co-Supervisor	Liang Huang (Completed) , Ryerson University Thesis/Project Title: Physical-rule based adaptive neuro-fuzzy inferential sensor for optimal control of space heating systems Present Position: IT developer, LDS Canada
2010/9 - 2012/6 Principal Supervisor	Edmund Wong (Completed) , Ryerson University Thesis/Project Title: Evaluating the Performance of a Canadian residential house with district heating using Computer Simulation Present Position: Consulting engineer in a leading energy company based in Los Angeles
2009/9 - 2011/8 Principal Supervisor	Ka Long Ringo Ng (Completed) , Ryerson University Thesis/Project Title: THE ROLE OF THERMAL SIMULATION IN VARIOUS PHASES OF BUILDINGS' LIFE-CYCLES IN IMPROVING BUILDING PERFORMANCES Present Position: Senior consultant in a leading building energy consulting company based in Toronto
2008/9 - 2010/8 Academic Advisor	Thomas Behan (Completed) , Ryerson University Thesis/Project Title: Acoustic Emission Technology for PCCP Fault Detection Present Position: Engineer

Doctorate [n=4]

2013/6 - 2017/8 Co-Supervisor	Xingyi Zhang (In Progress) , Suchoow University Student Degree Expected Date: 2017/8 Thesis/Project Title: Heritages as driving force for sustainable revitalization: balance between creation and preservation
2012/6 - 2016/8 Co-Supervisor	Yiting Zhu (In Progress) , Hefei University of Technology Student Degree Expected Date: 2014/8 Thesis/Project Title: Application of sustainable building technologies in China Present Position: Research associate
2010/9 - 2014/7 Academic Advisor	K Hafeez (Completed) , Ryerson University Thesis/Project Title: Inter-Vehicular Communication

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Dr. Zaiyi Liao

| 2007/9 - 2011/6 Principal Supervisor | Surinder Jassar (Completed) , Ryerson University Thesis/Project Title: Grey Box Modeling an Advanced Control Scheme for Building Heating Systems Present Position: Instructor at Humber College |

Post-doctorate [n=1]

| 2013/6 - 2014/6 Academic Advisor | Jianwen Huang (Completed) , the China Three Gorges University Thesis/Project Title: Optimal management of large dam project construction Present Position: Associate Professor |

Research Associate [n=4]

| 2015/8 - 2016/8 Principal Supervisor | Ying ZHU (In Progress) , Ryerson University Thesis/Project Title: Adaptive reuse of old heritage buildings |

| 2014/1 - 2014/12 Academic Advisor | Xingxia Wang (Completed) , The China Three Gorges University Thesis/Project Title: Self-adaptive filter based on LMS algorithm for predicting slop movement |

| 2011/6 - 2016/6 Academic Advisor | Yaoxing Liu, The China Three Gorges University Thesis/Project Title: Decentralized black-water treatment for low-cost applications |

| 2011/6 - 2016/6 Academic Advisor | Jianjun Chen, The China Three Gorges University Thesis/Project Title: Eco-Filter based grey-water treatment for low-cost application Present Position: Professor at the China Three Gorges University |

Committee Memberships

| 2011/10 - 2013/10 | Committee Member, FEAS Faculty Promotion Committee, Ryerson University |

| 2010/7 - 2012/6 | Chair, Departmental Appointment Committee, Ryerson University |

| 2010/1 - 2011/1 | Committee Member, Ryerson University Creative Research Fund Review Committee, Ryerson University |

Other Memberships

| 2008-10-15 - 2016-10-15 | Professional Engineer of Canada (PENG), Engineers Canada |

| 2004-11-15 - 2016-10-01 | Member, ASHRAE TORONTO Chapter |

Publications

Journal Articles

1. *Y Zhu, Z Liao, Y Wu. (2015). The Strategies for Balancing Preservation and Creation in the Revitalization of Canada's Main Streets: A Case Study in Unionville Village. Chinese Journal of Urban Planning. 2015(11)
    In Press
    Refereed?: Yes, Open Access?: No

2. *P McKeen, Z Y Liao. (2015). Modelling the Combustion of PPUF (Polyether Polyurethane Foam Kinetics) in CFD. International Journal of Building Performance Simulation.
    Submitted
    Refereed?: Yes, Open Access?: No

115

Dr. Zaiyi Liao

3. Z Liao, W Xuan. (2015). An Experimental Study on the Energy Efficiency of Gas-Burned Boilers in Heating Systems. International Journal of Scientific Research.
    Accepted
    Refereed?: Yes, Open Access?: Yes

4. *P McKeen, Z Y Liao. (2015). A Three-Layer Macro-Scale Model for Simulating the Combustion of PPUF in CFD. International Journal of Building Simulation.
    Submitted
    Refereed?: Yes, Open Access?: No

5. *J Chen, Y Xi, Z Liao, S Lu, *Y Liu, J He. (2015). Impacts of Hydraulic Loading Rate and Air Temperature on Eco-Filter Based Treatment of Greywater Generated in a Rural Household. Journal of Agro-Environment Science. 34(10): 2012-18.
    Published
    Refereed?: Yes, Open Access?: No

6. *S Li, Z Liao, L Chen. (2015). Study on the Transitions between Watersheds and Built-up Areas under Different Artificial Interference: a Case Study in Toronto. City Planning Review.
    In Press
    Refereed?: Yes, Open Access?: No

7. *Y Liu, Y Lei, Y Xi, Z Liao, R Chen, X Wu. (2015). Domestic Wastewater Treatment in Rural China Three Gorges Reservoir Area Using Biological and Ecological Combined Technology. Journal of Chemical Technology and Biotechnology.
    Submitted
    Refereed?: Yes

8. *J Chen, Z Liao, G Hu, X LU. (2015). Decentralized Treatment of Greywater Generated from Single Farm Household Using an Eco-Filter Based Process. Journal of Biological Engineering.
    Submitted
    Refereed?: Yes

9. *E Konroyd-Bolden, Z Liao. (2015). Thermal Window Insulation. Energy and Buildings.
    Accepted
    Refereed?: Yes, Open Access?: No

10. *X Zhang, Z Liao, Y Wu. (2015). Investigate the Border Effect of Urban-Rural Transitional Belts: A Case Study in the Village of Unionville, Ontario, Canada. International Urban Planning.
    Revision Requested
    Refereed?: Yes, Open Access?: No

11. *Y Li, Z Liao, H Yuan. (2015). A Study of Emergency Evacuation Process Simulation Based on System Dynamics. International Journal of Engineering and Industries. 6(1): 20-26.
    Published
    Refereed?: Yes, Open Access?: No

12. *Y Q Wang, *E Song, Z Liao. (2015). Post-Occupancy Evaluation of Landscape Performance: A Case Study in Bailuyuan Garden, Suzhou. Anhui Journal of Agriculture Science. 2015(8): 170-4.
    Published
    Refereed?: Yes, Open Access?: No

13. *J Chen, *Y Lei, Z Liao, Y Liu, J He, J Tan. (2015). Biological Treatment of Greywater Produced in Individual Farmhouse: Design and Operation of the Process and Equipment. Journal of China Water and Wastewater. 2015(05)
    Published
    Refereed?: Yes, Open Access?: No

14. *X Wang, *J Huang, Liao Z. (2014). Self-adaptive Filter Based on LMS Algorithm for Predicting Slope Movement. People Yellow River. 36(9): 101-4.
    Published
    Refereed?: Yes, Open Access?: No

116

Dr. Zaiyi Liao

15. *X Wang, Q Huang, Z Y Liao. (2014). Slope Stability Evaluation Based on Choquet Fuzzy Integral. Water Power. 40(7): 33-35.
Published
Refereed?: Yes, Open Access?: No

16. *Y Liu, *Y Lei, Z Liao, X Wu, *J Chen. (2014). Copper and Nickel Removal from Electroplating Wastewater Using Two-Step Coagulation Method. Journal of China Three Gorges University (Natural Science). 36(2)
Published
Refereed?: Yes, Open Access?: No

17. *Y Liu, Z Liao, X Wu, C Zhao, Y Lei, D Ji. (2014). Electrochemical Degradation of Methylene Blue Using Electrodes of Stainless Steel Net Coated with Single Walled Carbon Nanotubes. Desalination and Water Treatment.
Published
Refereed?: Yes

18. *X Wang, *J Huang, Z Liao. (2014). Experimental Investigation on Mechanical Properties of Sandstone in Three Gorges Reservoir Area under Unloading Conditions. Advanced Materials Research. 1035: 18-22.
Published
Refereed?: Yes, Open Access?: Yes

19. *X Wang, W Ma, *J Huang, Z Liao. (2014). Mechanical Properties of Sandstone Under Loading and Unloading Conditions. Advanced Materials Research. 852: 441-446.
Published
Refereed?: Yes

20. *Y Li, Z Liao, H Yuan. (2014). Investigating the Impacts of BIM on Project Parties and Its Application. Construction Technology Special Issue. 43(6): 522-525.
Published
Refereed?: Yes, Open Access?: No

21. *J Huang, H Pan,*Y Li, *Y Zhu, Z Liao. (2014). Cost/Schedule Monitoring and Forecasting for Project Based on Earned Value Management (EVM). Advanced Materials Research. 919: 1437-40.
Published
Refereed?: Yes, Open Access?: No

22. *Y Zhu, Z Liao, Y Wu. (2014). The Strategies for Balancing Preservation and Creation in the Revitalization of Heritage Buildings: A Case Study in Main Street Unionville, Canada. Architectural Journal. 2014(4): 108-113.
Published
Refereed?: Yes, Open Access?: No

23. *Y Liu, X Wu, Z Liao, *J Chen, Y Lei. (2014). Treatment of Municipal Wastewater with Oyster Shell as Medium Used in Biological Aerated Filter. Technology of Water Treatment. 40(4): 83-86.
Published
Refereed?: Yes, Open Access?: No

24. *Y Liu, X Wu, Z Liao, *J Chen. (2014). Removal of Heavy Metal Ions From Aqueous Using Electrochemical Method. Environmental Engineering. 2014(3): 70-74.
Published
Refereed?: Yes, Open Access?: Yes

25. *J Chen, Z Liao, *X Lu. (2013). Effect of Indigenous Microbial Promoting on Phosphorus in Black-order Sediment and the Overlying Water. Chinese Journal of Environmental Engineering. 7(9): 3403-08.
Published
Refereed?: Yes, Open Access?: No

26. *P Huang, Z Liao. (2013). A Neuro-Fuzzy Based Adaptive Control Scheme for Heat Exchanger in District Heating System. International Journal of Civil Engineering and Architecture. 6(11): 1584-88.
Published
Refereed?: Yes, Open Access?: No

117

Dr. Zaiyi Liao

27. Liao Z, L Huang, L Zhao. (2013). Physical Rules Based ANFIS Model for Predicting the Indoor Temperature in Heating Systems. International Journal of Distributed Sensor Networks.
Published
Refereed?: Yes, Open Access?: No

28. *Ng R, Liao Z. (2012). Evaluating the Need and Potential of Equipping North American Houses with Multi-zone VAV Systems. Applied Mechanics and Materials. 361-363: 22-30.
Published
Refereed?: Yes

29. *P Huang, Z Liao, L Zhao. (2012). Physical Rules Based ANFIS Model For Predicting The Indoor Temperature In Heating Systems. International Journal of Distributed Sensor Networks.
Published
Refereed?: Yes

30. *K Ng, Z Liao, M Gorgolewski, L Gurunlian. (2012). Low-energy Envelope Systems for an Apartment Building in Cold Climate. Journal of Green Buildings. 6(3): 106-132.
Published
Refereed?: Yes, Open Access?: No

31. Z Liao, A Dexter. (2011). Model-based Predictive Control of Boilers in Hot-water heating Systems. IEEE Transactions on Control Systems Technology. 18(5): 1092-1102.
Published
Refereed?: Yes, Open Access?: No

32. *S Huang, Z Liao, L Zhao. (2011). Synergism of INS and PDR in Self-contained Pedestrian Tracking with a Miniature Sensor Module. IEEE Sensor Journal. 10(8): 1349-1359.
Published
Refereed?: Yes, Open Access?: No

33. *K Hafeez, L Zhao, Z Liao, B Ma. (2011). OFDMA-Based MAC Protocol (COMAC) for Vehicular Ad Hoc Networks. EURASIP Journal on Wireless Communications and Networking. 2011(117)
Published
Refereed?: Yes

34. *S Jassar, Z Liao, L Zhao. (2011). A Recurrent Neuro-Fuzzy System and its Application in Inferential Sensing. Applied Soft Computing. 11(3): 2935-2945.
Published
Refereed?: Yes

35. *S Jassar, Z Liao, L Zhao. (2010). Data Quality in Hybrid Neuro-Fuzzy based Soft-Sensor Models: An Experimental Study. IAENG International Journal of Computer Science. 37(1): 64-75.
Published
Refereed?: Yes

36. *R Wu, Z Liao,L Zhao, X Kong. (2009). Wavelets Application in Acoustic Emission Signal Detection of Wire Related Events in Pipeline. Canadian Acoustic. 36(2): 33-41.
Published
Refereed?: Yes, Open Access?: No

37. L Zhao, Z Liao. (2009). Power Allocation for Amplify-and-Forward Cooperative Transmission Over Rayleigh-Fading Channels. Journal of Communications. 3(3): 33-42.
Published
Refereed?: Yes, Open Access?: No

38. *S Jassar, Z Liao, L Zhao. (2009). Adaptive Neuro-Fuzzy Based Inferential Sensor Model for Estimating the Average Air Temperature in Multi-zone Heating Systems. Building and Environment. 44(8): 1609-1616.
Published
Refereed?: Yes

118

Dr. Zaiyi Liao

39. *S Jassar, Z Liao. (2009). Improve the Control of Residential Heating Systems. Applied Mechanics and Materials. 52-54: 1571-1576.
Published
Refereed?: Yes

40. *L Bai, L Zhao, Z Liao. (2009). Energy-balanced Parameter-adaptable Protocol Design in Cooperative Wireless Sensor Networks. International Journal of Multimedia and Ubiquitous Engineering. 4(1): 39-57.
Published
Refereed?: Yes

41. *N Chowdbury, Z Liao, L Zhao. (2009). The Effect of Pipe Profiling and Tube Wave Analysis of WRE Signal Propagation in Fluid-filled PCCP. Canadian Acoustics. 37(2): 25-36.
Published
Refereed?: Yes, Open Access?: No

Books

1. Zaiyi LIAO. (2015). Contemporary Poets Influencing China: Zaiyi LIAO - Sadness without Tears. : 180.
In Press, Chinese Literacy Press
Refereed?: Yes

Book Chapters

1. *T Behan, Z Liao, L Zhao. (2009). Integer Neural Networks On Embedded Systems. Advanced Technologies. : 213-233.
Published, Advanced Technology Ltd
Refereed?: Yes

2. *S Jassar, Z Liao, L Zhao. (2009). Data Quality in ANFIS Based Soft Sensor Sensors, in Machine Learning and System Engineering. Ao S-I, Rieger B, Amouzegar M. Machine Learning and System Engineering. : 143-155.
Published, Springer
Refereed?: Yes

Conference Publications

1. *A Ravandar, Z Liao, H Ge. (2014). Simulation study of solar chimney assisted solarium. Proceedings. 10th Nordic Symposium on Building Physics, Lund, , 2014-06-15
Paper
Published
Refereed?: Yes, Invited?: No

2. *J Huang, T Zhang, *X Wang, Z Liao. (2013). TOPSIS Based on the Triangular Fuzzy Function and Its Application in Construction Scheme Optimization. Proceedings. 2013 10th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD2013), Shengang, , 2013-07-23 (338-343)
Paper
Published
Refereed?: Yes, Invited?: No

3. *J Chen, S Lu, Z Liao, S Ai. (2012). Effect of Mechanical Aeration on Nitrogen and Microbial Activity in Sediment-water Interface from Urban Lake. EnergyEnvironment and Sustainable Development. 2012 Asian Pacific Conference on Energy, Environment and Sustainable Development (APEESD2012), Kuala Lumper, , 2012-11-12
Paper
Published
Refereed?: Yes, Invited?: No

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4. *K Hafeez, L Zhao, Z Liao, B Ma. (2012). A Fuzzy-Logic Based Cluster Head Selection Algorithm in VANETs. IEEE ICC 2012 – Ad-hoc and Sensor networking Symposuym (ICC'12 AHSN). IEEE ICC 2012 – Ad-hoc and Sensor networking Symposuym (ICC'12 AHSN), , 2012-08-13
   Paper
   Published
   Refereed?: Yes, Invited?: No

5. *K Hafeez, L Zhao, Z Liao, B Ma. (2012). Reliability of Cluster-Based Multichannel MAC Protocols in VANETs. IEEE ICC 2012 – Ad-hoc and Sensor networking Symposuym (ICC'12 AHSN). IEEE ICC 2012 – Ad-hoc and Sensor networking Symposuym (ICC'12 AHSN), , 2012-08-03
   Paper
   Published
   Refereed?: Yes, Invited?: No

6. *L Huang, Z Liao, L Zhao. (2012). GA-BP neural-network based inferential sensor in adaptive set-point heat exchanger in district heating systems. ICBSE 2012: International Conference on Building Science and Engineering, Tokyo, Japan, 2012-07-09
   Paper
   Published
   Refereed?: Yes, Invited?: No

7. *P Huang, Z Liao. (2011). A Neuro-Fuzzy Based Adaptive Control Scheme for Heat Exchanger in District Heating System. Proceedings. 7th International Symposium on Heating, Ventilation and Air-Conditioning (ISHVAC), Shanghai, China, 2011-09-06
   Paper
   Published
   Refereed?: Yes, Invited?: No

8. *K Hafeez, L Zhao, Z Liao, B Ma. (2011). A Novel Medium Access Control (MAC) Protocol for VANETs. Proceedings. ChinaCOM Communications and Networking in China, Harbin, China, 2011-08-17
   Paper
   Published
   Refereed?: Yes, Invited?: No

9. *P He, L Zhao, Z Liao. (2011). Improved and Extended Sum-capacity Computation for the Gaussian Vector Broadcast Channel Via Dual Decomposition. Proceedings. 6th International Conference on Wireless Algorithms, Systems, and Applications (WASA2011), Chengdu, China, 2011-08-11
   Paper
   Published
   Refereed?: Yes, Invited?: No

10. L Zhao, Z Liao. (2011). Power/Rate Allocation and Partner Selection Using GRP for Cooperative Cellular Wireless Networks. Proc. 4th IEEE International Conference on Computer Science and Information Technology. Fourth IEEE International Conference on Computer Science and Information Technology, Chengdu, China, 2011-06-14
    Paper
    Published
    Refereed?: Yes, Invited?: No

11. *K Ng, Z Liao. (2011). Evaluating the need and potential of equipping North American houses with multi-zone VAV systems. International Conference on Energy, Environment and Sustainable Development, Shanghai, China, 2011-10-21
    Paper
    Published
    Refereed?: Yes, Invited?: No

12. *P He, L Zhao, Z Liao. (2010). Optimal Sum Rate of the MIMO Relay Communication System. IEEE Globecom2010, Miami, United States, 2010-08-09
    Paper
    Published
    Refereed?: Yes, Invited?: No

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Dr. Zaiyi Liao

13. *K Hafeez, L Zhao, Z Liao, B Ma. (2010). #Performance Analysis of Broadcast Messages in VANETs Safety Applications#. Proceedings. IEEE Globecom 2010, Miami, United States, 2010-09-06
Paper
Published
Refereed?: Yes, Invited?: No

14. *K Hafeez, L Zhao, Z Liao, B Ma. (2010). A New Broadcast Protocol for Vehicular Ad Hoc Networks Safety Application. IEEE Globecom 2010, Miami, United States, 2010-06-08
Paper
Published
Refereed?: Yes, Invited?: No

15. *K Hafeez, L Zhao, Z Liao, B Ma. (2010). Impact of Mobility on VANETs Safety Applications. IEEE Globecm 2010, Miami, United States, 2010-06-08
Paper
Published
Refereed?: Yes, Invited?: No

16. *M Elalem, L Zhao, Z Liao. (2010). Interference Mitigation Using Power Control in Cognitive Radio Networks. VEHICULAR TECHNOLOGY CONFERENCE. IEEE. 71ST 2010. (VTC 2010-SPRING). 2010 IEEE 71st Vehicular Technology Conference: VTC2010-Spring 16–19 May 2010, Taipei, Taiwan, Taipei, , 2010-05-16
Paper
Published
Refereed?: Yes, Invited?: No

17. *K Ng, Z Liao, M Gorgolewski. (2010). The Study of Low-Energy Envelop Systems in High-Rise Apartments in Cold Climatic Regions with DesignBuilder and EnergyPlus. eSim 2010. eSim 2010, Winnipeg, Canada, 2010-05-19
Paper
Published
Refereed?: Yes, Invited?: No

18. *S Jassar, Z Liao, L Zhao. (2010). Hybrid Neuro-Fuzzy System Application to Inferential Sensing. Proceedings. Fifth IEEE Conference on Industrial Electronics and Applications, Taichung, Taiwan, Province of China, 2010-06-15
Paper
Published
Refereed?: Yes, Invited?: No

19. *L Farhi, L Zhao, Z Liao. (2009). Constrained Weighted Least Square Optimization for Vehicle Position Tracking. IEEE-Globecom 2009, Honolulu, , 2009-11-30
Paper
Published
Refereed?: Yes, Invited?: No

20. *K Ng, Z Liao, R Richman. (2009). Life-cycle analysis for constant air volume and variable air volume systems in North American houses. Proceedings. Tenth Asia Pacific Conference on the Built Environment, Kaohsiung, China, 2009-10-15
Paper
Published
Refereed?: Yes, Invited?: No

21. *M Chowdhury, Z Liao, L Zhao,R Ramakrishnan. (2009). Modal Soluation of the Acoustic Wave Propagation Through Fluid-filled Pipes. Proceedings. Annual Conf. Canadian Acoustical Assoc., Niagara Falls, Canada, 2009-10-15
Paper
Published
Refereed?: Yes, Invited?: No

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Dr. Zaiyi Liao

22. *M Chowdhury, Z Liao, L Zhao. (2009). PCCP Profiling and Tube Wave Analysis of WRE Signal.
COMSOL Conference, Boston, United States, 2008-10-13
Paper
Published
Refereed?: Yes, Invited?: No

23. *K Hafeez, L Zhao, Z Liao, B Ma. (2009). The Optimal Radio Propagation Model in VANET.
Proceedings. Fourth International Conference on Systems and Networks Communications, Porto,
Portugal, 2009-09-20 (6-11)
Paper
Published
Refereed?: Yes, Invited?: No

24. *M Chowdhury, Z Liao, L Zhao, R Ramakrishnan. (2009). Eigenfrequency Analysis of Fluid-filled Pipes.
Proceedings. Canadian Acoustical Assoc., Niagara Falls, Canada, 2009-09-07
Paper
Published
Refereed?: Yes, Invited?: No

25. L Zhao, Z Liao. (2009). On the Power allocation for Cooperative Amplify-and-Forward Transmission.
Proc. IEEE Vehicular Technology Conference. IEEE Vehicular Technology Conference, Barcelona,
Spain, , 2009-04-26 (1162-1166)
Paper
Published
Refereed?: Yes, Invited?: No

26. *S Jassar, Z Liao, L Zhao, *R Ng. (2009). Parameter selection for training process of neuro-fuzzy
systems for average air temperature estimation. Proceedings. 2009 IEEE International Conference on
Mechatronics and Automation, Changchun, China, 2009-08-12
Paper
Published
Refereed?: Yes, Invited?: No

27. *S Jassar, *T Behan, Z Liao, L Zhao. (2009). The comparison of Neural Network and hybrid Neuro-
Fuzzy based Inferential Sensor Models for Space Heating Systems. IEEE International Conference on
Mechatronics and Automation, Changchun, China, 2009-08-11
Paper
Published
Refereed?: Yes, Invited?: No

28. *R Wu, Z Liao, L Zhao, X Kong. (2009). Wavelets Application on Acoustic Emission Signal Detection
in Pipeline. Proc. IEEE Canadian Conference on Electrical and Computer Engineering (CCECE). IEEE
Canadian Conference on Electrical and Computer Engineering (CCECE), , 2008-08-15
Paper
Published
Refereed?: Yes, Invited?: No

29. *M Chowdhury, S Hossain, L Zhao, Z Liao. (2009). Low Cost Indoor Environment for Antenna
Measurement. Proc. IEEE Canadian Conference on Electrical and Computer Engineering (CCECE).
IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), , 2008-07-16
Paper
Published
Refereed?: Yes, Invited?: No

30. *S Jassar, Z Liao, L Zhao. (2009). The Potential or Improving Space Heating Energy Efficiency &
Reducing CO2 Emissions. Fourteenth International Interdisciplinary Conference on Environment,
Edmonton, Canada, 2008-06-10
Paper
Published
Refereed?: Yes, Invited?: No

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Dr. Zaiyi Liao

31.   *M Shaik, O Das,L Zhao L, Z Liao. (2009). Inter-vehicle Range Smoothing for NLOS Condition in the Persistence of GPS Outages. Fourth IEEE Conf. on Industrial Electronics and Applications (ICIEA 2009), Xi'an, China, 2009-05-25
      Paper
      Published
      Refereed?: Yes, Invited?: No

32.   *M Chowdhury, Z Liao, L Zhao. (2009). Theoretical Analysis of WRE Signal Propagation of PCCP. Int'l Conf. on Scientific Computation and Differential Equations 2009 (SciCADE09), Beijing, China, 2009-05-25
      Paper
      Published
      Refereed?: Yes, Invited?: No

Intellectual Property

Patents

1.   A Biological Process and Equipment for Treating Waste-water Produced in Individual Farmhouse. China. 201410214243.5. 2014-05-21.
     Patent Status: In Progress
     A novel wast-water treatment technology based on biological method has made it possible to build cheap and effective equipment for treating waste-water generated in typical farmhouse in China. This is extremely useful for controlling so-called Area Waste-Water Pollution.

2.   A new technology for integrated treatment of grey-water, black-water for application in the rural areas of China. China. ZL 2014 1 0099774.4. 2014-03-18.
     Patent Status: Completed
     Date Issued: 2015-05-27
     This new technology provides a solution for building affordable and effective waste-water treatment in the rural areas of China. It is the result of a four-year research project that I led a team of researchers in China.

3.   Heating System. United Kingdom. AU2003217010.
     Patent Status: Completed
     Date Issued: 2003-09-16
     Classification – International: F24D19/10 Classification – European: AU20030217010 20030307

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1.1.44 Dr. Ramani Ramakrishnan

Ramani Ramakrishnan – CV May 2016

Ryerson University, Toronto, ON, Canada

Programs: Architectural Science, Building Science

a) NAME: rank, status

RAMAKRISHNAN, **Ramani,** Professor, Tenured
Member of the Graduate Faculty: Yes

Professional Affiliations

P. Eng, Member of the Professional Engineers of Ontario (1984).
ASA – Member of the Acoustical Society of America (From 1983 till 2012).
INCE – Member of the US Institute of Noise Control Engineering (From 1985 till 2012).

b) DEGREES

D.Sc. (Acoustics), Joint Institute of Acoustics and Flight Sciences NASA Langley Research Centre (VA, USA), Department of George Washington University, 1977.

M.S (Acoustics), Joint Institute of Acoustics and Flight Sciences, NASA Langley Research Centre (VA, USA), Department of George Washington University, 1973

B. Tech (I Class) Civil Engineering, Indian Institute of Technology, 1970

c) EMPLOYMENT HISTORY

dates   rank/position, department, institution/firm

2000-Present   Professor, Ryerson University, Department of Architectural Science
1984 - 2000   CUPE Member, Ryerson University, Department of Architectural Science
1997 - 2000   Senior Acoustician, Aerodynamics Group, Aiolos Engineering Corporation

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1994 - 1997   Engineering Consultant, Engineering Consulting Division, Vibron
Limited
1991 - 1992   Technical Specialist - Noise Control, Ontario Hydro
Corporation
1985 - 1991   Senior Policy Analyst – Noise Control, Ministry of the
Environment, Province of Ontario
1980 - 1982   Scientist, Lockheed-Georgia Corporation, Atlanta, GA,
USA
1977 - 1979   Senior Post-Doctoral Research Fellow, University of
Southampton, Institute of Sound and Vibration Research
(ISVR), England
1971 - 1977   Research Assistant, Joint Institute of Acoustics and
Flight Sciences, NASA Langley Research Centre (VA,
USA), Department of George Washington University,
Washington.

d) HONOURS

Ramakrishnan and Ball. 'Air Handling Systems.' Patent Pending in
Canada and India, 1989
Ramakrishnan and Ball. 1991.' Air Handling System.' USA Patent No:
4,986,170, Date of Patent: 22 January, '91
Appeared in the 1994 issue of WHO's WHO in Science and
Engineering in America, 1992
Board of Directors (Elected), Canadian Acoustical Association and
completed one four year term, 1992
Dean's Teaching Award (2012-2013) – Awarded for teaching
excellence by Ryerson University.
ThresholdHouse, a team of six students, under my supervision, won
three awards, for Best Design Goals, Best Construction
Document and Best Presentation at the Challenge Home
Student Design Competition organized by US DOE and held at
NREL in Golden, CO, 26-27 April, 2014.

e) SCHOLARLY AND PROFESSIONAL ACADEMIC ACTIVITIES

Year	rank/status, program, institution
2007-2012	Visiting Professor and Sessional instructor at Concordia University, Montreal
2005- 2010	Adjunct Associate Professor, University of Windsor
2000 - Present	*Associate Professor,* Ryerson University, Department of Architectural Science, Toronto
1984 – 2000	*CUPE Member,* Ryerson University, Department of Architectural Science, Toronto – taught between one to two courses every winter term

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1977 – 1979   *Senior Post-Doctoral Research Fellow,* University of Southampton, Institute of   Sound   and   Vibration Research (ISVR), England

Technical Chair, Acoustics Week in Canada, Windsor, Ontario, 1997.

Organising Committee, Acoustics Week in Canada, Alliston, Ontario, 2001.

Conference Chair, Acoustics Week in Canada, Niagara-on-the-Lake, Ontario, 2009.

Co-Guest Editor, Special Issue of the Journal of Industrial Ergonomics, 2011-12

Technical Chair, Acoustics Week in Canada, Winnipeg, Manitoba, 2014.

Editor-in-Chief, Canadian Acoustics Journal – Dec 1998 – Dec. 2012.

Member – Advisory Board, Canadian Acoustics Journal – (Dec. 2012 – Present)

Chair – Research and Development Committee, Department of Architectural Science, Ryerson University – 2002 – 2007

Member – Research and Development Committee, Department of Architectural Science, Ryerson University – 2009-present

Member of Faculty Annual Report Committee, - Faculty of Engineering Architecture and Science, Ryerson University – since 2004,

Founder, Publisher and Editor-in-Chief – Kala Arts Quarterly – publication focussing on the classical arts of the South Asian community, Toronto from 1996 till 2004.

Canadian Standards Association - Sub-Committee on the Measurements of noise and vibration from blasting.

ISO9613/CSA Z107.55: International Standards Organisation-Canadian Standards Association - Working Group- Recently appointed to the working group to develop a Canadian Standard on Noise Propagation from Industrial sites.

ISO TC 43: Appointed in January 2006 to the ISO TC 43/SC 1/WG to represent Canada - The working group is finalizing an International Standard ISO/TS 1374 - Acoustics, "Impulse sound propagation for environmental noise assessment." Published in 2009.

ISO TC43/SC2. Recently appointed to be a member of the Canadian Advisory committee on "Building Acoustics." 2011- Responsibilities include commenting on Standards being ballotted.

f) G R A D U A T E   S U P E R V I S I O N S

Completed:

1. Pushpindar Bhullar - Mechanical Engineering, Ryerson University – MA.Sc. "Sensitive Analysis of Beamforming Technique for Acoustic Measurements." September 2004.

2. Helen Ule - Mechanical Engineering, University of Windsor – MSc. "Experimental Measurements of Automotive Intake Noise." September 2004.

3. Tony Spadafora - Mechanical Engineering, University of Windsor – MSc. " Comparison of Experimental and Modelled Insertion Loss of a Complex Multi-Chamber Muffler with Temperature and Flow Effects." October 2005.

4. Jun Zuo - Mechanical Engineering, University of Windsor – MASc. "Analytical and Experimental Study on the Performance of Perforated Exhaust Muffler." May 2007.

5. Ben Gaum – Architectural Science, Ryerson University – M.Arch. "Sound Created Form." September 2009.

6. Stephen Bibla - Architectural Science, Ryerson University – M.BSc. "A Review of Classroom Daylighting Within LEED© Certified Schools in the Toronto District School Board." September 2010.

7. Abdul Sayed- Architectural Science, Ryerson University – M.BSc. "Day lighting potential in Ryerson's MON Building." September 2012.

8. Yawar Siddiqui - Architectural Science, Ryerson University – M.Arch. "Immaterial Architecture." Completed April 2013.

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9. Adam Barker- Architectural Science, Ryerson University – MBSc. "Validating seasonal performance of energy recovery ventilation in compartmentalized high-rise residential buildings and comparing to predicated performance." Completed January 2014.

10. Hussein Altameemi - Mechanical Engineering, Ryerson University – MEng. – "Boundary layer creation for Architectural model testing in a wind tunnel." Completed September 2014.

11. Vipul Sehrawat – Mechanical Engineering, Ryerson University – MASc. "Acoustic and Flow measurement of wind farms and noise propagation from wind turbines." Completed February 2015.

12. Bayati, Neshat – MBSc., " Evaluating the effects on the energy consumption of a Commercial Building in Toronto, Canada after a lighting retrofit has been completed," Second Reader, Completed April 2015.

13. Murad, Chuck, MBSc., "Investigate the Impact of Low U-value Framing Conditions and Insulation Solution at Cantilevered Concrete Balcony Slabs in High-Rise MURBs" Second Reader, Completed April 2015.

14. Fariz Dhalla, MBSc., "Investigating Thermal Bridging in Window Systems Insulated with Monolithic Silica Aerogel" Second Reader, Completed September 2015.

15. Melissa Ann Sachiko Furukawa, MBSc., "The Adoption Of Green Roofs In Building Retrofitting: Outdoor Microclimate Benefits And Energy Savings" Second Reader, Completed September 2015.

16. Viktoriya Mykytyak, MBSc "The Impact Of Window-To-Wall Ratio On Energy Intensity Of Existing Office Building In Ontario And Quebec" Second Reader, Completed September 2015,

17. Pilip Mckeen, MASc., "Numerical Simulations of Polyurethane Foam Fires, Smoke Spread and Egress in Metro-Stations," Second Reader, Completed January 2016.

18. Ching Chi Suen, MBSc. "Acoustical Performance of Porous Materials." Completed February 2016.

19. Nabila Alibhai, MASc, "The Electric Utility of the Future: Insights on Challenges and Changes in Ontario LDCs." Thesis examiner, Completed April 2016.

In Progress:

1. Amit Gurung MBSc. "Building Integrated Phtovoltaics (BIPV) for daylight control and electricity production"

2. Mathew Hudson, MBSc., " Wind profile around buildings and harnessing natural ventilation."

3. Rockford Boyer, MBSC. "Theory of Self Drying Roofs."

4. Anna Lena Assel, MASc. German Exchange student, Co-supervisor, "Wind Tunnel Study on Section Model of Bridge Deck."

g) GRADUATE COURSES

2002-2003　Advanced Theoretical Acoustics
2006-2007　Advanced Theoretical Acoustics
2012-2013　Advanced Theoretical Acoustics
2007-2011 Building Acoustics @ Concordia University, Montreal, Quebec, Canada
(Seven week summer Course).
2009-present Acoustical Design Details in Buildings @Ryerson – every alternate Fall term
2010-present Details of Lighting Design in Buildings @Ryerson – every alternate Fall term
2012-2013 – Directed studies in Building Acoustics
2016 – Directed Studies – Wind Tunnel Testing

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h) RESEARCH ASSISTANTS(HQP)

2012-2012 Setareh Shams – URO Scholar - "Acoustic Metrics for Classroom Performance – A Literature Review."
2013-2014 Nick Shinbin – Research Assistant – "Performance analysis of Elbow Silencers."
2014-2014 Romain Dumoulin – Research Assistant – "Acoustic Performance of Corner vanes of a Wind Tunnel."
2014-2014 Tooraj Yousefi – Post Doctoral Research Fellow – "Pressure Drop Evaluation of Elbow Silencers."
2013-2014 Jim Kim – Research Assistant – "Performance analysis of Porous Materials."
2015-2016 Ze-Bin Ren – Visiting China Scholar – "Performance analysis of passive and active absorption systems"

i)   1. EXTERNAL RESEARCH FUNDING

Year, source purpose, type, amount per year

September 2002 to August 2004 - Institute of Aerospace Research, National Research Council, Ottawa – to study "Use of Beam form techniques for source localization in wind tunnels." $15,000 per year for two years.

July 2012 to August 2014 – Ontario Centre for Excellence grant to study "the Behaviour of Elbow and Staggered Silencers." $110,000 over the two year duration.

March 2013 to July 2014 – Collaborative research grant from the Health Department of Niagara Region, Ontario to study "Wind Turbine Noise Propagation." $40,000.

January 2014 to July 2014 – – Ontario Centre for Excellence grant to study "the Acoustic Performance of Wind tunnel corner vane treatments." $40,000.

January 2014 to July 2014 – – Ontario Centre for Excellence grant to study "Pressure Drop Evaluation of silencers." $42,000.

May 2014 to Oct 2014 – – Ontario Centre for Excellence grant to study "the Acoustic Performance of Porous materials." $52,000, awarded May 2014.

May 2015 to October 2015 - - Ontario Centre for Excellence grant to study "the investigation and mitigation of shed vortex resonances in heat exchangers." $35,000 – Application under preparation to be finalized and submitted by early April 2015 (Industry partner is on board).

2. INTERNAL RESEARCH FUNDING

Year, source purpose, type, amount per year
July 2000-Junly 2001 - Ryerson University. SEED Grant, FEAS Research $15,000.

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j) PUBLICATIONS

1. Life-time Summary

Item	Number
Books authored	1
Books edited	1
Chapters in books	3
Papers in refereed journals	17
Papers in Progress or under review	4
Invited Papers	3
Papers in refereed conference proceedings	9
Technical reports	6
Abstracts and/or papers read at conferences	54
Other (workshops presented)	3
TOTAL (Not updated)	**101**

Ramakrishnan R., 'Using STAMSON 4.1: Manual for the Evaluation of Road and Rail Pass-by Noise', July 1991

Ramakrishnan R., Editor: 'Environmental Noise Assessment in Land Use Planning', Ministry of Environment Ontario, March 1989
(2nd Edition) .

Ramakrishnan R., Contributor: 'Environmental Noise Assessment in Land Use Planning', Ministry of Environment Ontario, March 1989 (
2nd Edition)

Ramakrishnan R., Contributor: 'Introductory Environmental Noise Course Manual', Ministry of Environment Ontario, January
1988
Ramakrishnan R , Contributor: 'Certificate Environmental Noise Course Manual,' Ministry of Environment Ontario, March 1989.

Refereed Publications till 2006

Hosier and **Ramakrishnan**. ' Helicopter Rotor Rotational Noise Predictions based on Measured High Frequency Blade Loads.' NASA TN D-7624, December 1974. **(Refereed Publication)**

Ramakrishnan and Davies. 1979. ' Sound Generation by Flow Acoustic Coupling.' IUTAM / ICA / AIAA Symposium on the Mechanics of Sound Generation in Flows, Goettingen, Germany, August 28-31, 1979. **(Invited Paper)**

Ramani Ramakrishnan. 1980. ' Radiation in a Wall-Jet Flow Environment.' Journal of Sound and Vibration 68(3), 389-405. **(Refereed Publication)**

Ramani Ramakrishnan. 1980. ' A Note on the Reflection Coefficients of Higher Order Duct Modes.' Journal of Sound and Vibration 72(4), 554-558. **(Refereed Publication)**

Ramani Ramakrishnan. 1982. ' A Note on the Calculation of Wiener-Hopf Split Functions.' Journal of Sound and Vibration 81(4), 592-595. **(Refereed Publication)**

Ramakrishnan, Salikuddin and Ahuja 1982. ' Generation of Desired Signals from Acoustic Drivers.' Journal of Sound and Vibration 85(2), 39-51. **(Refereed Publication)**

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Salikuddin and **Ramakrishnan** 1987. ' Acoustic Power Measurement for Single and Annular Stream Duct-Nozzle Systems Utilizing a Modal Decomposition Scheme.' Journal of Sound and Vibration 113(3), 441-472. **(Refereed Publication)**

Ramakrishnan and Watson 1990. ' Acoustical Performance of Multi-Unit Splitter Silencers.' Canadian Acoustics Journal, 18(3), 3-12. **(Refereed Publication)**

Ramakrishnan and Watson 1991. ' Design Curves for Circular and Annular Duct Silencers.' Noise Control Engineering Journal, 36(3), 107-120. **(Refereed Publication)**

Ramakrishnan and Watson 1992. ' Design Curves for Rectangular Splitter Silencers.' Applied Acoustics Journal, 35(1), 1-24. **(Refereed Publication)**

Ramakrishnan and Stevens 1994. ' Improving the Accuracy of Duct Silencer Insertion Loss Predictions.' Journal of Sound and Vibration, 169(3) 423-427 (1994). **(Refereed Publication)**

Alavi and **Ramakrishnan** 1994. ' Systematic Diagnostic Analysis of Vibration in a Boiler Feed Pump-Motor, Part I Analysis.' Vibrations (Vibrations Institute Journal), 10(2) 8-13 (1994). **(Refereed Publication)**

Alavi and **Ramakrishnan** 1994. ' Systematic Diagnostic Analysis of Vibration in a Boiler Feed Pump-Motor, Part II Modal Tests and Modifications.' Vibrations (Vibrations Institute Journal), 10(4), pp 6-9, (1994). **(Refereed Publication)**

2. Details for the Past Seven Years

Books Authored

Books Edited

Chapters in Books

Papers in Refereed Journals

Peter Waudby-Smith and **Ramani Ramakrishnan** 2007. 'Wind Tunnel Resonances and Helmholtz Resonators.' Canadian Acoustics Journal, Vol. 35 (1) 3-11 **(Refereed Publication)**

Ramani Ramakrishnan, 2011 "Location of Horn Speakers in a Reverberation Room." Canadian Acoustics Journal, Vol. 39 (1) 37-42 **(Refereed Publication)**

Ben Gaum and **Ramani Ramakrishnan**, 2011 "Sound Created Form." Canadian Acoustics Journal, Vol. 39 (1) 23-30 **(Refereed Publication)**

A. Seifzadeh, A. Pietrzyk, P. Göransson, D.C.D. Oguamanam, and **R. Ramakrishnan**, 2014 "Effect of coupling between passenger compartment and trunk of a car on coupled system natural frequencies using acoustic frequency response function" Applied Acoustics Journal, Vol 76, pp 310-318 **(Refereed Publication).**

A. Seifzadeh, P. Göransson, A. Pietrzyk and **R. Ramakrishnan**, 2014. "Experimental investigation of coupling effects of passenger compartment and trunk of a car on coupled system natural frequencies using noise transfer function," Applied Acoustics Journal, Vol. 83, pp16-21. **(Refereed Publication).**

7

Ramani Ramakrishnan
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Ramani Ramakrishnan and Romain Dumoulin, 2016. "Acoustics of a Music Venue/Bar – A Case Study." *Buildings* – Accepted for publication, to appear in 2016. **(Refereed Publication).**

Ramani Ramakrishnan, Sergio Raimondo, Anant Grewal and Gary Elfstorm "High frequency noise generation by impinging jets." Paper under preparation for CASI Journal 2016.

Anant Grewal, Yong Chen, **Ramani Ramakrishnan**, Bill Woyski, William O. Hughes, and Gary Elfstorm, "High Intensity Noise Generation for Extremely Large Reverberant Room Test Applications." Paper under preparation for CASI Journal 2016.

Ramani Ramakrishnan, Sergio Raimondo, Anant Grewal and Gary Elfstorm, "Screech Suppression of Supersonic Jet Noise," Paper under preparation for AIAA Journal, 2016.

Ramani Ramakrishnan and Nick Shinbin, "Performance Analysis of Conventional Elbow Silencers**.**" Paper under preparation for Applied Acoustics Journal, 2016.

Papers in Refereed Conference Proceedings

Ramani Ramakrishnan, 2004. 'Trends in Managing Construction Noise Levels.' WCPM Conference - May 2004, Toronto, Ontario. **(Refereed Publication)**

George Kapelos, and **Ramani Ramakrishnan** "Establishing a Research Policy and Protocol in an Emerging Program in Architecture" Presented at Emerging Research and Design; ARCC/EAEE International Conference on Architectural Research 2006 Conference, Philadelphia, USA, June 2006.

Afarin Maleki, **Ramani Ramakrishnan** and Hitesh Doshi. "Impact of Sealant on the Water Shedding Performance of Metal Flashing" Proceedings of the 11th Canadian Building Science & Technology Conference Conference, Banff, Alberta, March 2007 **(Refereed Conference).**

Anant Grewal, Yong Chen, **Ramani Ramakrishnan**, Bill Woyski, William O. Hughes, and Gary Elfstorm, "High Intensity Noise Generation for Extremely Large Reverberant Room Test Applications," presented at the IMAC XXIX - A Conference and Exposition on Structural Dynamics, Jacksonville, Florida, January-February 2011.

Adam Barker and **Ramani Ramakrishnan**, "Parametric analysis of energy recovery ventilation performance in the high-rise residential sector," Presented at the e-sims conference in Ottawa, ON in April, 2014.

Chuck Murad, Hitesh Doshi and **Ramani Ramakrishnan**, "Impact of insulated concrete curb on concrete balcony slab," Presented in International Conference on Sustainable Design, Engineering and Construction 2015, Chicago, May 2015.

Ramani Ramakrishnan and Vipul Seharwat, "Evaluation of sound propagation from wind farms," Presented at the 22nd International Conference on Sound and Vibration, Florence, Italy, July 2015.

Viktoriya Mykytyak, Hitesh Doshi and **Ramani Ramakrishnan**, "The Impact Of Window-To-Wall Ratio On Energy Intensity Of Existing Commercial Building In Ontario And Quebec." To be presented in the Whole Buildings XIII Conference, Toronto, December 2016.

Ramani Ramakrishnan and Vipul Seharwat, "Wind Turbine Noise Prediction," Invited Paper to be presented at the ICA2016 Conference, Buenos Aires, Argentina, September 2016.

Umberto Berardi and **Ramani Ramakrishnan**, "Comparison of Two-Microphone and Three-Microphone Impedance Methods of Evaluating Acoustic Performance of Porous Materials," to be presented at the ICA2016 Conference, Buenos Aires, Argentina, September 2016.

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Abstracts/Papers read Conferences

Ramakrishnan, van Every and Hess 2001. 'Aeolian Tones in a Wind Tunnel.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 2001, Alliston, Ontario.

Ramakrishnan, Rennie and Lau 2001. 'Uncommon Noise Signatures in a Wind Tunnel.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 2001, Alliston, Ontario.

Colin Novak, Helen Ule, **Ramani Ramakrishnan** and Robert Gaspar , "The effect of background noise on sound power in both a reverberant and anechoic environment." Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 2002, Charlottetown, PEI.

Helen Ule, Colin Novak, **Ramani Ramakrishnan** and Robert Gaspar , " Comparison of experimental and modelled insertion loss of a complex multi-chamber muffler." Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 2002, Charlottetown, PEI.

Ramani Ramakrishnan, Colin Novak, Helen Ule and Robert Gaspar , "Outdoor Noise Propagation." Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 2003, Edmonton, Alberta.

Ramani Ramakrishnan, and Willie Watson, "Insertion Loss of Silencers." Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 2003, Edmonton, Alberta.

Ramani Ramakrishnan and Werner Richarz, 2005. "Collaborative Noise Control Method - A Case Study," Presented at the *Acoustics Week in Canada*, London, ON, October 2005

Ramani Ramakrishnan, 2005. "Impact Noise issues in Multi-family dwellings, ". Presented at the June 2005 CSCE Conference in Toronto.

Ramani Ramakrishnan and Werner Richarz 2005 "Collaborative Noise Control Method, A Case Study" Presented in Acoustics week in Canada, London, ON 2005.

Nicholas Sylvestre-Williams and **Ramani Ramakrishnan** "Error Bounds, Uncertainties and Confidence Limits of Outdoor Sound Propagation" Acoustics Week in Canada, Halifax, October 2006.

Jun Zuo, Colin Novak, Helen Ule, **Ramani Ramakrishnan**, and Robert Gaspar. "Preliminary Acoustic Performance Investigation Of Concentric-Tube Perforated Muffler Design" Acoustics Week in Canada, Halifax, October 2006.

Ramani Ramakrishnan and Nicholas Sylvestre-Williams "Wind Turbine Noise and Meteorological Effects," Acoustics Week in Canada, Montreal, October 2007

Ramani Ramakrishnan and Anant Grewal "Reverberation Room and Spatial Uniformity," Acoustics Week in Canada, Vancouver, October 2008.

Ramani Ramakrishnan, "Wind Farms and Noise." Proceedings of Inter-Noise 2009, August 2009, Ottawa, Ontario. INCE-USA, Poughkeepsie, NY, USA. **(Invited paper)**

Ramani Ramakrishnan, Sergio Raimondo, Anant Grewal and Gary Elfstorm "High frequency noise generation by impinging jets." Proceedings of Inter-Noise 2009, August 2009, Ottawa, Ontario. INCE-USA, Poughkeepsie, NY, USA.

Ramani Ramakrishnan, Tim Preager, Payam Ashtiani and Vince Gambino "Concerns with using simplified wind profiles in determining noise impact of wind turbines." Proceedings of Inter-Noise 2009, August 2009, Ottawa, Ontario. INCE-USA, Poughkeepsie, NY, USA.

Ramani Ramakrishnan, "Characteristics of Wind Turbine Noise," Acoustics Week in Canada, Niagara-on-the-Lake, October 2009.

Ramani Ramakrishnan, Sergio Raimondo, Anant Grewal and Gary Elfstorm, "Screech Suppression of Supersonic Jet Noise," Acoustics Week in Canada, Niagara-on-the-Lake, October 2009.

Ben Gaum and **Ramani Ramakrishnan**, "Sound Created Form," Acoustics Week in Canada, Niagara-on-the-Lake, October 2009.

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N M Alam Chowdhury, Zaiyi Liao, Lian Zhao and **Ramani Ramakrishnan**, "Eigenfrequency Analysis of Fluid-filled pipes," Acoustics Week in Canada, Niagara-on-the-Lake, October 2009.

N M Alam Chowdhury, Zaiyi Liao, Lian Zhao and **Ramani Ramakrishnan**, "Modal Solutions of the Acoustic Wave Propagation through Fluid-filled pipes," Acoustics Week in Canada, Niagara-on-the-Lake, October 2009.

Ramani Ramakrishnan, "Location of Horn Speakers in a Reverberation Room," Acoustics Week in Canada, Victoria, BC, October 2010.

Ramani Ramakrishnan, "Validation of COMSOL Multiphysics and acoustical performance of splitter-silencers," Acoustics Week in Canada, Victoria, BC, October 2010.

Ramani Ramakrishnan and Zarko Sopkic "Noise Reduction Potential of Green Roofs," Acoustics Week in Canada, Victoria, BC, October 2010.

Ben Gaum and **Ramani Ramakrishnan**, "Acoustical Evaluation of Temporary Performance Facilities," Acoustics Week in Canada, Victoria, BC, October 2010.

Ramani Ramakrishnan and Romain Dumoulin, "Acoustics of Worship Spaces." Acoustics Week in Canada, Quebec City, Quebec, October 2011.

Ramani Ramakrishnan and Romain Dumoulin, "Performance Evaluation of Duct Bends." Acoustics Week in Canada, Quebec City, Quebec, October 2011.

Ramani Ramakrishnan and Romain Dumoulin, "Performance Evaluation of Lined Bends." Acoustics Week in Canada, Banff, Alberta, October 2012.

Setareh Shams and **Ramani Ramakrishnan**, "Acoustic Metrics for Classroom Performance – A Literature Review" Acoustics Week in Canada, Banff, Alberta, October 2012.

Francis Laparé, Tristan Truyens, Zaiyi Liao and **Ramani Ramakrishnan**, " The Green Room Method – Incorporating Green Façades into Whole Building Energy Models," to be presented in 2013 International Conference on Materials, Architecture and Engineering Technology (ICMAET 2013) Beijing, China, December 19-20, 2013.

Ramani Ramakrishnan, Romain Dumoulin and Peter Waudby-Smith, "Acoustic Simulation of Large Turning Vanes." Proceedings of the Acoustics Week in Canada, Winnipeg, Manitoba, October 2014.

Ramani Ramakrishnan, and Vipul Sehrawat, "Sound Propagation from Wind Farms." Proceedings of the Acoustics Week in Canada, Winnipeg, Manitoba, October 2014.

Ramani Ramakrishnan, and Nick Shinbin, "Parametric Analysis of Elbow Silencers." Proceedings of the Acoustics Week in Canada, Winnipeg, Manitoba, October 2014.

Ramani Ramakrishnan, and Tooraj Yousefi, "Pressure Drop Evaluation of Silencers." Proceedings of the Acoustics Week in Canada, Winnipeg, Manitoba, October 2014.

Atef Mohany and **Ramani Ramakrishnan**, "Generation of High-Intensity – High-Frequency Noise." Proceedings of the Acoustics Week in Canada, Winnipeg, Manitoba, October 2014.

Ramani Ramakrishnan, James Jung Soo Kim, James Andrew Smith and Rick Roos, "Effect of Compression on Acoustic Performance Of Fibrous Materials." Proceedings of the Acoustics Week in Canada, Winnipeg, Manitoba, October 2014.

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Ramani Ramakrishnan "Performance Of Annular Silencers – An Update." Proceedings of the Acoustics Week in Canada, Halifax, Nova Scotia, October 2015.

Ramani Ramakrishnan and Romain Dumoulin "Deesign of a Bar-Music Venue" Proceedings of the Acoustics Week in Canada, Halifax, Nova Scotia, October 2015.

Remaining List of Publications:

Hosier, **Ramakrishnan** and Pegg. 'The Prediction of Rotor Rotational Noise Using Measured Fluctuating Loads', presented at the 30th Annual Forum of the American Helicopter Society, Washington D.C., May 1974.

Ramakrishnan and Davies. 1979. Institute of Sound and Vibration Research Technical Memorandum. 'Higher Order Mode Propagation in Flow Ducts.'

Ramani Ramakrishnan. 1980. 'The Transient Sound Field in Ducts.' Lockheed-Georgia Report, LGO80ER167.

Salikuddin, **Ramakrishnan,** Ahuja and Brown. 1981. 'A Unique Method to Study Acoustic Transmission through Ducts Using Signal Synthesis and Averaging of Acoustic Pulses.' American Institute of Aeronautics and Astronautics, Paper No. 81 -1966.

Ramani Ramakrishnan. 1981. ' Progress in Duct Acoustics Research.' Lockheed-Georgia Report, LGO81ER0265.

Salikuddin, Brown, **Ramakrishnan** and Tanna 1982. 'Refinement and Application of Acoustic Impulse Technique to Study Nozzle Transmission Characteristics.' NASA CR -3656.

McIntyre and **Ramakrishnan.** 1984. 'Wave Action - Its Application to Acoustics.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada*- October 1984, Quebec City, Quebec.

Ramakrishnan and Ball 1988. 'PC- Baffle, Duct Silencer Performance Prediction Software for a Personal Computer.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1988, Toronto, Ontario.

Ramani Ramakrishnan 1988. 'The Impulsive Impact of Bird Scaring Devices, A Case History.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada*- October 1988, Toronto.

Ramakrishnan and Howe 1988. 'Fluid Induced Pulsations, A Case Study.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada*- October 1988, Toronto, Ontario.

Ramakrishnan, Howe and Gastmeier 1988. 'Noise Control of Underground Bus Station, A Case Study.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1988, Toronto, Ontario.

Ramakrishnan and Watson 1989. 'Design Curves for Circular and Annular Duct Silencers.' Proceedings, Inter-Noise '89, 417-420.

Ramani Ramakrishnan 1989. 'The Application of Sound Intensity System to Environmental Noise Concerns.' Proceedings, Inter-Noise '89, 999-1002.

Ramakrishnan and Ball 1991. 'PC- CIRCLE, Circular Duct Silencer Performance Prediction Software.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1991, Edmonton, Alberta.

Ramakrishnan, Stevens and Howe 1991. 'Comparison of Computational Methods for Rectangular Silencer Insertion Loss Prediction.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1991, Edmonton, Alberta.

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Misra and **Ramakrishnan** 1992. 'Application of ABAQUS to Acoustical Modelling. ' Paper presented at the ASME Pressure Vessels and Piping Conference in New Orleans, June 21-25, 1992.

Ramakrishnan and Watson 1992. 'Validity of Modelling Porous Material as Locally Reacting for Silencer Performance Evaluation.' Proceedings Inter-Noise '92, 197-200.

Ramakrishnan and Misra 1992. 'Insertion Loss of Multi-Chamber Mufflers.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1992, Vancouver, British Columbia.

Ramakrishnan 1993. 'Effect of Perforated Sheets on Rectangular Silencer Performance.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1993, Toronto.

Stevens and **Ramakrishnan** 1993. 'High Temperature Effects on the Insertion Loss of Absorptive Silencers.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1993, Toronto.

Barman, Gambino, **Ramakrishnan** and Swallow 1993. 'Reverberation Time ?' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1993, Toronto.

Ramakrishnan and Gaspar 1994. 'Controlling Control Valve Noise: A Case Study.' Canadian Acoustical Association Symposium - *Acoustics Week in Canada* - October 1994, Ottawa.

Ramakrishnan and Wilson 1995. 'Numerical Methods for Gas Turbine Silencer Design.' Paper presented in the Special Session on Overview of Boundary and Finite Element Methods in Acoustics, 130th ASA Meeting, 27 November - 1 December, 1995, St. Louis, Missouri, USA.

Ramakrishnan and Paige 1996. 'Effect of Floor Vibrations from Human Activities - Case Studies.' Paper presented in the Local Chapter Meeting CIMV, May 1996, Toronto, Canada.

Ramakrishnan, 1999. 'Simple solutions to Complex HVAC Noise Problems.' Canadian Acoustics Journal, 27(3), 3-12.

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Library Response to Letter of Intent for a Ph.D. Program in Building Science

Prepared by: Sonny Banerjee, Liaison Librarian
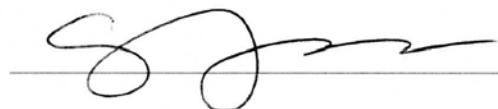
_____ March 22, 2018

Approved by: Carol Shepstone, Chief Librarian
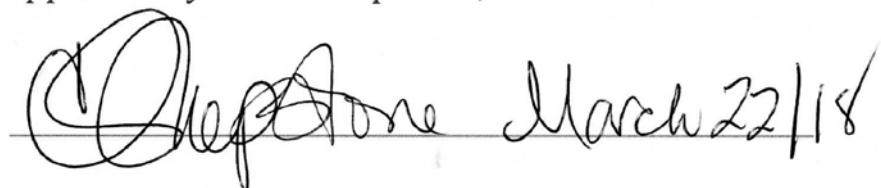
_____ March 22/18

The Ryerson University Library and Archives (RULA) looks forward to being an academic partner in supporting the proposed Ph.D. program in Building Science. We are happy to provide this response to the Letter of Intent for the proposed program.

Library Collection and Services

The Library and Archives is fundamental to the success of high quality academic programming, graduate student and faculty SRC activities, and to advancing the research impact and reputation of the University. At the heart of the academic enterprise we provide crucial academic information and learning resources, expert support and instruction, and leading edge technology tools and learning and creation spaces.

RULA is centrally located on campus and provides a variety of services and facilities. Situated on the main floor is the Ronald D. Besse Information and Learning Commons where students and faculty have access to a range of information resources with advanced technology, and staff expertise.

Learning spaces in the Ronald D. Besse Learning Commons include:

- Library Research Assistance
- Geospatial Map and Data Centre
- Technology Support
- Borrower and Learning Services

The recently opened Student Learning Centre (SLC) has increased the student-use space and includes quiet study areas and a dedicated Graduate Reading room. Graduate students are provided with a swipe-card restricted space on the 7th floor of the Student Learning Centre for their exclusive use.

The Library Digital Media Experience Lab is a new area for experiential learning where students can learn and develop their digital skill-set. This Library initiative provides students to take workshops and book hands on time to learn new software and hardware to supplement their coursework and research.

The Library's collection of electronic resources are accessible to students and faculty 24 hours a day and 7 days a week at https://library.ryerson.ca. The library uses a convenient single sign-on system, allowing access to all of its resources via the my.ryerson login. Patrons can also use a virtual reference chat service, Ask a Librarian, for reference service regardless of location.

Graduate students have excellent access to Abstract and Indexing databases in the discovery of scholarly materials. Avery Index to Architectural Periodicals, GreenFILE, Compendex (hosted on Engineering Village), Web of Science and Scopus are a few examples of these databases. Our "Search Everything" platform provides an easy way to search the majority of our resources in ways consistent with Google and other one-box interfaces. This interface has increased access to indexes, full text of books, journals, and conference proceedings, in all formats, in this subject area.

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Ryerson Library promotes a service model whereby Liaison Librarians support students to ensure their research is as effective and efficient as possible. This includes both classroom-based instruction as well as in-depth research assistance specifically focused on graduate-level studies and faculty support. Graduate Students and faculty benefit from specialized in-class and one-on-one instruction in the use of the latest scholarly information resources. The Library and subject librarian welcomes the promotion of instruction, scholarly research assistance to faculty and researchers. Incoming Building Science graduate students are introduced to the subject librarian and given an overview of available resources and services during an orientation seminar held at the beginning of the academic year.

We can also provide access to materials from other academic libraries through our Interlibrary Loan delivery (ILL) services. Interlibrary Loan is an essential service for our researchers and continues to support the Department's research activities by providing unique materials beyond our collection. Suggestions for purchases from faculty and students are welcomed and we strive to accommodate these requests. Where feasible, many ILL requests for monographs are being immediately purchased for RULA's collection.

Ryerson Library and Archives maintains an institutional repository intended for research and scholarly output produced by the individual university departments and centres on campus. The repository provides the ideal means for sharing publications, graduate theses, and major research papers produced by faculty members and researchers at Ryerson University, including the Department of Architectural Science. This not only enhances the reputation of the University but also helps ensure the widest impact of Ryerson SRC.

Summary and Recommendations

Upon review of our collections and services, we have determined that the Ryerson University Library and Archives resources and services would currently adequately support the proposed Ph.D. program in Building Science. The foundation of Ryerson University's collection in support of a Ph.D program in Building Science is based upon our existing collections for graduate programs in Architecture, Civil Engineering, Mechanical Engineering and the current Building Science Master's program.

Only one new course is proposed in the new program, and consequently, the current depth and breadth of print and electronic resources presents a collection that will satisfy the information demands of study, teaching, and research for this proposed program.

When evaluated alongside peer institutions such as Concordia University, which operates a similar PhD program in Building Science, we note that the Ryerson Library subscribes to all of the databases held by Concordia. Discovery of Building and Architectural Science articles is best accomplished with a variety of academic library databases, with the premier resources being Avery Index to Architectural Periodicals, Engineering Village, Scopus and Web of Science.

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Recommendations:

1. It is recommended that a start-up investment of $3,000 be provided in the first year. This will fund the purchase of approximately 20-30 monographs (print and ebook) in order to support the program. Titles will be determined by request and using demand-driven acquisition.

2. The addition of a Ph.D. program normally results in increased cost for existing resources. This is based on the views and practices of eresource vendors who determine additional uses and users for the same eresources should trigger increased costs/compensation. An initial estimate demonstrates that a base budget increase of $9,000 should be provided to support the program in order to cover increased costs for existing resources, including graduate program levies and increased FTE. The Library will provide a substantive report once there is an actual proposal for this new program. It is important to capture the fact that new programs lead to increases to Library expenditures.

3. Continued consideration of Ryerson University Library and Archives overall funding reality, which places RULA currently at the lowest rankings for both the collection spend per student (%160.00/FTE) and the lowest overall Library budget as percentage of overall University budget (2.99% compared the provincial average of 4.22%) should alsobe noted. Recommendations for addressing these concerns are moving forward.

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Appendix I: List of Current Master's Level Courses

1.1.45 Core Courses

Each core course is offered every year.

BL8100- Building science theory

This course allows students to develop an advanced understanding of building science theory as it applied to sustainable design issues, and provides the foundation of technical knowledge for other courses. It includes understanding climate and solar geometry, the environment, advanced heat, air and moisture transfer, durability, and principles of modelling, Course content is relevant to the OBEC Building Science Specialist designation.

BL8101- Building envelope systems

In this course students will investigate a variety of building envelope systems ranging from SIP panels to high performance curtain walls and develop detailed knowledge with respect to the performance of alternative systems and their relevance to durable, sustainable design. This will include the study of heat, air and moisture transfer through the envelope. The course will also provide core knowledge for the OBEC Building Science specialist designation.

Prerequisite: BL8100. Corequisite: BL8100.

BL8102- Ecological and resource efficient design

In this course students will have an opportunity to explore concepts such as biomimicry, closed loop systems, ecological design processes and prefabrication. Students will develop an in depth understanding of how to design to minimize the environmental impacts of material and component choices, specifications, and processes. The focus will be on resource efficiency, construction processes, and materials selection. Students will be asked to critically evaluate green building assessment systems and develop an understanding of LCA methods.

BL8103- Energy efficient building services and renewable energy systems

This course provides students with opportunities to explore advanced building services systems appropriate for energy efficient buildings and to investigate renewable energy systems in buildings. The course will focus on a number of selected techniques, such as combined heat and power (CHP), solar energy systems, ground source heat pumps, etc. Students will develop knowledge and skills that enable them to carry out relevant work in research, design, evaluation, commissioning and development.

Prerequisite: BL8100. Corequisite: BL8100.

BL8104- Buildings design seminar/studio (focusing on low energy design)

This seminar/studio course will focus on a design exercise/project aiming to develop and apply advanced knowledge of low energy design, exploring passive design, building form, construction technologies, and systems integration. Areas of study may include, net zero energy, natural lighting design, and integration of renewable energy. The use of appropriate methods of appraisal of passive systems and their integration will be considered.

Prerequisite: BL8101, BL8103. Corequisite: BL8101, BL8103.

1.1.46 Elective Courses

Typically, 5 courses from this list are offered each academic year.

BL8204- Building performance simulation/modelling (developed in association with Mechanical Engineering)

Simulation can be used as a teaching and research tool in the area of air movement, indoor air, wind impact, fire safety, energy efficiency, lighting, etc. Principle of modelling and computational simulation will be explored. This course will make students become familiar with the potential for building simulation programs particularly to improve energy performance and understand the techniques of simulation, why and when such programs can be best used. Students will develop critical skills necessary to assess the appropriate choice of procedure and precision at different stages of the design process. This course may be offered in association with the Department of Mechanical Engineering.

BL8207- Building performance assessment

This course focuses on the complex issue of assessing existing buildings for their overall performance, particularly energy use, environmental impact and occupant satisfaction and to identify potential for improvement. This is key to ensuring that sustainable buildings perform to their potential. Post-occupancy building evaluations will be used and outputs compared to performance benchmarks on which buildings can be rated and compared. Students will have the opportunities to carry out an in-depth study of a range of aspects of the performance of a building through measurement, surveys, investigations, etc.

BL8209- Directed Studies: Building Science

This class is available to graduate students enrolled in a Master's Degree Program in Building Science, who wish to gain knowledge in a specific area for which no graduate level classes are offered. Students are assigned an advisor and are required to present a formal report, or take a formal examination, at the end of the class. Registration approval is required from the Graduate Program Director.

BL8210- Building Science and Architecture Research Methodology

This course is intended to prepare students to develop and undertake research projects related to architectural science. It will allow students to understand that research is systematic inquiry directed toward the creation of knowledge. Course will allow students to become familiar with and apply several research strategies and methods in architectural science.

BL8211- Lighting Design in Buildings

This course will provide students with opportunities to explore in depth the design process for the lighting system design. The lighting metrics use for design will be introduced. Simple computational methods will be presented. In addition, detailed Radiosity evaluation using AGI32 software will be highlighted. Day lighting methods will be one of the main design applications that would be studied in this course.

BL8212- Renewable Energy Systems for Buildings

This course will provide students with opportunities to explore in depth the design process for renewable energy system integration into buildings. The characteristics of various available technologies and systems will be reviewed and simple computational methods will be presented.

BL8215- Building Envelope Restoration

This course will consider the investigation, design and contracting necessary for the building envelope restoration process. Students will develop knowledge of various investigation techniques used in building envelope diagnostics and learn how to recognize indicators of poor performance, deficiencies and failures.

The course will also cover the design of remediation strategies, including preparation of remedial repair documents, material selection and compatibility, the tendering process and contract administration.

Prerequisite: BL8100 and BL8101 or with the approval of the Building Science Graduate Program Director.

BL8201- Sustainability, heritage and existing buildings

This course considers the relationship between heritage and environment conservation. Students will develop the theoretical knowledge and the building science principles necessary for extending the life and improving the performance of heritage and other existing buildings. Students will develop an understanding of the theory and role of standards, testing and survey protocols, and will apply this in practice. There will also be a consideration of the economic basis of decision-making. Course content is relevant to the OBEC Building Science specialist designation.

BL8202- Building Automation

This course deals with the control of typical building service systems and equipment. It covers the methods and techniques used to control and operate building devices in order to optimize the indoor environment quality and to minimize the energy consumption and the operation costs. After completing the course, students are expected to be able to understand how typical building systems should be controlled, to design building automation systems for simple buildings, and to understand the principle of building automation and opportunities it offers.

BL8203- Health, human comfort and indoor environment

Students will have an opportunity to develop an understanding of human comfort and the health impacts of spaces, forms, materials and ventilation systems. This will include the effect of materials selection, maintenance, ventilation and how design issues affect productivity, and how users perceive and experience spaces.

BL8205- Fire safety design

Fire safety engineering is the application of scientific and engineering principles based on an understanding of the phenomena and effects of fire and of the behaviour of people to fire, to protect people, property and the environment from the destructive effects of fire. This course addresses multi-disciplinary aspects involving chemistry (e.g. the behaviour of materials), physics (e.g. heat transfer, movement of smoke), civil engineering (e.g. deformation of structures), electrical and mechanical engineering, and psychology (e.g. behaviours of people). Students will explore how to provide an acceptable level of safety when an accidental fire occurs and consider the implications on innovative and experimental sustainable design solutions.

BL8206- Advanced acoustic design

This course will provide students with opportunities to explore in depth how to provide appropriate acoustical environments within different building types, and the implications on materials use and other aspects of performance.

BL8208- Detail design project

This course will focus on a detail design problem and will be run as a project based course. The design will relate to some element of sustainable construction detailing focusing construction systems proposed for sustainable building projects. The course will allow students to investigate in detail a particular element or type of construction and develop appropriate design proposals. This course may be offered in association with the M.Arch program.

BL8213- Passive House Design and Construction

Students will gain a detailed understanding of low energy housing design and the passive house system. Students will learn about the Passive House principles, the PHPP software and how to use these tools to design energy efficient housing.

BL8214- Life Cycle Assessments

This course will be an investigation of the principles of the Life Cycle Assessment (LCA). The student will learn about the benefits of LCA to sustainable design, and how it can be used to aid in decision making in building design. The course will focus on understanding how LCA can quantify the environmental impacts of alternative strategies and will also consider the way LCA software tools such as Athena can be used as design and research tools.

Appendix J: Provost's Authorization to Proceed

Ryerson University

Michael Benarroch
Provost and Vice-President, Academic

April 9, 2018

Dr. Russell Richman
Associate Chair, Graduate Studies
Building Science

Re: Proposed PhD in Building Science

Dear Dr. Richman:

By this letter, you and your colleagues are authorized to proceed towards the development of a full proposal for a doctoral program in Building Science. In developing this proposal, your reference point is Senate Policy #112 *Development of New Graduate and Undergraduate Programs.*

The expansion of our graduate programming is an important step in Ryerson's continuing academic evolution. Further, I think that a PhD in Building Science will align well with our academic plan. In crafting the Letter of Intent (LOI), the Program Committee has demonstrated commendable creativity, diligence and foresight.

Work remains to be done on the proposal, as is customary in this process. In particular, I remind you of the obligation to ensure that the proposal expresses clearly defined learning objectives as they relate to program goals and the University's graduate degree level expectations. For assistance in developing your own program-specific graduate degree level expectations, please contact Paola Borin, Curriculum Development Consultant, Learning and Teaching Office.

This is an important initiative for Ryerson, and I offer you every encouragement in bringing it to the implementation stage. If you have questions or concerns about developing the proposal, please contact Cory Searcy, Associate Dean, Programs in the Yeates School of Graduate Studies. I will arrange for periodic updates, as I am most interested in seeing this venture move forward smoothly as rapidly as is reasonably possible.

Please extend my thanks and congratulations to the Program Committee for the excellent work to date.

Yours sincerely,

Michael Benarroch, PhD
Provost and Vice-President Academic

c.   M. Moshé, Interim Vice Provost Academic
         J. Mactavish, Vice Provost and Dean, Yeates School of Graduate Studies
         C. Searcy, Associate Dean, Programs, Yeates School of Graduate Studies
         T. Duever, Dean, Faculty of Engineering and Architectural Science
         G. Craney, Deputy Provost and Vice Provost University Planning

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Appendix K: FEAS Grad Students Funding Package

As of the academic 2017-18 year.

Funding Package Goals:

Tuition + $15,000 to $18,000 for PhD or Tuition + $12,000 to $16,000 for MASc

Domestic MASc/MSc: $9,884.35 + $10,000 to $14,000 = $20,000 to $24,000[19]
Domestic PhD: $9,283.80 + $15,000 to $18,000 = $24,000 to $27,000
International PhD: $20,890.32 + $15,000 to $18,000 = $36,000 to $39,000

	FEAS	Program (RGF/GDA)	Supervisor (min.cont)	Program (RISS/GDA /ATOP)	Dept: GA-ship	Total
MASc Domestic	-	$6,000	$10,000		$4,500 – 9,000	$20,500 – 25,000
PhD Domestic	-	$8,000	$12,000		$4,500 – 9,000	$24,500 – 29,000
PhD Intern.	$5,000		$17,000	$8,000	$4,500 – 9,000	$34,500- 39,000

OGS/QEII recipients should end up with min $5,000 more in funding

	OGS/QEII	FEAS	Program (RGF/GDA)	Supervisor (min.cont)	Dept.: GA-ship	Total
MASc Domestic	$15,000	-	-	$5,000	$4,500 – 9,000	$24,500 – 29,000
PhD Domestic	$15,000	-	$4,000	$7,000	$4,500 – 9,000	$30,500 – 35,000

NSERC recipients should end up with min $10,000 more in funding

	NSERC	FEAS	Program (RGF/GDA)	Supervisor (min.cont)	Dept.: GA-ship	Total
MASc Domestic	$21,000	$5,000	-	$5,000	$4,500 – 9,000	$35,500 – 40,000
PhD Domestic	$21,000	$5,000	$4,000	$5,000	$4,500 – 9,000	$39,500 – 44,000

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[19] International MASc tuition: $23,433.70;

Graduate Program in Building Science (PhD) Program Review

Reviewers: Dr. Dan Palermo and Dr. Jeffrey Siegel

June 28, 2018

This report summarizes both the site visit and the proposal for the Ph.D. program in Building Science. Our overall summary is that it should be an obvious decision to move forward because the initial small size of the program means that there is little need for additional resources beyond those that are already accounted for and the risk of the program failing to meet its goals is very small. Furthermore, the proposed program is unique in Canada and clearly has considerable room to grow if successful. The following report provides commentary on the specific criterion in the engagement letter as well as on opportunities to allow the program to continue to grow and have sustainable future success.

Part 1

i.　The consistency and alignment of the program's learning outcomes with the institution's mission, academic plans and Graduate Degree Level Expectations, and appropriateness of the degree nomenclature;

The proposal aligns with the Institutions mission, "Our Time to Lead." During the site visit, and with discussions at all levels of the University, it was noted that there is an on-going mandate to expand graduate education at Ryerson to make the University more research intensive and competitive. The proposed PhD program in Building Science helps to achieve this mandate and make Ryerson the place to be for post-graduate studies in this field. The education and research developed through this program falls within the multidisciplinary research themes, which has been identified as Ryerson's strength. The proposed program has its strength in combining engineering and architectural science. In addition, the program aligns with the Faculty of Engineering and Architectural Science's Strategic Plan, "Striving for Excellence", and the Department of Architectural Science's Academic Plan.

The program has been established around nine (9) learning outcomes that are appropriate for the structure of the program and are mapped to the Graduate Degree Level Expectations (GDLE). All six (6) GDLEs are captured by the stated learning outcomes.

The degree nomenclature is appropriate.

ii.　The alignment of the program's learning outcomes with the admission requirements and sufficient explanation of any alternative admission requirements;

The learning outcomes are generally complete and cover all important aspects of a Ph.D. program in building science. Given the strengths of the existing MASc program, there is an argument that there should be an additional outcome focused on interdisciplinary team work (mentioned in the

interdisciplinary program aims, but not specifically in the outcomes) and this could be specifically targeted at interdisciplinary <u>research</u>. There are no alternative admission requirements, but there should be an internal discussion about how to address promising applicants with insufficient subject matter expertise (e.g., a student with a masters in mechanical engineering, but no prior building science course content).

iii.   The appropriateness of the program's structure and regulations to meet specified program learning outcomes and Graduate Degree Level Expectations, and a rationale for program length;

The funded program length of four years is reasonable and consistent with other related programs. There should be some flexibility to address students who require more coursework in technical areas because of their background. As the program gets larger, lab space may be a constraint on completion time. This is a key area for resource investment in the future (and is discussed in more detail below).

iv.   The effectiveness of the curriculum in reflecting the current state of the discipline, and the effectiveness of innovative or creative curriculum components. For graduate programs an indication of the nature and suitability of the major research (scholarly, research and creative) requirements and evidence of the requirement to take a minimum of two-thirds of the course requirements from among graduate level courses;

The curriculum largely stems from the courses currently available as part of the MASc degree. The list of core and elective courses is impressive and all students should be able to follow a course program that supports their dissertation research. The single new course (BL8105) is an appropriate course for a PhD program. It would be appropriate for it to include research methods and cover topics such as data management and statistical analysis, uncertainty analysis, building simulation software testing, etc. Students explicitly mentioned the challenge of finding a relevant statistics courses and although it appears there are good options elsewhere at Ryerson, some centralized information about statistics (and other graduate research methods courses) of potential relevance to PhD building science students should be centralized. There is also a need for students to have formal training in entrepreneurship and conducting research in building science industry. We know of no similar course content in Canadian universities and this could be a unique aspect of this course.

We have two minor concerns with the curriculum that are described below

a.   *Given the importance of heating, ventilation, and air-conditioning (HVAC) systems to building science, thought should be given to having an HVAC course. Although there are HVAC-related courses in Mechanical Engineering, there are advantages to offering the material integrated into the building science curriculum and thus having control over it.*

b. *There are a large number of elective courses. A smaller list offered on a regular schedule would likely serve student needs well.*

One issue that came up in discussions with the faculty about courses are that there are financial costs to the department for students to take courses at other institutions as part of the OVGS program. Although, in principle, this could represent no net expenditure (if equal numbers of students in the program take courses at Ryerson as at other Ontario institutions), but there are evidently delays in transferring funds and for a small program, this can be a more important part of the budget. We suggest that consideration be given to both promoting Ryerson unique courses as part of this program to other Ontario graduate programs (more as part of a communications strategy about the program than about the revenues from doing so) and also ensuring the OVGS transfers are handled outside of the program's budget.

v.   The appropriateness of the mode(s) of delivery to meet the program's learning outcomes and Graduate Degree Level Expectations;

Given the limited size of the proposed program, the modes of delivery are appropriate including in-class lectures, experiential learning activities, and a final dissertation.

The modes of delivery of the program are explicitly linked to the Graduate Degree Level Expectations (GDLE). The modes include interactions within and outside the classroom and independent learning culminating in a final dissertation. The small class sizes are conducive for one-on-one interactions with faculty and for group discussion and activities. The courses are linked to Learning Outcomes (LO), which in turn, are mapped to GDLE's. Given that this is a new program, it was not clear, whether any analysis will be conducted to determine whether the LO and GDLE are achieved, and whether there is a plan for program improvement.

The experiential learning activities and final dissertation will hit a number of LO and GDLE.

vi. The appropriateness of methods used to assess, document and demonstrate student achievement of the program's defined learning outcomes and Graduate Degree Level Expectations;

The methods used to assess the program's Learning Outcomes (LO) and Graduate Degree Level Expectations (GDLE) are appropriate given the modes of delivery.

The assessments incorporate both written and oral methods. The written methods involve assignments, quizzes, projects, and exams, while the oral component involves presentations and discussions.

It is not clear in the proposal whether an analysis will be performed on a yearly basis or some cyclic period to determine whether the LO and GDLE are achieved by the students, and whether

there is a process in place for program improvement similar to what undergrad programs have in place to satisfy the CEAB requirements.

vii.   The appropriateness and effectiveness of the use of human, physical and financial resources, evidence of a sufficient number and quality of faculty, and evidence of resources to sustain quality scholarship, research, and creative activities;

There are three specific areas addressed in this response: physical resources (laboratory and shop), faculty resources, and financial resources.

a.   *We were very impressed with the quality of physical resources including the shop that was well-managed, student-focused, and flexible in allowing for a wide variety of activities. Similarly, the laboratory was well-equipped for applied building science research and managed well.   In comparison to other institutions with related programs, this is a clear strength of the proposed program. The students similarly spoke highly of both the resources themselves and the personnel who operate them. An issue that is going to become more important over time is that the laboratory space is going to be stretched to its limit when the program is at full capacity (and even more so if the program grows). An item to be addressed early on the life of the new program is managing of laboratory space and the nature of each student's work should be considered in this management (e.g., some students might conduct primarily fieldwork and rely less on the laboratory space, but still have space needs in terms of fieldwork staging and related tasks). As part of this, some thought should be given to long-term storage and management of this storage so that apparatuses/equipment that are not needed can be moved out of the laboratory to facilitate the maximal use of the laboratory space. Similarly, successful management of limited space, while maintaining quality research, will likely require that the lab manager position be made a permanent position.*
Future growth in laboratory facilities should be done strategically to recruit new faculty and to develop facilities that are unique and will benefit multiple faculty and students in the proposed program. Examples of areas that appear to be both strengths among faculty in the current program and unique in Southern Ontario include building material science and indoor acoustical engineering, but any such future directions should come from within the program.

b.   *The current faculty have done an excellent job with the MASc program and it is likely that much of this expertise will transfer to the proposed PhD program. A potential issue is that the current faculty have a range of engagement with supervision of PhD students.   There is a variety of reasons for this: some faculty have administrative roles that are time-consuming, some faculty are near-retirement, and some faculty may not be able to supervise PhD students. The provided CVs may be out of date, but only four faculty members (Drs. Gorgolewski, Richman, Liao, and Berardi) listed recent or ongoing PhD supervisions on their CVs. This is not necessarily a problem because of the relative small number of PhD students in the proposed program, but attention should be paid to hiring of faculty who will be active in the supervision of PhD students when new faculty are hired. There is more detail on this subject provided below in viii.*

c. *The MASc makes good use of the internal financial resources and so most of this comment will focus on external financial resources. A successful PhD program will, in part, be measured on the number of students who have external scholarships (e.g., NSERC PGSD and CGSD scholarships). Students should receive explicit training in preparing these applications. Further, building science occupies an uncomfortable place at NSERC because it doesn't have a "home" in any of the traditional areas and this may be especially true for programs that are associated with architecture rather than engineering departments. This is an issue that is bigger than just the proposed program, but the program would be well-served to lead an effort among related programs at other institutions to engage in a dialogue with decision makers at NSERC to have an area of application code that includes building science. Similarly, appropriate faculty (e.g., those that have received NSERC funding) should be encouraged to make themselves available to NSERC for the review of building science applications with the goal of normalizing building science as an NSERC-funded research area. Similarly, there should be an internal conversation within FEAS about the return of indirect cost to the program, perhaps at a higher level in initial years, to incentivize faculty to apply for external funding and to help the new program to grow.*

viii. The qualifications, appointment status and recent research (scholarly, research and creative) or professional/clinical expertise of faculty, and evidence of sufficient student financial assistance to ensure quality and numbers of students;

In general, the faculty contributing to the proposed program have the qualifications that will make this program successful.

The proposal has identified nine (9) faculty members that will support the program in various facilities with six (6) faculty able to supervise PhD students. The sustainability of the program will rely on the faculty with supervision status. These six faculty members provide a good spread between mid-career and senior faculty members. The energy and growth of the proposed program stems from the mid-career faculty members. It would be imperative to use replacement positions of the senior faculty members in strategic research areas of the proposed program to expand the program in the future. The faculty provide a comprehensive blend of engineering and architectural backgrounds and research backgrounds, a noted strength of this program. Eight (8) of the nine (9) identified faculty members are tenured professors, and one an assistant professor. The status of the group as a whole should ensure continuity in the proposed program. The assistant professor (Jennifer McArthur) does not currently have PhD supervision status. Given Professor McArthur's background, research areas, and practical experience, every effort possible should be made for her to acquire supervision status.

The research activities of the faculty members contributing to the proposed program varies. Some faculty members have made more contributions through peer-reviewed publications; while other substantially less. This however, may be linked to publishing expectations for consideration to career advancements.

The financial assistance through the specified funding package is sufficient to sustain quality in the graduate student population in the program. The funding package is in line with those currently in place at other financial institutions across Ontario, specifically in engineering disciplines. The funding provides a minimum "take-home" beyond tuition for all categories of graduate students (domestic, international, MASC, PhD). This will ensure that the net pay remains consistent regardless of increases in tuition. The basic funding package consists of a program contribution, a GA-ship, and a substantial contribution from the supervisor. The significant contribution from the supervisor should ensure that the model is sustainable. In addition, the top up in funding for major scholarship recipients is also in line with other institutions.

ix.   The evidence of adequate numbers and quality of faculty and staff to achieve the learning outcomes of the program, of planned/anticipated class sizes, of supervision for experiential learning opportunities (if required) and of adjunct and part-time faculty; and;

The proposed PhD Program in Building Science has a planned enrollment of two (2) doctoral students per year. Given the projected size, it is expected that the program can successfully be sustained based on the current allocation of faculty members and staff. The core proponents of the PhD program (Dr. Umberto Berardi, Dr. Russell Richman, and Prof Jennifer McArthur) are young, dynamic, and ambitious faculty with a vision to grow the program. The current MASc program in Building Science taps into leading industrial experts in the field to deliver courses. This is a healthy collaboration, which draws in pedagogy from a practitioner's point of view. It would also expose students to industrial opportunities post-graduation.

The program has explicitly identified three (3) experiential learning activities: Mentorship, Industry Liaison, and Teaching, of which one must be completed. These activities are well suited for the various career paths for the doctoral students. Those planning an academic career, have the opportunity to be exposed to teaching and mentorship, and those planning an industrial-related career can choose the industry activity to be exposed to business activities.

x.   Indicators of quality including faculty, program structure and faculty research (scholarly, research and creative) that will ensure the intellectual quality of the student experience.

The single biggest demonstration of the likely strength of the proposed program is the success of the MASc program. The quality of the student experience is high, the program is able to recruit good students, the physical resources are appropriate and well-used, there is a well-developed sense of community amongst the students and faculty, and the quality of the research is high. It is expected that many of the strengths will provide a firm foundation for the proposed PhD program. Additionally, there are several (both current and graduated) PhD students who are supervised by faculty in the program but whom have their official homes in other departments. This is further evidence that the proposed program is a natural extension and that it has a high probability of success. We did not see comprehensive assessment of these PhD students and what they did after graduation (and the overall numbers may not be large enough to draw firm conclusions), but there is no doubt that there is a pressing need in industry, government, and

academia for graduates with PhD training in the building science area. Three areas that the program should address to ensure intellectual quality:

a. *Initial cohorts of very strong students are very important to any small new program such as the proposed program. Historically, most related programs struggle to recruit strong PhD students in the area. The proposed program has an advantage because of the strength of the MASc program, but attention should be paid to make sure that applicant quality is not a limiting factor. Some specific strategies could include entrance scholarships, guaranteed TAships for students, emphasis on the unique aspects of the Ryerson program in recruiting and outreach materials, industry involvement in the recruiting process (for example, engaging industry to participate in recruiting events), and addressing applicant concerns around interactions with architecture/engineering licensure.*

b. *There will need to be some proactive outreach to potential employers of graduates of the program. The first outreach effort could be targeted at industry employers (e.g., building science firms) both to enhance the reputation of the proposed program as well as explore specific industry needs for Ph.D.-level graduates. The second outreach efforts could be targeted at academic employers. This is particularly important for programs outside of southern Ontario (e.g., the US architectural engineering programs mentioned in the proposal) as they may have less familiarity with Ryerson University and they may have specific requirements (e.g., eligibility for professional licensure in engineering) that may need to be addressed in the proposed program.*

c. *The faculty span a wide range of activity in scholarly output, but there are two important caveats to a detailed evaluation: the CVs in the proposal document were not all up-to-date and so it is difficult to assess recent activity (and one for Dr. Berardi was not included) and both external reviewers come from traditional engineering backgrounds and may not be qualified to assess the importance of contributions to architecture. With those caveats, there is ample evidence of internal and external research funding, graduate student supervision (see notes about Ph.D. supervision in vii b, above), scholarly output (publications), and other related activity. Given the wide range of activity, we encourage the program to focus on research active faculty in future faculty recruiting and hiring, particularly to be able to maintain continuity through research leaves and administrative appointments.*

Part 2

i.   The program's strengths, weaknesses and opportunities for program improvement and enhancement;

Strengths:

The proposed program separates itself from others in that it represents the only stand-alone graduate program in Building Science in Canada. Graduate-level teaching/research at other institutions in Canada typically falls under a larger graduate program, such as Civil Engineering. As such, this program has an advantage at attracting high quality HQP interested in pursuing higher education/research in Building Science.

The blending of Architecture and Engineering disciplines, research areas, and backgrounds is a great marketing opportunity for the program. Building sciences has often been under the ownership of either engineering programs or architectural programs separately. However, blending the two fields is the most appropriate approach from both pedagogical and practical points of view. Engineers and architects are routinely required to work together to develop solutions; however, there has always been disconnect in how the two collaborate. This graduate program is making inroads towards making this relationship seamless.

The quality of the technical, IT, and support staff is, for the most part, is a strength of the program, particularly the support in the wood working shop, laboratory, and IT office. Although, only, one technician (contract) is dedicated to the building science laboratory, his contributions and knowledge are a benefit to the program. In addition, the existing facilities are impressive, specifically the wood working shop, lecture halls, and studio spaces. The facilities will provide the students with a positive educational experience.

The sense of community that is apparent within the MASc Building Science Program. Discussions with current students and the site visit, including labs, lectures halls, studios, etc. portrayed a very inclusive community with a very positive atmosphere. The existing PhD students that are conducting research in building science but housed in other graduate programs also noted the comradery of those within the building science program.

The support of all levels within the University is a vitally important strength. Graduate students, technicians, support staff, faculty members, department, faculty, school of graduate studies, and the provost's office were in full support for the proposed program. This speaks to the clarity of the need for this program, the understanding of the potential for this program to be at the forefront of building science education, and an understanding of the importance of this program to research and the industry. Equally important is that this should translate into continual support to expand the program, including increased enrollment, additional faculty, staff and technical complement, and increased lab facilities.

<u>*Weaknesses and Opportunities:*</u>

A review of the program proposal and site visit did not reveal any critical weakness that are to be viewed negatively on the proposed PhD program, but rather areas of potential weaknesses that should be seen as opportunities to improve.

Currently, one contract technician oversees all research activities in the Building Science Graduate Program. Converting this position to full time is critical to the success of the research activities. Current graduate students spoke highly of the technician and noted that their research would suffer without his support.

It is apparent in the proposal that a number of faculty identified to contribute to the program are nearing retirement, although their involvement in the development of the proposal seems to be on the periphery and the success of the program should not be affected in the short term. The

retirement of these faculty members will provide an opportunity to hire strategically in the core teaching and research areas of the Graduate Program in Building Science.

The size of the lab where the building science experimental research takes places is sufficient for the early years of the new program. There is an opportunity in the future to expand the lab space to enhance the research productivity. This is as a positive rather than a weakness, as the drive for additional space will come from the consequence of success of the program, including increased enrollment and research funding.

ii.　The program's developmental plan; and

We did not see a specific developmental plan outlined in the document and thus believe that a strong developmental plan should be created. We specifically suggest that the following areas be addressed in the developmental plan:

- *Recruiting high quality students including consideration of entrance scholarships, assistance in obtaining external scholarships, end industry engagement in the recruiting process.*
- *Maintaining the Ph.D. student experience by proactively addressing laboratory space issues (as they arise), adding to and continuing to support the strong community that has formed around the MASc program, and making the BL8105 (discussed above) course responsive to student needs to conduct building science doctoral research.*
- *Developing strong links to industry, government, and academic employers of graduates from the program and integrating these employers into the training and research where possible.*
- *Focus faculty hiring on researchers who will supervise PhD students through active strategic recruiting, development of new laboratory spaces, and other incentives to support the goals of the proposed program.*
- *Work within the community to develop strategic areas for future growth that promise a sustainable future in funding and draw upon unique capabilities and resources at Ryerson University.*

iii.　Recommendations for actions to improve the quality of the program, if any, distinguishing between those that the program can itself take and those that would require external action, where possible.

The proposed PhD program in Building Science would benefit from one full-time technician to support graduate students and the research labs.

Future retirements should be replaced strategically to meet the demands of the Graduate Program in Building Science.

Consideration should be given to expand research facilities in the future as the Graduate Program expands.

There should be an internal discussion about how to address promising applicants with insufficient subject matter expertise in their prior education.

Although the proposed curriculum is strong, consideration should be given to adding some topics to BL8105 (discussed above), adding an HVAC course, and reducing the number of elective courses. Delays in transfers associated with the OVGS Program should be addressed.

The program would be well-served to lead an effort among related programs at other institutions to engage in a dialogue with decision makers at NSERC to have an area of application code that includes building science.

SUMMARY

In summary, based on the review of the proposal document and the site visit to Ryerson University, our opinion is that the PhD Program in Building Science should be approved. We have identified a number of opportunities for the program to consider as it expands in the near future.

_____   _____
Dr. Dan Palermo   Dr. Jeffrey Siegel

Graduate Program in Building Science

Department of Architectural Science
Faculty of Engineering and Architectural Science

PhD Program Proposal:
Response to External Review Team Report

August 1st, 2018

1. Introduction

Ryerson University's Graduate Program in Building Science (GPBS) hosted an external review team (ERT) site visit conducted as a part of its Ph.D. Program Proposal. The members of the ERT were:
- Dr. Jeffrey Siegel, Professor, University of Toronto;
- Dr. Dan Palermo, Associate Professor, York University;

The site visit was completed on June 6 and 7, 2018.

The ERT submitted a written report that summarized the key findings of its review to the Associate Dean of Programs in the Yeates School of Graduate Studies (YSGS) on June 28, 2018. The written report was based on the ERT's review of the Ph.D. Program Proposal documents, and interviews with: currently enrolled M.A.Sc. and Ph.D. (housed in other departments) students, core building science faculty associated with the proposed program, the Associate Chair – Graduate Program in Building Science Dr. Russell Richman (AC-GPBS), Graduate Program Administrator (GPA) Mimi Lam, Faculty of Engineering and Architectural Science (FEAS) Dean Dr. Thomas Duever, Associate Dean - Programs in YSGS Dr. Cory Searcy, Associate Dean Graduate Studies in FEAS Dr. Miljana Horvat and the Chief Librarian, Carol Sheptsone.

This document provides the response of the GPBS to the specific recommendations received in the ERT's written report.

The GPBS is pleased with the favourable review by the ERT and its opinion that "that it should be an obvious decision to move forward because the initial small size of the program means that there is little need for additional resources beyond those that are already accounted for and the risk of the program failing to meet its goals is very small." In addition, the ERT recognized the proposed program has numerous strengths, including:
- It "represents the only stand-alone graduate program in Building Science in Canada."
- "The blending of Architecture and Engineering disciplines, research areas, and backgrounds is a great marketing opportunity for the program."
- "The quality of the technical, IT, and support staff is, for the most part, is a strength of the program, particularly the support in the wood working shop, laboratory, and IT office."
- "The sense of community" within the existing graduate program.
- "The support of all levels within the University."

The Program appreciates the recommendations made to help strengthen the proposed Ph.D. program going forward and promote successful growth.

The remainder of this document is organized into two sections:
1. A response to the recommendations of the ERT;
2. A Table summarizing the recommendations of the ERT, the Program's response, and a timeline for action.

2. Response to Recommendations

The response is provided in the same order as the recommendations provided in the ERT's written report. The recommendations are listed as:
1. Transferring the current contract Building Science Laboratory Technician to a full-time position;
2. Replacing future retirements with strategic hires to support the graduate program in building science;

3. Consideration to expanding research facilities as the proposed program grows in the future;
4. Addressing applicants without a direct course history in building science;
5. Reviewing curriculum, specifically focusing on the new course (BL8215) and an HVAC course.
6. Engage in a dialogue with NSERC to achieve better recognition of building science as a stand alone research field

Recommendation 1. "The proposed PhD program in Building Science would benefit from one full-time technician to support graduate students and the research labs."

Response: The program agrees with the ERT's recommendation. The program is keenly aware of this necessity and is working with the current Building Science Laboratory Technician to document his impact at research, teaching and administrative levels. The program has continued to communicate with the FEAS Dean the importance of this position becoming full-time, and the Dean's response has been generally positive. It is the program's understanding that the university is also working towards moving 'one time only' positions such as this into 'base budget' over the next several years throughout the institution. The program will continue to build the case for this position being transferred into base budget.

Recommendation 2. "Future retirements should be replaced strategically to meet the demands of the Graduate Program in Building Science."

Response: The program agrees with the ERT's recommendation. Although out of the program's control, as hiring practices are governed by the RFA Collective Agreement, the program will lobby to ensure building science retirements are replaced with suitable faculty to directly support and grow the Graduate Program in Building Science. The program will also liaise with the FEAS Dean, DAS Chair and DAS DHC Chairs throughout future hiring cycles in response to building science retirements that occur.

Recommendation 3. "Consideration should be given to expand research facilities in the future as the Graduate Program expands."

Response: The program agrees with the ERT's recommendation. The program is currently exploring options to expand research facilities in collaborative spaces throughout the university, such as the planned Smart Building Analytics Lab funded by Schneider Electric. The program will encourage faculty members to apply for research funding in order to stimulate growth of the research facilities (e.g. equipment grants). The program recognizes that space allocation is a multi-level issue including the department, faculty and university. Following discussions with the Dean of FEAS the Department plans to undertake a process of scoping the potential for renovation and expansion of the Architecture building which will include consideration of research space. The program will continue to lobby research facility expansion in line with the expected growth and success of the graduate program.

Recommendation 4. "There should be an internal discussion about how to address promising applicants with insufficient subject matter expertise in their prior education."

Response: The program agrees with the ERT's recommendation. The program currently has an informal process at the Masters level to deal with such promising applicants. Sometimes an applicant is required to take several foundation (undergraduate) courses before admittance into the program or an interview

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to further explore an applicant's preparatory background in building science fundamentals. The program will continue to develop an informal strategy that is appropriate for the proposed Ph.D. program.

Recommendation 5. "Although the proposed curriculum is strong, consideration should be given to adding some topics to BL8105 (discussed above), adding an HVAC course, and reducing the number of elective courses. Delays in transfers associated with the OVGS Program should be addressed."

Response: The program is currently planning to initiate a further analysis of the curriculum in the fall of 2018, based on the first stage and outcomes of the Periodic Program Review conducted in the Fall of 2017. The program will consider these recommendations when carrying out this analysis. An HVAC course (BL8103 – Energy Efficient Building Services) is already offered in the Masters program, and this will be available to PhD students. The program will also include the recommendations made for BL8105 when developing this course in the near future. The program will work with FEAS and the university to expedite OVGS transfers.

Recommendation 6. "The program would be well-served to lead an effort among related programs at other institutions to engage in a dialogue with decision makers at NSERC to have an area of application code that includes building science."

Response: The program agrees with the ERT's recommendation. The program will liaise with other institutions to strategize and initiate this dialogue with NSERC. The program will also collaborate with Ryerson offices that could support this initiative.

3. Summary

The Table below summarizes the recommendations of the ERT, the Program's response, the key next steps, and a rough timeline and responsibilities for action.

Recommendation	GPBS Response	Action Plan	Timeline & Responsibility
1. Transfer Building Science Laboratory Technician to a full-time position.	Agreement	Continue to build the case for the importance of this position in supporting the program.	2019 GPBS, DAS Chair, FEAS Dean, Provost
2. Replace building science retirements with faculty who can directly support and grow the program.	Agreement	Work with FEAS Dean, DAS Chair and DAS DHC Chair during a pertinent hiring cycle to make the case for contributing faculty.	2019-2025 GPBS, DAS Chair, DAS DHC, FEAS Dean
3. Expand research facilities in the future.	Agreement	GPBS to work with DAS, FEAS and Ryerson to find additional spaces to accommodate expected future growth and success.	2020-2025 GPBS, DAS, FEAS, Ryerson FMD

Recommendation	GPBS Response	Action Plan	Timeline & Responsibility
4. Address promising applicants without direct building science backgrounds.	Agreement	Develop an informal strategy to deal with such applicants at the Ph.D. level.	2019 GPBS
5. Develop BL8105, add an HVAC course, reduce list of electives.	Agreement	GPBS form committee to perform an analysis on the current curriculum and specific needs of Ph.D. program.	2018-2019 GPBS
6. Lobby NSERC to recognize building science as a stand-alone research area	Agreement	Work within Ryerson and with other institutions to engage with NSERC.	2019-2020 GPBS, FEAS, Ryerson, other institutions

Yeates School of Graduate Studies

Response from YSGS on the PRT Report for the Proposed
Graduate Program: Building Science (PhD)

Dr. Jennifer Mactavish, Vice Provost & Dean, YSGS
Dr. Cory Searcy, Associate Dean, Programs, YSGS
August 15, 2018

The Peer Review Team (PRT) for the proposed PhD program in Building Science consisted of Dr. Dan Palermo (York University) and Dr. Jeffrey Siegel (University of Toronto).

The PRT site visit was conducted on June 6 and 7, 2018. The PRT report was communicated to the Associate Dean, YSGS on June 28, 2018, and the response to the report from Building Science was communicated on August 15, 2018.

The PRT cited several strengths of the proposed Building Science program in their report, including the program's uniqueness, the quality of the support staff, and the support at all levels of the university. The PRT also noted that "Our overall summary is that it should be an obvious decision to move forward…" 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 response to the report of Building Science. 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 Building Science responses) in the form of tables.

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ACADEMIC RECOMMENDATIONS

Recommendation	Building Science Response	YSGS Response
1. Replace future Building Science faculty retirements with strategic hires to support the graduate program in Building Science.	Agreement. The program will work with the Department of Architectural Science, the Dean of FEAS, and the Chair of the Departmental Hiring Committee during a pertinent hiring cycle to make the case for contributing faculty. This is anticipated to occur over the long-term, up to approximately 2025.	YSGS supports the program response. YSGS agrees that any appointments should be considered in the context of departmental- and faculty-level planning. YSGS further agrees that the program should consult with its Department, Dean of FEAS, and DHC on this recommendation, while ensuring any hiring process is conducted in line with the RFA collective agreement.
2. Consider how to address promising applicants without a direct background in Building Science.	Agreement. The program will develop an informal strategy (as exists in the Master's program) to deal with such applicants at the PhD level by 2019.	YSGS supports the program response. If the program makes any formal changes to its admissions policy, YSGS notes that any changes to the admission requirements would be considered a Category 3 minor program modification under Policy 127. YSGS will support the program as needed for any changes in the requirements, per Policy 127.
3. Review the curriculum, specifically focusing on further developing the new course (BL8105) and adding an HVAC course. Also consider reducing the list of electives.	Agreement. The program will form a committee to analyze the current curriculum and explore the specific needs of the PhD program. This will occur during the 2018-2019 academic year.	YSGS supports the program response. YSGS will support the program in any curriculum revisions it chooses to make to the proposal. Once the program is operational, YSGS notes that it will support the program as needed for any further minor or major curriculum modifications, per Policy 127.
4. Engage in a dialogue with NSERC to achieve better recognition of Building Science as a stand-alone research field.	Agreement. The program will liaise with other institutions to strategize and initiate this dialogue with NSERC. The program will also collaborate with Ryerson offices that could support this initiative.	YSGS supports the program response. YSGS encourages the program to work with the FEAS Dean's office on this initiative.

ADMINISTRATIVE AND FINANCIAL RECOMMENDATIONS

Recommendation	Building Science Response	YSGS Response
1. Transfer the current contract Building Science Laboratory Technician to a full-time position.	Agreement. The program will continue to build the case for the importance of this position in supporting the program. The program will work with the Departmental Chair and the Dean of FEAS to explore this possibility during the 2018-2019 academic year.	YSGS supports the program response. YSGS notes, however, that the transfer of the lab technician position to permanent status is outside its purview.

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Recommendation	Building Science Response	YSGS Response
		YSGS encourages the program to consult with the Dean of FEAS on this issue.
2. Consider expanding research facilities as the proposed program grows in the future.	Agreement. The program will work with the Department of Architectural Science and the Dean FEAS to explore potential renovations and expansion of the Architecture Building, including the expansion of research facilities. This is a long-term project with will unfold over the next several years.	YSGS supports the program response. As above, however, YSGS notes that changes to space allocations and/or building renovations are outside of its purview. YSGS encourages the program to work with its Department, the Dean of FEAS, and Ryerson's Academic Space Planning Office to discuss potential options.

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

Dr. Jennifer Mactavish
Vice Provost & Dean
Yeates School of Graduate Studies

Dr. Cory Searcy
Associate Dean, Programs
Yeates School of Graduate Studies

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Based on the TA/GA actual expenditures in 2016/17

Department	Total expenditure	Number of TA/GA contracts	Current number of PhD[20]	Current number of MASc[21]
Aerospace	$251,038	77	28	29
Chemical Eng.	$239,228	73	7	24
Civil Eng.	$412,860	122	40	31
ELCE	$849,793	264	45	47
MIE	$601,382	190	44	28
Dean's Office: BME			4	8
TOTAL	**$2,354,300**	**726**	**168**	**167**

 This table does not include Computer Networks with 17 GA contracts in 2016/17, not Architectural Science with 46 GA contracts. Some of the BME students were hired for GA position in ELCE or MIE departments.

 Finally, this table also does not include invigilation contracts for which graduate students are also hired.

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[20] Numbers as of December 2016, included both domestic and international
[21] Numbers as of December 2016, included both domestic and international

Graduate Studies

Ryerson University

Office of the Vice-Provost and Dean
Yeates School of Graduate Studies

Final Assessment Report and Implementation Plan

Periodic Program Review (PPR)

Literatures of Modernity (MA)

Last Updated: October 12, 2018

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FINAL ASSESSMENT REPORT

In accordance with the University Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the graduate program in **Literatures of Modernity (MA)**. This report identifies the peer review identified strengths of the program, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The report also includes an Implementation Plan that identifies who will be responsible for approving the recommendations set out in the final assessment report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations and who will be responsible for acting on those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.

EXECUTIVE SUMMARY

As a young program, designed in and for the 21st century, the MA in Literatures of Modernity has benefitted from the opportunity to rethink what an MA in English can be and do. Within the context of English studies, the MA in Literatures of Modernity introduces students to the contours of the debate around the thematic of 'modernity' and creates an intellectual environment for exploring and querying its implications.[1] This focus reflects a dynamic approach to literary study that enlists literary and comparative methodologies. With a strong focus on experiential learning, the MA program echoes the spirit of Ryerson's educational mission: to foster intellectual, social, and cultural development in the context of advancing knowledge in response to existing and emerging societal needs. The program cultivates the development of scholarly acumen and professional skills through courses, employment opportunities (teaching, marking, and research assistantships), hands-on activities, and practica.

Our graduate degree is distinctive in comparison to the MA degrees in English offered, for instance, by the University of Toronto, York University, and Queen's University. Instead of comprising a general program of literary study that abides by national, generic, or periodized approaches, the MA in Literatures of Modernity provides students with an opportunity to intersect literary studies with the particular topic of modernity. While providing a unique focus on modernity, the degree also prepares students for employment in related literary fields or to pursue doctoral studies. Consequently, the degree allows students to hone practical and critical skills that will ready them for careers in a wide range of areas, including

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[1] This thematic of modernity is described in the introduction to our Self-Study Report.

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cultural consulting; jobs in publishing institutions such as literary agencies, university presses, trade book publishers, and literary magazines; and the teaching of literature and writing. For others, the degree provides the foundation for PhD studies in English or related fields, such as Comparative Literature, Communication and Culture, Cultural Studies, Gender and Sexuality Studies, Visual Culture Studies and Art History, Library and Information Science, and Book History.

The structure of the program, in accordance with Ryerson's mandate for practical learning, includes a number of exceptional opportunities for hands-on learning in Practicum placements, RAships, and in elements of coursework. The Practicum program in particular has proven to be a distinctive feature of our MA program, and has evolved to include some very rewarding opportunities for our students (in local cultural organizations as well as further afield, such as at the Iceland Writers Retreat).

Our courses are equally distinctive in their conception, in relation to the program's attention to issues and topics relevant to modernity. Our approach to course design has been progressive insofar as we aim to foreground cross-disciplinary and trans-media approaches, while providing a solid grounding in the more traditional subject areas and skills associated with a Master's level degree in English.

The relatively small size of our program, and the fact that we do not have resources directed to PhD students,[2] enable us to offer all of our students opportunities for professional and personal development as research, teaching, and graduate assistants—in our undergraduate courses, alongside faculty, and through research centres such as the Modern Literature and Culture Research Center, the Children's Literature Archive, and the Center for Digital Humanities. The size of the program also allows us to offer a high level of student mentoring and support; students build lifelong relationships both with faculty and among themselves, due to the intensive and collaborative nature of their experiences in the program. The strength of our faculty, and our research productivity, has been instrumental in creating and supporting both the core and extra-curricular activities we have been able to offer.

Our location at the heart of a vibrant urban centre is very much to our advantage, offering resources and opportunities that complement Ryerson's, and facilitating direct access to diverse cultural industries. This ultimately makes it easier for our students, especially those who undertake the Practicum, to leverage their contacts and develop networks beyond the program.

While we have never failed to meet our admissions target numbers (set annually by the Yeates School of Graduate Studies), and have often exceeded it, our application numbers

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[2] Note that we do not plan to develop a PhD program.

have occasionally fluctuated in line with variations that are both Ryerson and sector-wide. We have in some years, however, encountered unevenness in student preparation as a result of admitting students who are promising but not as academically strong as we would like. We are conscious that at times we lose some of our strongest applicants to other universities with deeper pockets. Thus, funding in relation to student scholarships and support is a clear area where we are often held back. This extends to OGS and SSHRC funding for our MA students, which is now allocated centrally; typically we have only one OGS and one or two SSHRC-funded students each year, and to preserve our competitiveness, this number must increase.

In terms of resources, while we are on the whole well served, the library presents some limitations. Recently, the arrangement that provided our students with borrowing privileges at Robarts Library at the University of Toronto was terminated. Meanwhile, our own library has faced an additional $450,000 cut to base funding, and it reports that it is not in a position to subscribe to any new resources.

Despite these funding issues, many new opportunities are opening up to the program as it becomes more established and our presence grows both locally and globally. Recently, we have been able to expand the roster of Practicum placement partners. In some cases, we have been approached by new partners, while in others we have reached out ourselves—and some of this has been a result of the focus the university has placed on internationalization. This latter initiative is one on which we can capitalize, particularly as Toronto itself grows as a key hub for diverse cultures and creative industries.

The consolidation of the *White Wall Review* into the Department of English offers us increased opportunities for student involvement, opening up the possibility for building the production of the journal into a professional skills course at the MA level. Similarly, the recent move of the Centre for Digital Humanities and the Children's Literature Archive into the special collections area of the library will raise their profiles, improve facilities, and enhance existing student involvement. As we approach our tenth anniversary, we also have the opportunity to encourage more contact and mentorship between cohorts and reconnect with our alumni.

Finally, there is the opportunity provided by the program review itself, to reflect on what we have achieved, and to ask ourselves what we would like our program to look like at the end of another eight years. In our Developmental Plan we have outlined how the program will change in the short-term through the increased numeracy and value of student awards; the implementation of the Graduate Writing Café; the addition of more specific career workshops earlier in the program; and the development of courses by our new faculty.

The longer vision for the program involves updating our website, reconnecting with our alumni to celebrate our tenth anniversary, and increasing the outreach to other graduate programs at Ryerson. The program would also benefit from reintroducing the role of Teaching Assistant Coordinator to better support our students. Moreover, in order to ensure maximum administrative support for our students, we hope to secure from the Dean's Office a commitment to reinstate the two (as opposed to the one, beginning in 2018-2019) course releases from the Graduate Program Director's teaching load–since our Program's inception, every GPD has had two course releases per year. In addition to extending and consolidating our local connections in the city of Toronto, the program will also explore ways to capitalize on the burgeoning Ryerson International initiative, such as increasing international opportunities for our students either through exchanges, Practicum placements, and partnerships.

Having come to the end of our first review process, we appreciate this opportunity for substantive self-reflection. We are proud of our accomplishments to date. Moving forward, we are excited to continue building on our strengths. We remain committed to fostering excellence in scholarship, professional skills development, and practica experience through our unique MA in English Literature.

Periodic Program Review and Peer Review Team
Literatures of Modernity (MA)

The graduate program in Literatures of Modernity (MA), Department of English - Faculty of Arts, submitted a Self-Study Report to the Yeates School of Graduate Studies that outlined program descriptions and learning outcomes, an analytical assessment of the program, program data including data from student surveys and the standard data packages. Course outlines and CVs for full-time faculty members were also appended.

Two external and one internal arm's-length reviewers were selected from a set of proposed candidates. The Peer Review Team (PRT) for the Periodic Program Review (PPR) of the graduate program in Literatures of Modernity (MA) consisted of Dr. Heather Murray (University of Toronto), Dr. Stephen Powell (University of Guelph), and Dr. Jeremy Shtern (Ryerson University).

The appraisal committee spent two days at Ryerson. The visit included interviews with the University and Faculty Administration including the Provost and Vice-President Academic, Faculty of Arts Associate Dean, Vice-Provost and Dean Yeates School of Graduate Studies (YSGS); Associate Dean YSGS, Graduate Program Director of the Graduate Program, and meetings with Faculty, a group of current students, and support staff.

The PRT site visit was conducted on May 28 and 29, 2018. The PRT report was communicated to the Associate Dean, YSGS on June 27, 2018, and the response to the report from Literatures of Modernity was communicated on July 31, 2018.

Program Strengths, Weaknesses, and Opportunities
The Peer Review Team identified program strengths, weaknesses and opportunities for program improvement and enhancement, outlined below.

The program's assessment of its **strengths,** as provided in their self-study, seem in line with our judgments. In particular, we wish to highlight the following:

1. A clearly focused and distinctive program of study founded on well-articulated objectives that are being achieved effectively and with value to the students (and that also pay dividends to the department's faculty, the university, and the larger academic community).
2. Coursework that grows out of the faculty's broad SRC interests and that leads students to opportunities for intensive research projects, practice-based learned in the Practicum stream, and the potential for career enhancement or further advanced study.
3. The innovative and distinctive Practicum option, which is particularly well-conceived and successfully run.

4. Consistent engagement with Ryerson's distinctive educational mission and urban setting, effected through courses, through the program's dual emphasis on academic work and practical education, and through outreach to Toronto's employers, and cultural and arts institutions, through the Practicum program.

5. A laudable sense of cohort among the program's students and a cohesive commitment of the faculty to the program's continued strength and development.   This is evidenced by the faculty's willingness to rethink and reshape aspects of the program on an on-going basis in response to student suggestion, and an openness to providing constructive feedback on the part of students.

6. Strong interest in the program, as shown by admissions pool data (in a saturated English MA market), coupled with excellent on-time completion rates that evidence strong student motivation and good program management.

7. Excellent faculty SRC productivity that is deployed to support innovative coursework and research opportunities for students and that leads as well to the provision of funding and training opportunities in the form of RAships supported by external grants.

The program's assessment of its **weaknesses** in its self-study is to the point, but we judge most of the weaknesses identified in that report to be of relatively minor importance in light of the program's strengths. Some—such as difficulties keeping students on track in the summer term and a sense that students aren't perfectly prepared—are common to all one-year MA programs and probably most graduate programs; these weaknesses have apparently not done much in any case to damage the completion rates of the program.

The identified limitations of the Ryerson's library holdings for English graduate studies are hard for us to assess, as stated above, given the time limitations of the site visit. It would certainly be worth exploring the renewal of Ryerson's previous arrangement with the University of Toronto so that graduate students might have easier access to the Robarts holdings, or considering a way to subvent Literature of Modernity students with identifiable needs for Robarts materials. We presume that the number of Literature of Modernity students with such needs would be small, so at the current rate of $25 for summer stacks access (or $310 for borrowing privileges for more extensively printed- based projects) the cost of supporting MRP students who require Robarts resources would be relatively modest.

We believe that the program has identified key **opportunities** in its self-study. In particular, we note the program's continuing reflection on its unique name. As discussed above, that name does carry certain risks because of its uniqueness, but to this point has certainly not hampered the growth and flourishing of the program.

But, as the faculty have written, this review is indeed an opportunity for the program to think further about the full value of its name and perhaps to sharpen its engagement with different dimensions of that title. We believe, for example, that the program *should* consider the role of creative writing (as the faculty have suggested) to make sure that the program neither marginalizes this part of the discipline nor that it loses focus on the academic study of the already numerous literatures that Literature of Modernity seeks to engage with. As new faculty enter the program, or as it is pulled in new directions by other factors (faculty departures, student interest, fiscal realities), it will continue to be important to extend such discussions, not to delimit the program artificially (or to the exclusion of certain faculty) but to provide for future and current students a clear and compendious notion of what *literatures of modernity* means for the program. In undertaking such discussions, the faculty may indeed wish to find a new name for the program, but we believe they should do so only if they are convinced that it would provide a distinct advantage to the current name, which has already become well-known (if not always well-understood) in other Canadian departments.

Summary of PRT Recommendations with Graduate Program and YSGS Responses
ACADEMIC RECOMMENDATIONS

Recommendation 1: Continue to sharpen, and more effectively communicate, the program identity and focus on "modernity".

Program Response

Agreement. Literatures of Modernity will discuss ways to better define the meaning of "modernity," and the title of the program. Discussions will be held in both the GPC and the Department of English during the 2018-2019 academic year.

YSGS Response

YSGS supports the program response.

Recommendation 2: Stream-line the Foundations course to function more specifically as a gateway course to the field of modernity/modernities studies.

Program Response

Ongoing. Literatures of Modernity has been working to address issues related to the Foundations course and will continue to discuss further restructuring during the 2018-2019 academic year. The GPD will lead these discussions in the GPC.

YSGS Response

YSGS supports the program response. YSGS notes that any changes to the course description would be considered a Category 1 minor program modification under Policy 127. YSGS will support the program as needed for any curriculum modifications, per Policy 127.

Recommendation 3: Raise the minimum admission GPA to B+ in final two years of an undergraduate program.

Program Response

To be considered based on the availability of guaranteed secure funding from the Administration. This issue will be discussed in the GPC and a recommendation will be developed. Pending the outcome of those discussions, the GPD will submit any potential admission GPA change to YSGS by Feb 2019 for implementation by Fall 2020 (if needed).

YSGS Response

YSGS supports the program response to evaluate its admission criteria. YSGS notes that any changes to the admission requirements would be considered a

Category 3 minor program modification under Policy 127. YSGS will support the program as needed for any changes to the requirements, per Policy 127.

YSGS also notes that centrally allocated graduate scholarship funding is derived from our Provincial government grant allocation that is based on eligible FTE enrolments. Making target at the program, Faculty, and university levels is the pathway to stability in funding.

It is not currently possible for YSGS to guarantee funding as it is subject to annual budgetary decisions that are outside its purview. Funding guarantees do not reconcile with the government's funding model or the annual budget process of the university. YSGS, however, continues to advocate for strong central support for graduate student funding.

YSGS also encourages the program to explore other sources of student funding, particularly graduate student stipends and research assistantships funded through faculty research grants.

Recommendation 4: Improve TA training available to Literatures of Modernity students; add a TA coordinator role

Program Response
Agreement. Literatures of Modernity is committed to improving its TA training. In 2018-2019, the GPD will work with the Department Chair and the current TA coordinator to explore expanding the duties of the TA coordinator throughout the year.

> ### *YSGS Response*
> *YSGS supports the program response.*

Recommendation 5: Expand instruction in the teaching of writing either through enhanced TA training or in a dedicated course/module.

Program Response
Agreement. Literatures of Modernity will work to increase workshops offered through Learning and Teaching Office (LTO), and discuss options for a "teaching writing" module/course. This will be discussed in the program's GPC and the GPD will liaise with the Department Chair and representatives from the LTO, Career Centre, and YSGS.

> ### *YSGS Response*
> *YSGS supports the program response. An Associate Dean from YSGS, either for Students or Programs, will participate in any consultations as needed.*

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Recommendation 6: Provide and post brief course descriptions and/or draft syllabi for both Fall and Winter courses at the time of Fall enrollment for better informed course choices.

> **Program Response**
> Agreement. Literatures of Modernity will implement this recommendation beginning in the Fall 2018 semester.
>
> > ***YSGS Response***
> > *YSGS supports the program response.*

Recommendation 7: Consider in hiring plans the addition of a specialist in early literatures with a focus on the transition from medieval to renaissance.

> **Program Response**
> To be considered. The GPD will discuss this recommendation with the Department Chair and the DHC during the 2018-2019 academic year.
>
> > ***YSGS Response***
> > *YSGS supports the program response. YSGS further notes that any appointments need to be considered in the context of departmental- and faculty-level planning. The appointment of new faculty is outside of the purview of YSGS. YSGS also urges the program to consult with the Dean of Arts on this recommendation.*

ADMINISTRATIVE AND FINANCIAL RECOMMENDATIONS

Recommendation 1: Restructure funding and awards information (internal and external) on the department website for prospective students.

> **Program Response**
> Agreement. Literatures of Modernity will undertake a website overhaul, including funding and awards, during the 2018-2019 academic year. This will be discussed in the GPC and lead by the Department Website Committee.
>
> > ***YSGS Response***
> > *YSGS supports the program response.*

Recommendation 2: Create a sustainability plan that prepares for offering the program – including funding and experiential learning – in the event that there are gaps or departures in faculty SSHRC projects.

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Program Response

Agreement. The GPD will discuss this issue with the Department Chair, and engage in dialogue with the Offices of the Dean of Arts and YSGS. This will be completed during the 2018-2019 academic year.

> ***YSGS Response***
>
> *YSGS supports the program response. The Associate Dean, Programs in YSGS will participate in any discussions with Literatures of Modernity and/or the Faculty of Arts on this issue if needed.*

Recommendation 3: Update the program's outcomes to more explicitly address its existing commitment to urban engagement (i.e., the program's engagement with its urban locale outside the university through various partnerships with presses, publications, and advocacy organizations is commendable but needs to be better recognized in its outcomes).

Program Response

Agreement. This will be implemented by the GPC for the Fall 2018 semester.

> ***YSGS Response***
>
> *YSGS supports the program response. YSGS encourages Literatures of Modernity to consult with the Curriculum Development Consultants in the Office of the Vice Provost Academic if any updates to the program's learning outcomes are made.*

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Implementation Plan

Academic Recommendations

Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Continue to sharpen, and more effectively communicate, the program identity and focus on "modernity".	Agreement. LitMod will discuss ways to better define the meaning of "modernity," and the title of the program. Discussions will be held in both the GPC and the Department of English during the 2018-2019 academic year.	YSGS supports the program response.	Discuss ways to better define meaning of "modernity," and title of program. A stronger definition will be added to the website.	GPC and Department of English	2018-19; in particular, the issue will be raised at the first Graduate Council meeting on November 13, 2018.
Stream-line the Foundations course to function more specifically as a gateway course to the field of modernity/modernities studies.	Ongoing. LitMod has been working to address issues related to the Foundations course and will continue to discuss further restructuring during the 2018-2019 academic year. The GPD will lead these discussions in the GPC.	YSGS supports the program response. YSGS notes that any changes to the course description would be considered a Category 1 minor program modification under Policy 127. YSGS will support the program as needed for any curriculum modifications, per Policy 127.	The GPD has already enhanced the focus on theorizing modernity in the fall 2018 Foundations course via lecture material and final term project on "modernity key words."	GPC and GPD	In winter 2019, the GPC will discuss the GPD's fall 2018 lectures and assignments related to strengthening the focus on modernity.

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Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Raise the minimum admission GPA to B+ in final two years of an undergraduate program.	To be considered based on the availability of guaranteed secure funding from the Administration. This issue will be discussed in the GPC and a recommendation will be developed. Pending the outcome of those discussions, the GPD will submit any potential admission GPA change to YSGS by Feb 2019 for implementation by Fall 2020 (if needed).	YSGS supports the program response to evaluate its admission criteria. YSGS notes that any changes to the admission requirements would be considered a Category 3 minor program modification under Policy 127. YSGS will support the program as needed for any changes to the requirements, per Policy 127. YSGS also notes that centrally allocated graduate scholarship funding is derived from our Provincial government grant allocation that is based on eligible FTE enrolments. Making target at the program, Faculty, and university levels is the pathway to stability in funding. It is not currently possible for YSGS to guarantee funding as it is subject to annual budgetary decisions that are outside its purview. Funding guarantees do not reconcile with the government's funding model or the annual budget process of the university. YSGS, however, continues to advocate for strong central support for graduate student funding. YSGS also encourages the program to explore other sources of student funding, particularly graduate student stipends and research assistantships funded through faculty research grants.	GPC to discuss and Recommend. The GPC began discussing the issue at the first GPC meeting of the year (September 2018), and initial desires to see the average GPA increase to a B+ were tempered with concerns related to the lack of guaranteed funding to secure higher-caliber students.	GPC and GPC	Pending outcome of ongoing discussions, submit admission GPA change to YSGS by Feb 2019 for implementation by Fall 2020.

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Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Improve TA training available to LitMod students; add a TA coordinator role.	Agreement. LitMod is committed to improving its TA training. In 2018-2019, the GPD will work with the Department Chair and the current TA coordinator to explore expanding the duties of the TA coordinator throughout the year.	YSGS supports the program response.	Expand duties of a dedicated TA coordinator throughout the year	GPD and Chair, TA Workshop Coordinator	The issue is on the GPD's agenda for the October 23, 2018 GPC meeting, and discussions will be ongoing throughout 2018-2019.
Expand instruction in the teaching of writing either through enhanced TA training or in a dedicated course/module.	Agreement. LitMod will work to increase workshops offered through Learning and Teaching Office (LTO), and discuss options for a "teaching writing" module/course. This will be discussed in the program's GPC and the GPD will liaise with the Department Chair and representatives from the LTO, Career Centre, and YSGS.	YSGS supports the program response. An Associate Dean from YSGS, either for Students or Programs, will participate in any consultations as needed.	Increase workshops offered through Learning and Teaching Office (LTO), and discuss options for "teaching writing" modules/course	GPC, GPD, Department Chair, LTO, Career Centre, YSGS	The issue is on the GPD's agenda for the October 23, 2018 GPC meeting, and discussions will be ongoing throughout 2018-2019.
Provide and post brief course descriptions and/or draft syllabi for both Fall and Winter courses at the time of Fall enrollment for better informed course choices.	Agreement. LitMod will implement this recommendation beginning in the Fall 2018 semester.	YSGS supports the program response.	Implementation beginning Fall 2018	GPD and GPA	2018-19

Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Consider in hiring plans the addition of a specialist in early literatures with a focus on the transition from medieval to renaissance.	To be considered. The GPD will discuss this recommendation with the Department Chair and the DHC during the 2018-2019 academic year.	YSGS supports the program response. YSGS further notes that any appointments need to be considered in the context of departmental- and faculty-level planning. The appointment of new faculty is outside of the purview of YSGS. YSGS also urges the program to consult with the Dean of Arts on this recommendation.	Discussion with Department Chair and DHC regarding new areas of hire	GPD, Chair, and DHC	2018-19

Administrative and Financial Recommendations

Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Restructure funding and awards information (internal and external) on the department website for prospective students.	Agreement. LitMod will undertake a website overhaul, including funding and awards, during the 2018-2019 academic year. This will be discussed in the GPC and lead by the Department Website Committee.	YSGS supports the program response.	Website overhaul including funding and awards	GPC and Department Website Committee	2018-19
Create a sustainability plan that prepares for offering the program – including funding and experiential learning – in the event that there are gaps or departures in faculty SSHRC projects.	Agreement. The GPD will discuss this issue with the Department Chair, and engage in dialogue with the Offices of the Dean of Arts and YSGS. This will be completed during the 2018-2019 academic year.	YSGS supports the program response. The Associate Dean, Programs in YSGS will participate in any discussions with LitMod and/or the Faculty of Arts on this issue if needed.	GPD will discuss with Department Chair, and in dialogue with the Offices of the Dean of Arts and YSGS	GPD and Department Chair, YSGS and Dean of Arts	2018-19; the GPD and Department Chair will discuss the issue fall 2018; and consult with the Dean of Arts/YSGS by winter 2019.

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Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Update the program's outcomes to more explicitly address its existing commitment to urban engagement (i.e., the program's engagement with its urban locale outside the university through various partnerships with presses, publications, and advocacy organizations is commendable but needs to be better recognized in its outcomes).	Agreement. This will be implemented by the GPC for the Fall 2018 semester.	YSGS supports the program response. YSGS encourages LitMod to consult with the Curriculum Development Consultants in the Office of the Vice Provost Academic if any updates to the program's learning outcomes are made.	Implementation for Fall 2018	GPC	Fall 2018

A report on the progress of these initiatives will be provided in the Follow-up Report which will be due in one year from the date of Senate approval.

Graduate Studies

Ryerson University

Office of the Vice-Provost and Dean
Yeates School of Graduate Studies

Final Assessment Report and Implementation Plan

Periodic Program Review (PPR)

Mechanical and Industrial Engineering (MEng, MASc, PhD)

Last Updated: October 12, 2018

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FINAL ASSESSMENT REPORT

In accordance with the University Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the graduate program in **Mechanical and Industrial Engineering (MEng, MASc, PhD).** This report identifies the peer review identified strengths of the program, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The report also includes an Implementation Plan that identifies who will be responsible for approving the recommendations set out in the final assessment report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations and who will be responsible for acting on those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.

EXECUTIVE SUMMARY

The Mechanical and Industrial Engineering (MIE) graduate programs started with a Master of Applied Science and Master of Engineering in the Fall of 2001 followed by the start of the PhD program in the Fall of 2004. As of November 1, 2016, 291 MASc students, 282 MEng students and 80 PhD students have graduated from the program. Students take graduate courses and research in the areas of Manufacturing, Materials and Solid Mechanics, Thermofluids and Industrial Engineering.

The curriculum is designed to provide students with ample opportunities to further their knowledge in advanced areas of engineering, apply their knowledge to complex problems and contribute to the body of knowledge in the literature. Survey results have shown that students are satisfied with the delivery of graduate courses in the program and appreciate the opportunities provided for engaging in world class research.

The success of graduate students over the life of the MIE graduate program is the best indicator of the program's sustained worth. Many PhD graduates have gone to careers in academia as professors and instructors, others have joined Research and Development departments of major corporations and some have continued their education or working as post-doctoral fellows. MIE students have also been successful in competition for prestigious awards such as NSERC doctoral scholarships, Ontario Graduate Scholarships, Vanier and Trillium awards and numerous best paper awards. The academic record shows that the majority of students are graduating with high GPAs.

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MIE program students are engaged in their education through participation in weekly graduate seminars where each week two students present their research work. As a local decision making body, the MIE Graduate Council benefits from representation by graduate students. Survey of recent graduates has shown broad satisfaction with supervision, quality of research work and financial support. Funding for MIE's PhD and MASc students is the highest in the Faculty of Engineering and Architectural Science (FEAS). Students are also rewarded for exceptional research and academic outcomes by five graduate awards which are presented annually.

MIE faculty are the main reason behind the success of the program. They conduct well funded, relevant research which has generated above average publications per faculty member. An indication of the quality of research done in the program is the citations per publication where the faculty in the program score well above average even when compared to institutions with much longer graduate histories. The faculty is engaged with broader research communities through such activities as editorship in scientific and technical journals, being members of grant selection committees at the national and international levels, organizing conferences and professional meetings.

The challenges facing the program include a low number of domestic applicants, especially at the PhD level. This is not restricted to the MIE graduate program and is a problem in all Ontario universities. The program has taken some initiatives including open houses and updating of the communication tools but more systematic efforts are needed. A second challenge is the career readiness of PhD students who do not find employment in academia. The scarcity of academic positions is not a new fact but with a larger number of PhD graduates, it is important to make sure they have the necessary tools and preparation for a job market beyond academia. There is planning at the Faculty and University level for workshops and professional certificates to address some of these concerns but more is needed.

Periodic Program Review and Peer Review Team
Mechanical and Industrial Engineering (MEng, MASc, PhD)

The graduate program in Mechanical and Industrial Engineering (MEng, MASc, PhD), Department of Mechanical and Industrial Engineering - Faculty of Engineering and Architectural Science (FEAS), submitted a Self-Study Report to the Yeates School of Graduate Studies that outlined program descriptions and learning outcomes, an analytical assessment of the program, program data including data from student surveys and the standard data packages. Course outlines and CVs for full-time faculty members were also appended.

Two external and one internal arm's-length reviewers were selected from a set of proposed candidates. The Peer Review Team (PRT) for the Periodic Program Review (PPR) of the graduate programs in Mechanical and Industrial Engineering (MIE) consisted of Dr. Alidad Amirfazli (York University), Dr. Chi-Guhn Lee (University of Toronto), and Dr. Murtaza Haider (Ryerson University).

The appraisal committee spent two days at Ryerson. The visit included interviews with the University and Faculty Administration including the Provost and Vice-President Academic, FEAS Associate Dean, Vice-Provost and Dean Yeates School of Graduate Studies (YSGS); Associate Dean YSGS, Graduate Program Director of the Graduate Program, and meetings with Faculty, a group of current students, and support staff.

The PRT site visit was conducted on February 1 and 2, 2018. The PRT report was communicated to the Associate Dean, YSGS on March 29, 2018, and the response to the report from MIE was communicated on June 7, 2018.

Program Strengths, Weaknesses, and Opportunities

The Peer Review Team identified program strengths, weaknesses and opportunities for program improvement and enhancement, outlined below.

Program Strengths

The PRT recognizes research productivity and excellence demonstrated by many faculty members. Some colleagues are at the cutting edge of research in their respective fields. The creation of new scholarship in active research labs is allowing graduate students to engage in cutting-edge research and gain valuable experience in applied research as part of their training and research related to their theses and dissertations.

Graduate students expressed a great degree of satisfaction with the level of service they received from the Department, in particular, the graduate program director and the administrator. The PRT recognizes their commitment and hard work in serving a large body of graduate students.

Being in the heart of downtown Toronto, the Department has a unique ability to attract students of high research calibre. The opportunity to do cutting-edge research in the Department's labs is complemented by proximity to a rich cultural experience made possible by the University's unique location. Similarly, the University's location will help with recruitment of staff and faculty.

Program Weaknesses and Opportunities

The PRT recognizes a misalignment in the curriculum. Numerous courses offered in the past three years of the review period demonstrate very low enrolments. Given the size of the graduate program and student enrolment, courses with very low enrolment are indicative of a mismatch between student preferences and course offerings.

At the same time, many courses are offered only sporadically. This practice has a larger adverse impact on MEng students than others because MEng students are expected to complete more graduate courses as part of the degree requirements. Similarly, if the portfolio of courses is not uniform for each successive cohort, it is likely to lead to a lack of consistency in learning competencies among students.

Some graduate students expressed a lack of guidance in selecting and identifying relevant coursework. They felt unsupported in searching for relevant courses that would allow them to graduate on time.

The PRT observed that sessional instructors taught a greater proportion of courses with large enrolments. For instance, in 2015-16, of the 254 students enrolled in 24 courses offered at the

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graduate level, 100 students were enrolled in courses taught by sessional instructors. The number of courses taught by sessional instructors is large when compared to comparable programs at other universities. It appears that courses that attract graduate students are being taught by sessional instructors and not by the full-time tenured or tenure-track faculty.

The PRT observed that graduate students were not fully cognizant of the scale and support the services offered by the University. For instance, some students were not aware of the extent of digital resources available at the University library. Some journals and proceedings that students believed were not available at the University Library were, in fact, available as part of the digital resources curated by the library.

The PRT recognizes that the Departmental leadership is doing a tremendous job in supporting graduate students. However, given the size of the Department and the number of graduate students, the focus is on servicing the immediate needs of graduate students. The PRT finds the absence of a champion or coordinator for research related activities to complement the leadership in graduate program offerings. Perhaps establishing an Associate Chair of Research occupied by a person with experience in high calibre research can aid the Department.

The PRT observed that research-active faculty members are not adequately incentivized for the research productivity that distinguishes them within the Department and the University. Given that some faculty members are leading significantly large research groups with an active research agenda, the absence of incentives to continue and improve on research excellence could be a deterrent in achieving these goals.

The PRT believes that the Department lacks adequate visibility that could hinder its ability to attract quality graduate students. A lack of adequate student participation in international conferences contributes to the lack of awareness about the program. Similarly, the Department appears not to have capitalized on the use of social media and other related web-based technologies to promote its research and learning opportunities. The website of the Department related to research needs immediate attention and improvement.

Summary of PRT Recommendations with Graduate Program and YSGS Responses

ACADEMIC RECOMMENDATIONS

Recommendation 1: Organize courses around natural thematic subjects. This is important to satisfy the educational needs of the diverse graduate student population in the program.

> **Program Response**
>
> Agreement. The MIE program notes that it already organizes courses around natural thematic subjects. The themes are: Thermofluidics, Solid Mechanics and Design, and Industrial Engineering.
>
> > *YSGS Response*
> >
> > *YSGS supports the program response to each of these curriculum-focused issues (i.e., recommendations 1 – 6).*
> >
> > *YSGS notes that it will support the program as needed for any minor or major curriculum modifications, per Policy 127.*

Recommendation 2: Use directed reading courses to fill boutique gaps for very specialized topics.

> **Program Response**
>
> Agreement. The MIE program notes that it offers a Directed Studies course (ME8135) for this purpose and will continue offering the course as needed.

Recommendation 3: Introduction of core courses to provide solid common competencies for graduates.

> **Program Response**
>
> Taken under consideration. The MIE program notes that it did employ the model of "core courses" at the program's inception. They were later dropped in favour of elective courses since it was concluded that the model does not match the level of diversity in research topics in this program. The GPC, however, will revisit this decision in the Fall 2018 semester.

Recommendation 4: Ensure that a sufficient and consistent number of courses are offered annually to avoid inconsistency in training.

> **Program Response**
>
> Agreement. The MIE program notes that it offers close to 35 graduate courses each year. It also notes that close to 90% of these courses are repeated each year. The

program will continue its ongoing efforts to offer a sufficient and consistent number of courses.

Recommendation 5: Courses that are popular among MEng students are recommended to be aligned with the needs of a practicing engineer and to have an enriched applied content.

Program Response
Agreement. The MIE program notes that the majority of courses use specialized software used in industry.

Recommendation 6: The seminar course can be improved by including lectures on how to deliver a high-calibre scientific talk.

Program Response
Agreement. The MIE program notes that it has invited guest speakers for a variety of topics including best practices in technical presentations. Nevertheless, it will strive to do so more systematically.

Recommendation 7: To be able to develop actionable proposals around the above points, perhaps the MIE can consider striking a smaller and more nimble and focused graduate curriculum committee.

Program Response
Agreement. The program notes that its Graduate Program Council (GPC) includes all faculty involved in graduate programs and graduate student representatives. The GPC, however, has a number of standing committees including Graduate Admissions and Studies, Awards and Scholarships, etc. The Curriculum committee is an ad hoc committee that is struck from time to time to deal with specific issues brought to the attention of GPC. As per the PRT's suggestion, the mandate and membership of this committee will be determined at the time the committee is constituted.

YSGS Response
YSGS supports the program's response. As noted above, YSGS will support the program as needed for any minor or major curriculum modifications, per Policy 127. YSGS will also provide support to the program as needed if modifications to the GPC bylaws are required.

Recommendation 8: The PRT believes that if the department were to continue running the MEng program, it must consider improving the quality of the students it attracts to the program. Their academic preparation should be on par with those enrolled in the MASc program.

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Program Response

Taken under consideration. The GPC will consider this in the Fall 2018 semester. The MIE program does note, however, that the minimum GPA requirement for the MEng program is B, which is in line with all major universities in Ontario. The program also notes that the courses taught are not categorized based on students who take them (MEng or otherwise).

> *YSGS Response*
>
> *YSGS supports the program response. Should the program determine modifications to its admissions requirements are needed, YSGS will support the program, per Policy 127.*

Recommendation 9: The Department should take steps to improve graduate student support as soon as possible. The minimum guaranteed funding should be increased for all students, particularly international students.

Program Response

Agreement. The MIE program notes that the funding package for research students (MASc and PhD) has been updated since the visit and currently aligns with the visiting team's recommendation. All eligible PhD students will receive the same take home amount after fees are considered. The same holds for all MASc students.

> *YSGS Response*
>
> *YSGS supports the program response and encourages the program to continue to pursue opportunities to improve funding packages for its graduate students.*

Recommendation 10: The Department should offer opportunities for professional development to students by encouraging them to participate in international conferences.

Program Response

Agreement. The MIE program notes that a number of professional development opportunities exist within the Faculty (FEAS) and the Graduate School (YSGS). The program also notes that it does provide funding for graduate student attendance at international conferences**.**

> *YSGS Response*
> *YSGS supports the program response.*

Recommendation 11: The Department should consider the possibility of graduate students starting in January and May.

Program Response

Agreement. The Program shares the view that a more streamlined admission process would be helpful. It should be noted that winter and spring admissions have always been possible on a case by case basis.

> ### *YSGS Response*
> *YSGS supports the program response. YSGS notes that winter and spring admissions are already possible on a case-by-case basis.*

ADMINISTRATIVE AND FINANCIAL RECOMMENDATIONS

Recommendation 1: The PRT recommends implementation of a formal process for scheduling equipment use services provided by technical staff.

> ### Program Response
> Agreement. Following the strategic plans of the Faculty and the Department, these recommendations are being implemented.
>
> > ### *YSGS Response*
> > *YSGS supports the program response.*

Recommendation 2: The PRT believes that the number of staff members dedicated to responsibilities related to graduate students might be increased to provide better support to graduate students whose number is likely to expand in the future.

> ### Program Response
> Taken under consideration. At the current level of enrollment, the staff numbers (Associate Chair Graduate Program and Graduate Program Administrator) seem to be adequate and in line to other graduate programs in FEAS. There are no plans for growth and increase in number of graduate students in the program under the next strategic plans, both at the Faculty and the university level.
>
> > ### *YSGS Response*
> > *YSGS supports the program response.*

Recommendation 3: The Department should consider creating a new Associate Chair of Research position to streamline research among colleagues and provide mentorship to research graduate students.

> ### Program Response
> Taken under consideration. This is being considered as a part of the Faculty and Department strategic plans. The program will consult with the Associate Dean, Research and Dean of FEAS.
>
> > ### *YSGS Response*

YSGS supports the program response. It notes, however, that the creation of a new Associate Chair position is outside of its purview. YSGS encourages the program to work with the Dean of FEAS to explore this possibility.

Recommendation 4: The Department may consider improving opportunities for social gatherings among faculty members and students.

Program Response

Agreement. The MIE program notes that, currently, a number of social events are organized at the FEAS level specifically for graduate students, by the FEAS Graduate Students Ambassadors team, including: Orientation Networking & Social, Bowling, Pumpkin Carving, Pub Night, Archery Tag and BBQ. As for the Program, some faculty members attend weekly seminars and there are also opportunities for socializing at Awards Night. The Program will explore other faculty-student social events.

YSGS Response

YSGS supports the program response and its efforts to improve the social cohesion of the department.

Recommendation 5: The PRT believes that the program must improve its efforts to engage with alumni

Program Response

Agreement. The recommendation is appreciated. While we do have sample information, a full database would be useful. This will be undertaken with support from the university.

YSGS Response

YSGS supports the program response.

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Implementation Plan

Academic Recommendations

Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Organize courses around natural thematic subjects. This is important to satisfy the educational needs of the diverse graduate student population in the program.	Agreement. The MIE program notes that it already organizes courses around natural thematic subjects. The themes are: Thermofluidics, Solid Mechanics and Design, and Industrial Engineering.	YSGS supports the program response to each of these curriculum-focused issues (i.e., recommendations 1 – 6). YSGS notes that it will support the program as needed for any minor or major curriculum	Completed		
Use directed reading courses to fill boutique gaps for very specialized topics.	Agreement. The MIE program notes that it offers a Directed Studies course (ME8135) for this purpose and will continue offering the course as needed.		Completed		
Introduction of core courses to provide solid common competencies for graduates.	Taken under consideration. The MIE program notes that it did employ the model of "core courses" at the program's inception. They were later dropped in favour of elective courses since it was concluded that the model does not match the level of diversity in research topics in this program. The GPC, however, will revisit this decision in the Fall 2018 semester.		GPC consideration	Associate Chair Graduate	Winter 2019

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Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Ensure that a sufficient and consistent number of courses are offered annually to avoid inconsistency in training.	Agreement. The MIE program notes that it offers close to 35 graduate courses each year. It also notes that close to 90% of these courses are repeated each year. The program will continue its ongoing efforts to offer a sufficient and consistent number of courses.		Continuing efforts	Associate Chair, Departmental Chair, Home Faculty Associate Dean for Graduate Studies	Ongoing
Courses that are popular among MEng students are recommended to be aligned with the needs of a practicing engineer and to have an enriched applied content.	Agreement. The MIE program notes that the majority of courses use specialized software used in industry.		Continuing efforts	Associate Chair Graduate, Departmental Chair, Home Faculty Associate Dean for Graduate Studies	Ongoing
The seminar course can be improved by including lectures on how to deliver a high-calibre scientific talk.	Agreement. The MIE program notes that it has invited guest speakers for a variety of topics including best practices in technical presentations. Nevertheless, will strive to do so more systematically.		Continuing efforts	Associate Chair Graduate	Ongoing

Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
To be able to develop actionable proposals around the above points, perhaps the MIE can consider striking a smaller and more nimble and focused graduate curriculum committee.	Agreement. The program notes that its Graduate Program Council (GPC) includes all faculty involved in graduate programs and graduate student representatives. The GPC, however, has a number of standing committees including Graduate Admissions and Studies, Awards and Scholarships, etc. The Curriculum committee is an ad hoc committee that is struck from time to time to deal with specific issues brought to the attention of GPC. As per the PRT's suggestion, the mandate and membership of this committee will be determined at the time the committee is constituted.	YSGS supports the program's response. As noted above, YSGS will support the program as needed for any minor or major curriculum modifications, per Policy 127. YSGS will also provide support to the program as needed if modifications to the GPC bylaws are required.	Completed		
The PRT believes that if the department were to continue running the MEng program, it must consider improving the quality of the students it attracts to the program. Their academic preparation should be on par with those enrolled in the MASc program.	Taken under consideration. The GPC will consider this in the Fall 2018 semester. The MIE program does note, however, that the minimum GPA requirement for the MEng program is B, which is in line with all major universities in Ontario. The program also notes that the courses taught are not categorized based on students who take them (MEng or otherwise).	YSGS supports the program response. Should the program determine modifications to its admissions requirements are needed, YSGS will support the program, per Policy 127.	GPC consideration	GPC	Fall 2018

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Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
The Department should take steps to improve graduate student support as soon as possible. The minimum guaranteed funding should be increased for all students, particularly international students.	Agreement. The MIE program notes that the funding package for research students (MASc and PhD) has been updated since the visit and currently aligns with the visiting team's recommendation. All eligible PhD students will receive the same take home amount after fees are considered. The same holds for all MASc students.	YSGS supports the program response and encourages the program to continue to pursue opportunities to improve funding packages for its graduate students.	Continuing efforts	Associate Chair, Department Chair, FEAS Dean, FEAS Assoc. Dean Graduate Studies, Vice-Provost and Dean of YSGS	Ongoing
The Department should offer opportunities for professional development to students by encouraging them to participate in international conferences.	Agreement. The MIE program notes that a number of professional development opportunities exist with the Faculty (FEAS) and the Graduate School (YSGS). The program also notes that it does provide funding for graduate student attendance at international conferences.	YSGS supports the program response.	Continuing efforts	Associate Chair, Department Chair, FEAS Dean, FEAS Assoc. Dean Graduate Studies, Vice-Provost and Dean of YSGS	Ongoing
The Department should consider the possibility of graduate students starting in January and May.	Agreement. The Program shares the view that a more streamlined admission process would be helpful. It should be noted that winter and spring admissions have always been possible on a case by case basis.	YSGS supports the program response. YSGS notes that winter and spring admissions are already possible on a case-by-case basis.	Discussions with YSGS	Associate Chair Graduate, FEAS Associate Dean Graduate Studies, YSGS Graduate Admissions office	Ongoing

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Administrative and Financial Recommendations

Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
The PRT recommends implementation of a formal process for scheduling equipment use services provided by technical staff.	Agreement. Following the strategic plans of the Faculty and the Department, these recommendations are being implemented.	YSGS supports the program response.	Completed		
The PRT believes that the number of staff members dedicated to responsibilities related to graduate students might be increased to provide better support to graduate students whose number is likely to expand in the future.	Taken under consideration. At the current level of enrollment, the staff numbers (Associate Chair Graduate Program and Graduate Program Administrator) seem to be adequate and in line to other graduate programs in FEAS. There are no plans for growth and increase in number of graduate students in the program under the next strategic plans, both at the Faculty and the university level.	YSGS supports the program response.	Department and FEAS Dean consideration	Department Chair, FEAS Dean	Winter 2019
The Department should consider creating a new Associate Chair of Research position to streamline research among colleagues and provide mentorship to research graduate students.	Taken under consideration. This is being considered as a part of the Faculty and Department strategic plans. The program will consult with the Associate Dean, Research and Dean of FEAS.	YSGS supports the program response. It notes, however, that the creation of a new Associate Chair position is outside of its purview. YSGS encourages the program to work with the Dean of FEAS to explore this possibility.	Department and FEAS Dean consideration	Department Chair, FEAS Dean, FEAS Associate Dean Research and Partnership	Unknown

Recommendation	Program Response	YSGS Response	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
The Department may consider improving opportunities for social gatherings among faculty members and students.	Agreement. The MIE program notes that, currently, a number of social events are organized at the FEAS level specifically for graduate students, by the FEAS Graduate Students Ambassadors team, including: Orientation Networking & Social, Bowling, Pumpkin Carving, Pub Night, Archery Tag and BBQ. As for the Program, some faculty members attend weekly seminars and there is also opportunities for socializing at Awards Night. The Program will explore other faculty-student social events.	YSGS supports the program response and its efforts to improve the social cohesion of the department.	GPC discussion	Associate Chair Graduate, GPC	Fall 2018
The PRT believes that the program must improve its efforts to engage with alumni.	Agreement. The recommendation is appreciated. While we do have sample information, a full database would be useful. This will be undertaken with support from the university.	YSGS supports the program response.	Part of curriculum review	Associate Chair Graduate Studies, Department and Dept. Chair, FEAS Development and Alumni Officer, Ryerson University Advancement	Ongoing

A report on the progress of these initiatives will be provided in the Follow-up Report which will be due in one year from the date of Senate approval.

REPORT OF ACADEMIC STANDARDS COMMITTEE
Report #F2018–1; November 2018

In this report the Academic Standards Committee (ASC) brings to Senate its evaluation and recommendation on the following items:
- **TED ROGERS SCHOOL OF MANAGEMENT** – Foundational Quantitative Curriculum Modification
- **SCHOOL OF OCCUPATIONAL HEALTH** – Major Curriculum Modification
- **SCHOOL OF ACCOUNTING & FINANCE** – Co-op Resequencing Proposal
- **RTA SCHOOL OF MEDIA** - Discontinuation of Concentrations in New Media Program
- **SCHOOL OF FASHION** –Major Curriculum Modification Proposal
- **LIBERAL STUDIES** – New Course Proposals

A. TRSM – FOUNDATIONAL QUANTITATIVE CURRICULUM MODIFICATION
1. Introduction and Rationale
As part of an ongoing redesign of the TRSM core curriculum, the Ted Rogers School of Management (TRSM) proposes:
  i)   Discontinuing QMS 102 and QMS 202 in TRSM programs where they are currently required.
  ii) Adopting a one-semester applied business mathematics course (where not currently in place) and a one-semester business statistics course (where not currently in place), effective fall 2019.

Currently, TRSM's Bachelor of Commerce degree programs require students to complete one or more foundational courses in quantitative methods. Historically, these courses included QMS 102 (Business Statistics I) and QMS 202 (Business Statistics II); however, not all programs require both courses. Moreover, many students struggle with these lower level quantitative courses, and attrition rates have been less than desirable. In recent years, two Schools (SAF and ITM) introduced a first-year math course (ITM 107; QMS 130) to better prepare their students for the quantitatively demanding curriculum taught in their upper years. While certain programs may require students to take additional quantitative courses, a clearly defined curriculum for the development of core quantitative skills is necessary to ensure that students meet TRSM's intended learning outcomes related to numeracy. The proposed new courses will introduce students to key mathematical and statistical techniques and concepts, within business contexts, in order provide a renewed and focused quantitative foundation for the TRSM Bachelor of Commerce degree.

2. Comparison between the Proposed and the Current (2017/2018 Academic Year) Curricula

School of Business Management

CURRENT (2018-2019)

1st Semester		2nd Semester	
REQUIRED:		**REQUIRED:**	
ACC 100	Introductory Financial Accounting	**ACC 406**	Introductory Management Accounting
BUS 100	Strategies for Success	**ECN 204**	Introductory Macroeconomics
ECN 104	Introductory Microeconomics	**GMS 200**	Introduction to Global Management
ITM 102	Business Information Systems I	**MHR 523**	Human Resources Management
QMS 102	Business Statistics I	**MKT 100**	Principles of Marketing
LIBERAL STUDIES:		**QMS 202**	Business Statistics II
One course from **Table A - Lower Level Liberal Studies**.			

NEW *Revised Curriculum begins 2019-2020.*

1st Semester		2nd Semester	
REQUIRED:		**REQUIRED:**	
ACC 100	Introductory Financial Accounting	**ACC 406**	Introductory Financial Accounting
BUS 100	Strategies for Success	**ECN 204**	Introductory Macroeconomics
ECN 104	Introductory Microeconomics	**GMS 200**	Introduction to Global Management

ITM 102	Business Information Systems I	**MHR 523**	Human Resources Management
QMS 110	Applied Mathematics for Business	**MKT 100**	Principles of Marketing
LIBERAL STUDIES:		**QMS 210**	Applied Statistics for Business

One course from **Table A - Lower Level Liberal Studies**.

School of Hospitality and Tourism Management

CURRENT (2018-2019)

1st Semester		2nd Semester	
REQUIRED:		**REQUIRED:**	
ENC 104	Introductory Microeconomics	ACC 100	Introductory Financial Accounting
HTF 110	Food Service Operation and Control	CMN 279	Introduction to Professional Communication
HTH 102	Service and Professionalism	ECN 204	Introductory Macroeconomics
HTL 130	Lodging Management Foundation	HTF 110	Food Service Operation and Control
HTT 150	Tourism Demand, Supply and Distribution	HTH 503	Human Resources Administration
ITM 102	Business Information Systems I	HTL 130	Lodging Management Foundation

LIBERAL STUDIES:
One course from **Table B - Upper Level Liberal Studies**.

NEW *Revised Curriculum begins 2019-2020*

1st Semester		2nd Semester	
REQUIRED:		**REQUIRED:**	
ENC 104	Introductory Microeconomics	ACC 100	Introductory Financial Accounting
HTF 110	Food Service Operation and Control	CMN 279	Introduction to Professional Communication
HTH 102	Service and Professionalism	ECN 204	Introductory Macroeconomics
HTL 130	Lodging Management Foundation	HTF 110	Food Service Operation and Control
HTT 150	Tourism Demand, Supply and Distribution	HTH 503	Human Resources Administration
QMS 110	Applied Mathematics for Business	HTL 130	Lodging Management Foundation

LIBERAL STUDIES:
One course from **Table B - Upper Level Liberal Studies**.

School of Hospitality and Tourism Management (cont.)

CURRENT (2018-2019)

3rd Semester		4th Semester	
REQUIRED:		**REQUIRED:**	
HTH 601	Organizational Behaviour	HTA 402	Management Accounting for HTM
HTM 302	Marketing Principles	HTM 402	Strategic Marketing Planning
HTR 741	Hospitality and Tourism Research Concepts	LAW 122	Business Law
QMS 102	Business Statistics I		

LIBERAL STUDIES (3rd): One course from **Table A - Lower Level Liberal Studies**.

LIBERAL STUDIES (4th): One course from **Table A - Lower Level Liberal Studies**.
PROFESSIONAL: One course from **Table** I.

NEW *Revised Curriculum begins 2020-2021 for students admitted Fall 2019 and after.*

3rd Semester		4th Semester	
REQUIRED:		**REQUIRED:**	
ITM 102	Business Information Systems I	HTA 402	Management Accounting for HTM
HTM 302	Marketing Principles	HTM 402	Strategic Marketing Planning
HTR 741	Hospitality and Tourism Research Concepts	LAW 122	Business Law
QMS 210	Applied Statistics for Business	**HTH 601**	Organizational Behaviour

LIBERAL STUDIES (3rd): One course from **Table A - Lower Level Liberal Studies**

LIBERAL STUDIES (4th): One course from **Table A - Lower Level Liberal Studies**
~~PROFESSIONAL: One course from Table I.~~

School of Information Technology Management

CURRENT (2018-2019)

1st Semester		2nd Semester	
REQUIRED:		REQUIRED:	
CMN 279	Introduction to Professional Communication	ECN 104	Introductory Microeconomics
GMS 200	Introduction to Global Management	ITM 207	Computer-Enabled Problem Solving
ITM 100	Foundations of Information Systems	MHR 405	Organizational Behaviour
ITM 107	Managerial Decision Making	QMS 102	Business Statistics I
SSH 105	Critical Thinking I	LIBERAL STUDIES:	
		One course from **Table B - Upper Level Liberal Studies**	

==NEW== *Revised Curriculum begins 2019-2020.*

1st Semester		2nd Semester	
REQUIRED:		REQUIRED:	
CMN 279	Introduction to Professional Communication	ECN 104	Introductory Microeconomics
GMS 200	Introduction to Global Management	ITM 207	Computer-Enabled Problem Solving
ITM 100	Foundations of Information Systems	MHR 405	Organizational Behaviour
ITM 107	Managerial Decision Making	==QMS 210==	==Applied Statistics for Business==
SSH 105	Critical Thinking I	LIBERAL STUDIES:	
		One course from **Table B - Upper Level Liberal Studies**	

School of Information Technology Management (cont.)

CURRENT (2018-2019)

5th Semester		6th Semester	
REQUIRED:		REQUIRED:	
FIN 300	Managerial Finance I	ECN 204	Introductory Macroeconomics
ITM 750	IS Project Management	ITM 706	Enterprise Architecture
QMS 202	Business Statistics II	ITM 820	Information Systems Security and Privacy
LIBERAL STUDIES:		LIBERAL STUDIES:	
One course from **Table B - Upper Level Liberal Studies**.		One course from **Table B - Upper Level Liberal Studies**.	
PROFESSIONAL: One course from **Table** 1.		PROFESSIONAL: One course from **Table** 1.	

==NEW *Revised Curriculum begins 2021-2022 for students admitted Fall 2019 and after.*==

5th Semester		6th Semester	
REQUIRED:		REQUIRED:	
FIN 300	Managerial Finance I	ECN 204	Introductory Macroeconomics
ITM 750	IS Project Management	ITM 706	Enterprise Architecture
==ITM 618==	==Business Intelligence and Analytics[1]==	ITM 820	Information Systems Security and Privacy
LIBERAL STUDIES:		LIBERAL STUDIES:	
One course from **Table B - Upper Level Liberal Studies**.		One course from **Table B - Upper Level Liberal Studies**.	
==PROFESSIONAL: One course from **Table** 1.==		PROFESSIONAL: One course from **Table** 1.	

[1] With respect to quantitative foundational courses, the only change to the Business Technology Management (BTM) program will be removing QMS 102 and QMS 202 and adding QMS 210, which will be positioned in 2nd semester. Since QMS 202 will no longer be required in 5th semester of this program, the School of Information Technology Management decided to add a new analytics course (ITM 618) as part of the BTM curriculum.

School of Retail Management

CURRENT (2018-2019)

1st Semester		2nd Semester	
REQUIRED:		**REQUIRED:**	
CMN 279	Introduction to Professional Communication	**ACC 100**	Introductory Financial Accounting
GMS 200	Introduction to Global Management	**ECN 104**	Introductory Microeconomics
MHR 405	Organizational Behaviour	**ITM 102**	Business Information Systems
QMS 102	Business Statistics I	**MKT 100**	Principles of Marketing
RMG 100	Issues and Innovations in Retailing I	**RMG 200**	Intro to Retail and Services Management
RMG 101	Academic and Career Preparation		

NEW *Revised Curriculum begins 2019-2020.*

1st Semester		2nd Semester	
REQUIRED:		**REQUIRED:**	
CMN 279	Introduction to Professional Communication	**ACC 100**	Introductory Financial Accounting
GMS 200	Introduction to Global Management	**QMS 210**	Applied Statistics for Business
MHR 405	Organizational Behaviour	**ITM 102**	Business Information Systems
RMG 100	Issues and Innovations in Retailing I	**MKT 100**	Principles of Marketing
QMS 110	Applied Mathematics for Business	**RMG 200**	Intro to Retail and Services Management
ECN 104	Introductory Microeconomics		
~~**RMG 101**~~	~~Academic and Career Preparation~~[1]		

Recommendation

- Having satisfied itself of the merit of this proposal, the Academic Standards Committee recommends: *That Senate approve the TRSM Foundational Quantitative Curriculum Modification*

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[2] In anticipation of implementing the new QMS courses, the School of Retail Management has reviewed their first year curriculum and determined that the course objectives of RMG 101 overlap with RMG 100 (Issues and Innovations in Retailing I). RMG 100, as a course that provides insight into the Canadian retail environment, provides a suitable opportunity for students to establish their interest in retail management careers. RMG 100, going forward, will also dedicate course time to the development of academic success strategies and providing students with the necessary resources to support their transition to university. Lastly, the content covered on the math proficiency test, which was previously administered in RMG 101, will be addressed in the new QMS 110 course.

B. SCHOOL OF OCCUPATIONAL HEALTH – MAJOR CURRICULUM MODIFICATION

1. Introduction and Rationale
The School of Occupational and Public Health (SOPHe) currently offers two undergraduate programs; the **Bachelor of Applied Science in Occupational and Public Health (Occupational Health and Safety)** and the **Bachelor of Applied Science in Occupational and Public Health (Public Health and Safety)**. The Occupational Health and Safety (OHS) program is recognized by the Board of Canadian Registered Safety Professionals (BCRSP) as substantially exceeding its educational requirements for professional registration and it is the only degree program in OHS offered in Canada. The Public Health and Safety (PHS) program is accredited by the Canadian Institute of Public Health Inspectors (CIPHI) and is one of only six programs accredited in Canada. Both programs are currently offered in three formats: a four year program, a five year cooperative education program and a two year program for university graduates.

It is proposed that a four year program, a five year cooperative program and a two year program for university graduates, continue to be offered for both public health and occupational health and safety. Further, in accordance with the new curriculum framework, it is proposed that both four year programs and both five year cooperative programs will have 30 core courses, 6 liberal studies and 4 open electives. Both two year programs for university graduates are proposed to have 26 core courses, and as per current standards, no electives. The modifications identified in this proposal are proposed to be implemented in **Fall 2019**.

The rationale for the proposed program modifications is as follows:

- To ensure that the undergraduate programs offered by SOPHe fit the university's new curriculum framework for undergraduate programs
- To update and modernize the existing programs
- To ensure the revised programs fulfill the new program goals and themes
- To ensure that graduates from the proposed programs are equipped with the knowledge and skills for current employment needs and future challenges in either public health or occupational health and safety positions (or related professions)
- To ensure that the new program degree names provide a recognition of the substantially different career pathways for graduates of each program and enable clearer identification of each discipline. It therefore provides graduates with enhanced branding and name recognition of the qualification they hold and removes the current potential for employer misunderstanding of the qualification held by the graduates.
- To ensure that the programs continue to meet the accreditation requirements of the professional bodies, i.e. Canadian Institute of Public Health Inspectors (CIPHI) for the public health program, and Board of Canadian Registered Safety Professionals (BCRSP) for the occupational health and safety program.
- To allow the potential for further majors and minors to be added to the programs by using the common first year and other common courses as a framework.

2. Summary of the Proposed Curriculum Changes
The changes to the existing programs are summarized below:

- Re-naming of the two programs as follows:

  The **BASc in Occupational and Public Health (with a Public Health and Safety option)** (i.e. OC001 and OC005) be renamed as the **BASc in Public Health**

  The **BASc in Occupational and Public Health (with an Occupational Health and Safety option)** (i.e. OC003 and OC006) be renamed as the **BASc in Occupational Health and Safety**

- Continuation of a common first year and significant amount of commonality between the two programs for the second to fourth years
- Restructuring the two programs to fit the new university curriculum framework (i.e. reducing the current course total from 46 to 40 courses, and including the new model for open electives, i.e. retaining 6 liberal studies and proposing the introduction of 4 open electives). Each program, therefore, comprises 30 core courses, 4 open elective courses, and 6 liberal study elective courses. This configuration is due to the need to meet professional accreditation requirements.
- Adding or removing courses as a consequence of the program restructuring
- Updating and modernizing the course content
- Developing program learning outcomes and themes for each program

3. Revised Program Learning Outcomes
Graduates of the Occupational Health & Safety program will:
1. Understand the professional, technical, legal, societal and ethical role of occupational health & safety
2. Know the physical, chemical, biological and regulatory concepts, theories, current advances and methodologies relevant to occupational health & safety
3. Have the knowledge and skills to start a career in occupational health & safety, have the competencies necessary to achieve professional certification and be aware of the limitations of their knowledge and skills
4. Have the ability to manage their own learning in changing circumstances throughout their careers
5. Demonstrate effective interpersonal and communication skills
6. Have the ability to work independently, critically review and evaluate qualitative and quantitative information, solve problems and propose solutions
7. Have an interdisciplinary perspective of occupational health & safety
8. As a member of the Ryerson community and through this program, will gain a sound understanding of the principles of equity, diversity and inclusion and how these apply to their personal relationships and professional practice.

Graduates of the Public Health program will:
1. Understand the professional, technical, legal, societal and ethical role of public health inspection
2. Know the physical, chemical, biological and regulatory concepts, theories, current advances and methodologies relevant to public health inspection
3. Have the knowledge and skills to start a career in public health inspection, have the competencies necessary to achieve professional certification and be aware of the limitations of their knowledge and skills
4. Have the ability to manage their own learning in changing circumstances throughout their careers
5. Demonstrate effective interpersonal and communication skills
6. Have the ability to work independently, critically review and evaluate qualitative and quantitative information, solve problems and propose solutions
7. Have an interdisciplinary perspective of public health inspection
8. As a member of the Ryerson community and through this program, will gain a sound understanding of the principles of equity, diversity and inclusion and how these apply to their personal relationships and professional practice.

4. Comparison between the Proposed and the Current (2017/2018 Academic Year) 4-Year Programs
Public Health & Safety vs Public Health
Semester 1:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
General Chemistry (CHY 104) *Lecture and tutorial (3 + 1.5)*	General Chemistry (CHY 104) *Lecture and laboratory (3 +1.5)*
Applied Ecology (ENH 617) *Lecture (3)*	Data Management (POH 103) *Lecture and laboratory (3+1)*

Health Law (ENH 121)	Environmental Health Law (ENH 121)
Lecture (3)	*Lecture (3)*
Foundations of Pathophysiology (ENH 220)	Professional Practice (POH 100)
Lecture (3)	*Lecture (3)*
Mathematics for Professional Programs (MTH 125)	One Table A Liberal Studies Course
Lecture (4)	
One Table A Liberal Studies Course	
Total (excluding liberal studies elective) 17.5h	Total (excluding liberal studies elective) 14.5h

Semester 2:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Foundations of Aetiology (ENH 222)	Pathophysiology (ENH 220)
Lecture and laboratory (3 + 2)	*Lecture (3)*
Introduction to Epidemiology (ENH 122)	Biostatistics (ENH 440)
Lecture (3)	*Lecture (3)*
Occupational Health and Safety Law (OHS 208)	Professional Communication (CMN 100)
Lecture (3)	*Lecture (3)*
Introductory Organic Chemistry (CHY 152)	Determinants of Health (POH 201)
Lecture (3)	*Lecture (3)*
Physics for the Health Sciences (PCS 106)	
Lecture, laboratory & tutorial (3+0.5+0.5)	
One Table A Liberal Studies Course	One Table A Liberal Studies Course
Total (excluding liberal studies elective) 19.5h	Total (excluding liberal studies elective) 12h

Semester 3:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Epidemiology: Communicable Diseases I (ENH 322)	Agents of Communicable Disease (PUB 301)
Lecture (2)	*Lecture and laboratory (3+1)*
Wastewater Treatment Systems (ENH 324)	Occupational Health and Safety (OHS 508)
Lecture and laboratory (3+0.5)	*Lecture (3)*
Introduction to Food Hygiene (ENH 333)	Food Hygiene (ENH 333)
Lecture and laboratory (3+0.5)	*Lecture (3)*
Introductory Toxicology (OHS 322)	Introductory Toxicology (OHS 322)
Lecture (3)	*Lecture (3)*
Local Government and Politics in Canada (POL 122)	One Table A Liberal Studies Course
Lecture (3)	
One Table A Liberal Studies Course	
Total (excluding liberal) 15h	Total (excluding elective) 13h

Semester 4:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Epidemiology: Communicable Diseases II (ENH 422)	Parasitology and Pest Control (ENH 610)
Lecture (2)	*Lecture and laboratory (3+1)*
Food Hygiene: Safe Food Handling (ENH 433)	Epidemiology (ENH 122)
Lecture and laboratory (3+0.5)	*Lecture (3)*
Water Quality (ENH 424)	Water Quality I (PUB 409)

Lecture and laboratory (3+0.5)	*Lecture and laboratory (3+1)*
Housing (ENH 325)	Housing and Built Environments (ENH 325)
Lecture (3)	*Lecture (3)*
International Health (ENH 429)	Environment and Emergencies (POH 407)
Lecture (3)	*Lecture (3)*
Infection Control (ENH 505)	
Lecture (3)	
Communication for Health Sciences (CMN 100)	
Lecture (3)	
Total 21h	Total 17h

Semester 5:

Public Health and Safety (Current)	Public Health (Proposed)
Biostatistics (ENH 440)	Communicable Disease Control (PUB 501)
Lecture (3)	*Lecture (3)*
Pollution Control (ENH 524)	Research Methods (ENH 522)
Lecture (3)	*Lecture (3)*
Food Hygiene: Food Pathogens (ENH 733)	Food Safety (PUB 508)
Lecture (3)	*Lecture (3)*
Occupational Health (OHS 508)	Open Elective
Lecture (3)	
One Table B Liberal Studies Course	One Table B Liberal Studies Course
Total (excluding liberal studies) 12h	Total (excluding electives) 9h

Semester 6:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Epidemiology: Research Methods (ENH 522)	Water Quality II (PUB 609)
Lecture (3)	*Lecture and laboratory (3+1)*
Health Administration (ENH 821)	Wastewater Treatment Systems (ENH 324)
Lecture (3)	*Lecture and laboratory (3+1)*
Hazard Recognition and Control (OHS 608)	Air Quality* (PUB 607)
Lecture (3)	*Lecture (3)*
Professionally-Related Elective	Open Elective
One Table B Liberal Studies Course	One Table B Liberal Studies Course
Total (excluding liberal & elective) 9h	Total (excluding electives) 11h

* Note: New course to address topic not currently covered and required for CIPHI accreditation

Semester 7:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Parasitology (ENH 610)	Pollution and Waste Management (ENH 524)
Lecture and laboratory (3+1)	*Lecture (3)*
Health Education (ENH 712)	Health Promotion and Education (POH 705)
Lecture (3)	*Lecture (3)*
Public Health Law (ENH 721)	Infection Control (ENH 505)
Lecture (3)	*Lecture (3)*
Field Project (ENH 66A/B) or	Risk Assessment (ENH 825)

Research Project 1 (ENH 766)	*Lecture (3)*
Lecture (3)	
One Table B Liberal Studies Course	Open Elective
Total (excluding liberal) 13h	Total (excluding elective) 12h

Semester 8:

Public Health and Safety (Current)	Public Health (Proposed)
Seminars (ENH 809)	Public Health Law (ENH 721)
Lecture (3)	*Lecture (3)*
Health Promotion: Planning & Evaluation (ENH 816)	Advanced Professional Practice (PUB 800)
Lecture (3)	*Lecture (3)*
Risk Assessment (ENH 825)	Food Safety Management (PUB 808)
Lecture (3)	*Lecture and laboratory (3+1)*
Emergency Measures and Planning (ENH 911)	Open Elective
Lecture (3)	
Field Project (ENH 66A/B) [#] or Research Project II (ENH 866)[#]	One Table B Liberal Studies Course
Lecture (3)[#]	
Total 15h[#]	Total (excluding electives) 10h

[#]Students may substitute two courses from Professionally-Related courses

Occupational Health and Safety

Semester 1:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
General Chemistry (CHY 104)	General Chemistry (CHY 104)
Lecture and tutorial (3+1.5)	*Lecture and laboratory (3+1)*
Applied Ecology (ENH 617)	Data Management POH 103)
Lecture (3)	*Lecture and laboratory (3+1)*
Health Law (ENH 121)	Environmental Health Law (ENH 121)
Lecture (3)	*Lecture (3)*
Foundations of Pathophysiology (ENH 220)	Professional Practice (POH 100)
Lecture (3)	*Lecture (3)*
Mathematics for Professional Programs (MTH 125)	One Table A Liberal Studies Course
Lecture (4)	
One Table A Liberal Studies Course	
Total (excluding liberal studies) 17.5h	Total (excluding liberal studies) 14h

Semester 2:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Foundations of Aetiology (ENH 222)	Pathophysiology (ENH 220)
Lecture and laboratory (3+2)	*Lecture (3)*
Introduction to Epidemiology (ENH 122)	Biostatistics (ENH 440)
Lecture (3)	*Lecture (3)*
Occupational Health and Safety Law (OHS 208)	Professional Communication (CMN 100)
Lecture (3)	*Lecture (3)*
Introductory Organic Chemistry (CHY 152)	Determinants of Health (POH 201)
Lecture (3)	*Lecture (3)*
Physics for the Health Sciences (PCS 106)	One Table A Liberal Studies Course

Lecture, laboratory & tutorial (3+0.5+0.5)	
One Table A Liberal Studies Course	
Total (excluding liberal studies) 19.5h	Total (excluding liberal studies) 12h

Semester 3:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Introductory Microeconomics (ECN 104)	Introductory Toxicology (OHS 322)
Lecture (3)	*Lecture (3)*
Epidemiology: Communicable Diseases I (ENH 322)	Introductory Organic Chemistry (CHY 152)
Lecture (2)	*Lecture (3)*
Physical Agents (OHS 314)	Biological Agents (OHS 301)
Lecture and laboratory (2+1.5)	*Lecture (3)*
Health Effects of Radiation (OHS 319)	Accident Theory (OHS 323)
Lecture and laboratory (2+1.5)	*Lecture (3)*
Introductory Toxicology (OHS 322)	One Table A Liberal Studies Course
Lecture (3)	
One Table A Liberal Studies Course	
Total (excluding liberal studies) 15h	Total (excluding liberal studies) 12h

Semester 4:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Communication in the Health Sciences (CMN 100)	Advanced Toxicology (OHS 422)
Lecture (3)	*Lecture (3)*
Epidemiology: Communicable Diseases II (ENH 422)	Epidemiology (ENH 122)
Lecture (2)	*Lecture (3)*
Infection Control (ENH 505)	Physical Agents (OHS 314)
Lecture (3)	*Lecture and laboratory (3+1)*
Accident Theory and Analysis (OHS 323)	Occupational Hygiene I (OHS 421)
Lecture (3)	*Lecture and laboratory (3+1)*
Occupational Hygiene Methods I (OHS 421)	Environment and Emergencies (POH 407)
Lecture and laboratory (2+1.5)	*Lecture (3)*
Advanced Toxicology (OHS 422)	
Lecture (3)	
Integrated Disability Management (OHS 477)	
Lecture (3)	
Total 20.5h	Total 17h

Semester 5:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Biostatistics (ENH 440)	Systems Safety* (OHS 509)
Lecture (3)	*Lecture (3)*
Health Education (ENH 712)	Research Methods (ENH 522)
Lecture (3)	*Lecture (3)*
Safety Evaluation Techniques (OHS 523)	Safety Evaluation Techniques (OHS 523)
Lecture (3)	*Lecture (3)*
Occupational Hygiene Methods II (OHS 621)	One Table B Liberal Studies Course
Lecture and laboratory (2+1.5)	

One Table B Liberal Studies Course	Open Elective
Total (excluding liberal studies) 13.5h	Total (excluding electives) 9h

Semester 6:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Epidemiology: Research Methods (ENH 522) *Lecture (3)*	Occupational Hygiene II (OHS 621) *Lecture and laboratory (3+1)*
Ergonomics (OHS 516) *Lecture (3)*	Ergonomics (OHS 516) *Lecture (3)*
Safety Control Methods (OHS 623) *Lecture and laboratory (3+1)*	Safety Control Methods (OHS 623) *Lecture and laboratory (3+1)*
The Politics of Work and Labour (POG 319) *Lecture (3)*	One Table B Liberal Studies Course
One Table B Liberal Studies Course	Open Elective
Total (excluding liberal studies) 13h	Total (excluding electives) 11h

* Note: New course to cover topic areas identified as a gap in the current program

Semester 7:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Systems Management I (OHS 718) *Lecture (3)*	Risk Assessment (ENH 825) *Lecture (3)*
Sectoral Applications I (OHS 723) *Lecture and laboratory (3+1)*	Disability Management(OHS 477) *Lecture (3)*
Fire Safety Management (OHS 833) *Lecture (3)*	Fire and Radiation Safety (OHS 709) *Lecture (3)*
Field Project (ENH 66A/B) or Research Project I (ENH 766) *Lecture (3)*	Health Promotion and Education (POH 705) *Lecture (3)*
One Table B Liberal Studies Course	Open Elective
Total (excluding liberal studies) 13h	Total (excluding elective) 12h

Semester 8:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Risk Assessment (ENH 825) *Lecture (3)*	Sectoral Applications (OHS 800) *Lecture and laboratory (3+1)*
Seminars (OHS 810) *Lecture (3)*	OHSE Management Systems (OHS 811) *Lecture (3)*
Systems Management II (OHS 818) *Lecture (3)*	Advanced Health and Safety Law (OHS 806) *Lecture (3)*
Sectoral Applications II (OHS 823) *Lecture and laboratory (3+1)*	One Table B Liberal Studies Course
Field Project (ENH 66A/B)[#] or Research Project II (ENH 866)[#] *Lecture (3)*	Open Elective
Total 16h[#]	Total (excluding electives) 10h

[#]Students may substitute two courses from Professionally-Related Table 1

5. Comparison between the Proposed and the Current (2017/2018 Academic Year) 2-Year Programs

Public Health and Safety (renamed as 'Public Health')

Semester 1:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Wastewater Treatment Systems (ENH 324) *Lecture and laboratory (3+0.5)*	Introductory Toxicology (OHS 322) *Lecture (3)*
Introduction to Food Hygiene (ENH 333) *Lecture and laboratory (3+0.5)*	Agents of Communicable Disease (PUB 301) *Lecture and laboratory (3+1)*
Biostatistics (ENH 440) *Lecture (3)*	Food Hygiene (ENH 333) *Lecture (3)*
Applied Ecology (ENH 617) *Lecture (3)*	Occupational Health and Safety (OHS 508) *Lecture (3)*
Occupational Health (OHS 508) *Lecture (3)*	Pollution and Waste Management (ENH 524) *Lecture (3)*
Foundations of Pathophysiology (ENH 220) *Lecture (3)*	Environmental Health Law (ENH 121) *Lecture (3)*
Health Law (ENH 121) *Lecture (3)*	
Total 22h	Total 16h

Semester 2:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Introduction to Epidemiology (ENH 122) *Lecture (3)*	Pathophysiology (ENH 220) *Lecture (3)*
Housing (ENH 325) *Lecture (3)*	Biostatistics (ENH 440) *Lecture (3)*
Water Quality (ENH 424) *Lecture and laboratory (3+0.5)*	Determinants of Health (POH 201) *Lecture (3)*
Food Hygiene: Safe Food Handling (ENH 433) *Lecture and laboratory (3+0.5)*	Parasitology and Pest Control (ENH 610) *Lecture and laboratory (3+1)*
Epidemology: Research Methods (ENH 522) *Lecture (3)*	Epidemiology (ENH 122) *Lecture (3)*
Occupational Health and Safety Law (OHS 208) *Lecture (3)*	Water Quality I (PUB 409) *Lecture and laboratory (3+1)*
Hazard Recognition and Control (OHS 608) *Lecture (3)*	Housing and Built Environments (ENH 325) *Lecture (3)*
Total 22h	Total 23h

Semester 3:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Pollution Control (ENH 524) *Lecture (3)*	Communicable Disease Control (PUB 501) *Lecture (3)*
Epidemiology: Communicable Diseases I (ENH 322) *Lecture (2)*	Research Methods (ENH 522) *Lecture (3)*
Parasitology (ENH 610) *Lecture and laboratory (3+1)*	Food Safety (PUB 508) *Lecture (3)*
Health Education (ENH 712) *Lecture (3)*	Health Education and Promotion (POH 705) *Lecture (3)*
Public Health Law (ENH 721) *Lecture (3)*	Infection Control (ENH 505) *Lecture (3)*
Food Hygiene: Food Pathogens (ENH 733) *Lecture (3)*	Risk Assessment (ENH 825) *Lecture (3)*
Introductory Toxicology (OHS 322)	

Lecture (3)	
Total 21h	Total 18h

Semester 4:

Public Health and Safety (**Current**)	Public Health (**Proposed**)
Epidemiology: Communicable Diseases II (ENH 422)	Wastewater Treatment Systems (ENH 324)
Lecture (2)	*Lecture and laboratory (3+1)*
International Health (ENH 429)	Water Quality II (PUB 609)
Lecture (3)	*Lecture and laboratory (3+1)*
Infection Control (ENH 505)	Air Quality (PUB 607)
Lecture (3)	*Lecture (3)*
Seminars (ENH 809)	Food Safety Management (PUB 808)
Lecture (3)	*Lecture and laboratory (3+1)*
Health Promotion: Planning and Evaluation (ENH 816)	Public Health Law (ENH 721)
Lecture (3)	*Lecture (3)*
Health Administration (ENH 821)	Advanced Professional Practice (PUB 800)
Lecture (3)	*Lecture (3)*
Risk Assessment (ENH 825)	Environment and Emergencies (POH 407)
Lecture (3)	*Lecture (3)*
Emergency Measures and Planning	
Lecture (3)	
Total 23h	Total 24h

Two year program in Occupational Health and Safety
Semester 1:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Health Law (ENH 121)	Environmental Health Law (ENH 121)
Lecture (3)	*Lecture (3)*
Foundations of Pathophysiology (ENH 220)	Introductory Toxicology (OHS 322)
Lecture (3)	*Lecture (3)*
Biostatistics (ENH 440)	Introductory Organic Chemistry (CHY 152)
Lecture (3)	*Lecture (3)*
Applied Ecology (ENH 617)	Biological Agents (OHS 301)
Lecture (3)	*Lecture (3)*
Physical Agents (OHS 314)	Accident Theory (OHS 323)
Lecture and laboratory (2+1.5)	*Lecture (3)*
Health Effects of Radiation (OHS 319)	Systems Safety (OHS 509)
Lecture and laboratory (3+1)	*Lecture (3)*
Introductory Toxicology (OHS 322)	
Lecture (3)	
Total 19.5h	Total 18h

Semester 2:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Introduction to Epidemiology (ENH 122)	Pathophysiology (ENH 220)
Lecture (3)	*Lecture (3)*
Epidemiology: Research Methods (ENH 522)	Biostatistics (ENH 440)
Lecture (3)	*Lecture (3)*
Occupational Health and Safety Law (OHS 208)	Determinants of Health (POH 201)
Lecture (3)	*Lecture (3)*
Accident Theory and Analysis (OHS 323)	Occupational Hygiene I (OHS 421)
Lecture (3)	*Lecture and laboratory (3+1)*
Occupational Hygiene Methods I (OHS 421)	Epidemiology (ENH 122)
Lecture and laboratory (2+1.5)	*Lecture (3)*

Advanced Toxicology (OHS 422)	Physical Agents (OHS 314)
Lecture (3)	*Lecture and laboratory (3+1)*
Integrated Disability Management (OHS 477)	Environment and Emergencies (POH 407)
Lecture (3)	*Lecture (3)*
Total 21.5h	Total 20h

Semester 3:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Epidemiology: Communicable Diseases I (ENH 322)	Research Methods (ENH 522)
Lecture (2)	*Lecture (3)*
Health Education (ENH 712)	Safety Evaluation Techniques (OHS 523)
Lecture (3)	*Lecture (3)*
Safety Evaluation Techniques (OHS 523)	Risk Assessment (ENH 825)
Lecture (3)	*Lecture (3)*
Occupational Hygiene Methods II (OHS 621)	Disability Management (OHS 477)
Lecture and laboratory (2+1.5)	*Lecture (3)*
Systems Management I (OHS 718)	Fire and Radiation Safety (OHS 709)
Lecture (3)	*Lecture (3)*
Sectoral Applications I (OHS 723)	Health Education and Promotion (POH 705)
Lecture and laboratory (3+1)	*Lecture (3)*
Fire Safety Management (OHS 833)	
Lecture (3)	
Total 21.5h	Total 18h

Semester 4:

Occupational Health and Safety (**Current**)	Occupational Health and Safety (**Proposed**)
Epidemiology: Communicable Diseases II (OHS 422)	Advanced Toxicology (OHS 422)
Lecture (2)	*Lecture (3)*
Infection Control (ENH 505)	Occupational Hygiene II (OHS 621)
Lecture (3)	*Lecture and laboratory (3+1)*
Risk Assessment (ENH 825)	Ergonomics (OHS 516)
Lecture (3)	*Lecture (3)*
Ergonomics (OHS 516)	Safety Control Methods (OHS 623)
Lecture (3)	*Lecture and laboratory (3+1)*
Safety Control Methods (OHS 623)	OHSE Management Systems (OHS 811)
Lecture and laboratory (3+1)	*Lecture (3)*
Seminars (OHS 810)	Sectoral Applications (OHS 800)
Lecture (3)	*Lecture and laboratory (3+1)*
Systems Management II (OHS 818)	Advanced Health and Safety Law (OHS 806)
Lecture (3)	*Lecture (3)*
Sectoral Applications II (OHS 823)	
Lecture and laboratory (3+1)	
Total 25h	Total 24h

6. Proposed Admissions Changes

Program	Current Admission Requirements	Proposed Admission Requirements
OC001 – PH 4yr	OSSD with a minimum of six Grade 12 U or M courses including English, and one of Chemistry (SCH4U) or Biology (SBI4U). Recommended: Grade 12 U courses in Physics and Mathematics	OSSD with a minimum of six Grade 12 U or M courses including English, and one of Chemistry (SCH4U) or Biology (SBI4U).
OC003 – OHS 4yr	Same as OC001	Same as OC001
OC005 – PH 2yr	Bachelor's degree or higher from an accredited university including three (lower or upper level) Liberal Studies courses. Applicants whose degree	A Bachelor's degree or higher from an accredited university including three (lower or upper level) Liberal Studies courses/liberal studies.

	does not include credit for at least one course in each of chemistry and microbiology will be required to successfully pass CHY 104 and or/ENH 222 before beginning the third semester of the option.	Applicants must have as part of their degree (or other post-secondary education) credit for at least a single-term course in chemistry (equivalent to CHY 104).
OC006 – OHS 2yr	Bachelor's degree or higher from an accredited university including three (lower or upper level) Liberal Studies courses. Applicants must have as part of their degree (or other post-secondary education) credit for at least a single-term course in each chemistry and organic chemistry (equivalent to CHY 104 and CHY 152). Applicants whose degree does not include credit for at least one course in each of physics and microbiology will be required to successfully pass PCS 106 and or/ENH 222 before beginning the third semester of the option.	Same as OC005

7. Co-Op Program Structures

Co-operative options in both occupational health and safety and public health will continue to be provided. This will enable graduating students to gain 20 month's work experience integrated into their academic studies. Current admission requirements for the co-op option will remain unchanged, i.e. students can apply during their third semester of study and must have a cumulative GPA (CGPA) of 2.67 and submit a cover letter and resume through the on-line submission system of the Co-Op Office. In previous years, students were also interviewed by the co-op coordinator as part of the application process; however, this practice was phased out a couple of years ago. To remain in the co-op program, students need to maintain 'clear' academic standing and maintain the minimum CGPA.

The sequencing of the academic and work terms will be the same as for the current programs, and is shown below:

Term	YR 1	YR 2	YR 3	YR 4	YR 5
Fall	SEM 1	SEM 3	WKT 210	SEM 6	SEM 7
Winter	SEM 2	SEM 4	SEM 5	WKT 410	SEM 8
Summer	Free	WKT 110	WKT 310	WKT 510	Graduate

8. Implications for Certificate Programs Offered by the Chang School
The SOPHe is the academic home for three certificate's offered by the Chang School, i.e. *Certificate in Occupational Health and Safety*, the *Certificate in Advanced Safety Management*, and the recently introduced (i.e. for Fall 2018) *Certificate in Occupational Health and Safety Leadership*. These Certificate programs consist of degree-equivalent courses from both of the current Public Health and Safety and Occupational Health and Safety programs.

The SOPHe consulted with the Chang School about implications of the degree modifications and came to an agreement on a new curriculum for the three certificates. A basic principle directing these modifications is to ensure that as much of the current certificate programs can be retained while updating and streamlining the programs to reflect current practice and to include the updated degree curriculum. The resulting implications for the certificate programs are:
- The three certificates will be retained – the *Certificate in Occupational Health and Safety*, the *Certificate in Advanced Safety Management*, and the *Certificate in OHS Leadership*.
- The *Certificate in Occupational Health and Safety* is the base certificate and is the prerequisite for the other two certificates.
- The number of courses in the certificates will remain the same (i.e. total of 20 courses across all 3 certificates), because this level of content is required to meet the BCRSP educational requirements.

- A summary of proposed degree changes that have implications for the existing Certificate in OHS are: the equivalent of CVOH 221 not retained in new degree; OHS 718 revised/merged to form new course OHS 811; OHS 208 and OHS 608 retained in new degree but only as open electives, with OHS 608 to only be taught by Chang School as COHS 608.

9. Implications for Current Minors

The current Minors that contain courses relevant to this proposal are:

- Labour and Employment Relations Minor – no change
- Law Minor – no change
- Occupational Health and Safety Minor – *changes as follows…*

Current Courses Impacted by this Proposal	Impact of the Proposal on the Minor
OHS 208 – Occupational Health and Safety Law	*OHS 208* retained, but is not core course – to be offered as an open elective
OHS 421 – Occupational Hygiene Methods 1	Course retained, but renamed as OHS 421 – *Occupational Hygiene I*
OHS 477 – Integrated Disability Management	Due to prerequisite requirements on OHS 477, this course will be replaced in the minor with *OHS 323 – Accident theory*
OHS 508 – Occupational Health	Course retained, but content slightly broadened and course renamed as OHS 508 – *Occupational Health and Safety*
OHS 608 – Hazard Recognition and Control	Course discontinued in the PH degree, but retained as an open elective, with delivery through the Chang School.
OHS 718 – Systems Management 1	Course discontinued in the OHS degree and replaced in the degree with OHS 811 – *OHSE Management Systems*.

10. Additional Resources

In terms of resources, there will be pressure on the School during the phase-in period. With faculty currently teaching four courses per year, there will clearly be a need for extra sessional faculty to cover the extra teaching requirements. It is also considered that there will be extra space requirements during the transition period. There may also be a need for new tenure-stream faculty, both because of the extra workload required for the transition period, but also because of the number of retirements recently experienced and potentially occurring within SOPHe.

It is important to state the main driver for this program change is the new university curriculum framework for undergraduate programs. The proposed curricular modifications seek to provide an efficient and stream-lined program that reflects modern pedagogical principles along with providing students with the appropriate knowledge and skills they need to address both current and future professional challenges. Once fully implemented, the new program contains less courses in total and less student contact hours, enabling the School to be more sustainable and viable.

11. Phase-In/Phase-Out Plan

A phase-in/phase-out plan of the programs' curricula has been developed in consultation with Curriculum Management.

Recommendation
- Having satisfied itself of the merit of this proposal, the Academic Standards Committee recommends: *That Senate approve the SOPHe Major Curriculum Modification*

C. SCHOOL OF ACCOUNTING & FINANCE – CO-OP RESEQUENCING PROPOSAL

1. Introduction and Rationale

The School of Accounting & Finance (SAF) proposes to amend the sequence of academic study and co-operative work terms in its Accounting Co-operative Education Program, commencing in the 2019-2020 academic year.

Currently, students in the co-op option of the accounting major spend two years in an academic setting studying core concepts prior to their first spring/summer work term. The proposed change of the co-op work term sequence will accelerate the first co-op work term so that it takes place in the winter semester of year two and coincides with "busy season" of accounting firms and industry employers. Subsequent work terms will also be shifted to accommodate work terms in peak periods of hiring within the industry.
Facilitating the availability of students during peak hiring seasons increases the number of co-op opportunities available and allows the department to offer the co-op option to a wider population of SAF Accounting students.

There are currently 1,189 undergraduate students enrolled in the SAF. Accounting majors represent 66% of the enrolments. At steady state, total enrolments in our undergraduate accounting specialization are projected to be approximately 700 students by 2020, with a steady-state annual co-op enrolment number of 140 students by 2021-2022.

Current and Projected Accounting Co-op Enrolments

	2017 - 2018	2018 - 2019	2019 -2020 (new calendar changes come into effect)	2020 -2021 (first time the new work term sequence comes into effect)	2021 - 2022
Year 2	49	80	100	130	140
Year 3	30	49	80	100	130
Year 4	20	30	49	80	100
Total Accounting Co-op Enrolments	99	159	229	310	385

Expanding student participation in co-op will also support SAF students who may not have the cultural and family connections that sometimes lead to the first job. These programs help students from diverse backgrounds, many of them new to Canada, get their foot through the employment door.

The goal is to ensure that co-op students acquire the necessary experience and technical training in their initial work term so that subsequent work terms scheduled in the "off-season" will ensure they are placed on work assignments that are progressively sophisticated in nature and commensurate with their experience. This aligns with the practices of university comparator accounting co-op programs such as Waterloo, Guelph and Brock, to name a few. Additionally, the proposed change will ensure that students acquire the requisite hours to become eligible for a public accounting license with CPA Ontario.

2. Comparison between the Proposed and the Current (2017/2018 Academic Year) Curricula

Current Accounting Co-op Sequence　　　　　　　　　　**Proposed Accounting Co-op Sequence**

	Fall	Winter	Spring/Summer		Fall	Winter	Spring/Summer
Year 1	BUS100 BUS221 CAF199 GMS200 MHR405 QMS130 LIBA	AFA 100 AFF 210 CMN 279 QMS 230 LIBA	Off		BUS100 BUS221 CAF199 GMS200 MHR405 QMS130 LIBA	AFA 100 AFF 210 CMN 279 QMS 230 LIBA	Off
Year 2	AFA200 AFA300 AFF310 ECN104* LAW122*	AFA400 AFF420 ECN204* MKT100* LIBA	Work		AFA200 AFA300 AFF310 ECN104* LAW122*	Work 1	AFA400 AFF420 ECN204* (Offered through Chang School on a 13 week semester) MKT100*(Offered through Chang School on a 13 week semester) LIBA
Year 3	AFA500 AFA511 AFA708 AFF713 LIBB	Work	AFA615 AFA619 LIBB PR1 PR2		AFA500 AFA511 AFA708 AFF713 LIBB	Work 2	AFA615 AFA619 LIBB PR1 PR2
Year 4	Work	AFA518 AFA717 BUS800 PR3 PR4	Work		AFA518 AFA717 BUS800 PR3 PR4	Work 3	Work 4
Year 5	AFA716 AFA817 AFA819 LIBB PR5				AFA716 AFA817 AFA819 LIBB PR5		

3. Summary of the Proposed Curriculum Changes*

Year 1- 2019-2020: Year 1 programming for Accounting (and Finance) students remains unchanged.

Year 2 - 2020-2021: Accounting and Finance students would still complete a common second year of course work but those students accepted to the Accounting co-op option would take their 4th Semester course work in the Spring/Summer term. To accommodate the resequencing, course work traditionally taken by accounting co-op majors in the winter of year 2 (Semester 4) will need to be offered in the spring/summer term. The courses include: AFA400 (currently offered in the Spring/Summer term), AFF420, ECN204 (currently offered by Chang School), MKTl00 (currently offered by Chang School) and a Liberal Arts A. The AFA400 and AFF420 courses can be taught by RFA faculty or CUPE faculty, and the SAF anticipates no difficulty in finding an instructor for each course. There is also no 'net gain' of courses to be offered, as the only new course is AFF420, but this new course will be more than offset by offering AFA518 and AFA717 only in the fall semester of Year 4 (they are currently offered in both fall and winter semesters).

Year 3 - 2021-2022: Programming for co-op and non-co-op accounting majors remains unchanged.

Year 4- 2022-2023: To accommodate the resequencing, course work traditionally taken by accounting co-op majors in the winter of year 4 (Semester 7) will need to be offered in the fall term. The courses include: AFA518, AFA717, BUS800 and two courses from the Professionally Related tables. Currently, AFA518 and AFA717 run in both academic terms. Students not in co-op take AFA518 and AFA717 in the fall term. Therefore, the Accounting Department does not plan to offer AFA518 or AFA717 in the winter term. However, the department will need to ensure that these courses are offered for the current co-op cohorts until 2022-2023. BUS800 runs in both terms and the department and course coordinators have been consulted.

*Note: The operationalization of new or revised curriculum may require that implementation timelines be adjusted.

Recommendation
Having satisfied itself of the merit of this proposal, the Academic Standards Committee recommends: *That Senate approve the School of Accounting & Finance Co-op resequencing proposal.*

D. RTA SCHOOL OF MEDIA – DISCONTINUATION OF CONCENTRATIONS IN NEW MEDIA PROGRAM

1. Introduction
The RTA School of Media currently offers 5 optional concentrations in its New Media BFA. These concentrations were introduced as part of a larger curriculum renewal and restructuring launched in 2013, with the rationale that they would help outline our core areas of study to students and guide them in their course selection process. After a review by our School's curriculum committee and assessing student feedback, we do not believe our Concentrations have had a positive impact on curriculum. The demand for them is low, and they introduce an additional layer of complexity to the course selection process which does not improve the student experience.

2. Proposed Changes
We propose discontinuing all Concentrations in the New Media BFA for students admitted in **Fall 2019** and later.

3. Impact on Learning Outcomes
Our concentrations are optional, therefore removing them will not impact our current learning outcomes. However, we still believe that there is a need to identify areas of practice or "clusters" of thematically related courses for students within our curriculum. We are currently exploring less formal alternatives to the Concentrations model such as online tools and course maps to communicate these curricular paths to students.

4. Phase-out Plan
A statement will be included in the UGRD Calendar as an informational item as of the year when concentrations are no longer provided as an option for students. Once entirely phased-out, any references to Concentrations will be removed from the URGD Calendar.

The following notice allows students admitted in 2018 to Year 1 (and those admitted prior to 2018) to complete concentrations (students who are admitted to Year 1 2018-2019 are coming into the program with concentrations still part of the curriculum/with the expectation that this is an option they can pursue beginning in their Year 2 (2019-2020):

Suggested notices in 2019-2020 UGRD Calendar under Concentrations:

> https://www.ryerson.ca/calendar/2018-2019/programs/fcad/new_media/
> *Optional Concentrations will be last offered to students admitted to BFA, New Media as of Fall 2018. Optional Concentrations will no longer be offered to students admitted to BFA, New Media as of Fall 2019.*

The RTA School of Media will continue to offer sufficient Core Electives to ensure that students admitted F2018 and before will continue to be able to declare and complete the optional concentrations, as long as

there is a demand. Also note that the change does not require adjusting semester requirements for Core Electives Table I.

Recommendation
- Having satisfied itself of the merit of this proposal, the Academic Standards Committee recommends: *That Senate approve the RTA School of Media's discontinuation of concentrations in the New Media program.*

E. SCHOOL OF FASHION –MAJOR CURRICULUM MODIFICATION PROPOSAL

1. Introduction
The School of Fashion proposes a restructuring of its curriculum from two distinct programs (Bachelor of Design, Fashion Communication; and Bachelor of Design, Fashion Design) to a single program—
Bachelor of Design, Fashion) with five optional concentrations, with implementation to commence in Fall 2020. The overarching goals for the proposed curriculum changes include:

1. Increased curricular flexibility and student choice
2. Expansion of possible career pathways open to students (addressing Fashion as an expanding discipline/profession)
3. Experiential learning and increased academic intensity
4. Improving writing skills
5. Ensuring reinforcement, proficiency and expertise through curriculum mapping
6. Raising the profile of diversity and inclusion

2. Summary of the Proposed Curriculum Changes
Core Courses (13 required) 1st – 4th year
In the School of Fashion's proposed curriculum, thirteen (13) *Core* courses form the backbone structure for disciplinary competence in the field of Fashion. Found intensively in the first year (six courses), and then sequentially (two per year) through the remaining three years of the program, these required and common courses bring all Fashion students together to explore, develop, and build expertise, skills and knowledge across a wide range of relevant professional and intellectual areas. See Figure I, turquois shaded boxes.
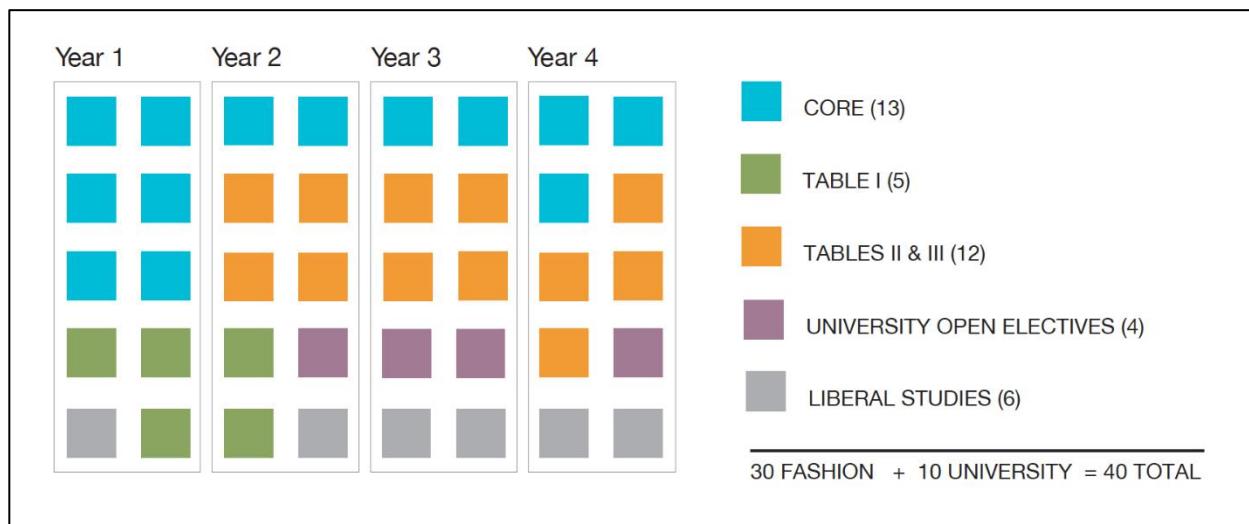
Figure 1: School of Fashion Proposed Curricular Structure

In the first year, Design Literacy courses introduce students to the foundational design skills and practices that inform the fabric of Fashion as a creative and visual field. Fashion Systems and Fashion Systems Applications help students understand the world of Fashion from industry and institutional perspectives. Students learn how various economic and social networks in the business of fashion determine the function and structure of contemporary fashion systems both locally and globally. In Fashion Theory and Fashion History in Context, students begin to explore the theoretical and cultural aspects of fashion studies as an emerging academic field and area of intellectual inquiry. Students unpack the underlying symbolic and ideological frameworks behind the social relevance and meaning of dress practices and embodied aspects of fashion in forming subjectivities and group identities historically and in the present media landscape.

Table I (*Fundamentals* Courses—Students choose 5)
Fundamentals courses lay the groundwork for upper level electives in *Concentration* areas in Years 1 and 2 of the program. Students choose five courses from Table I (see Figure 1, lime green shaded boxes). Designed to build on the 1st-year *Core* program of study, these courses introduce students to the diversity and breadth of knowledge and skills available in Fashion as a both a theoretical and practical discipline. *Fundamentals* courses also lay the foundation for upper-level electives that require specific pre-requisite knowledge and expertise. Courses are offered in a range of areas, roughly corresponding to the Concentration areas: Fashion Communication (FFC); Fashion Design (FFD); Fashion Studies (FFS); Design Leadership (FDL); and Materials and Fabrication (FMF). Table I FSN courses (101: Textiles, and 124: Illustration: Fundamentals of Figure Drawing) are common to more than one *Concentration* area.

Table II and III (*Concentration* area Electives—Students choose 12 courses)
In our proposed curriculum, students may choose to specialize in one *Concentration* area, gaining in-depth knowledge of, and skills in, Fashion Design, Fashion Communication, Fashion Studies, Design Leadership or Materials and Fabrication (See Figure 1, orange shaded boxes). Conversely, students may choose to concentrate in two or more areas in order to tailor course offerings to their specific curricular needs. Some may wish to be more interdisciplinary in their approach, combining two or more areas in order to excel in a career path of their own choosing (for example: Art Direction, Fashion Entrepreneurship, Research and Technology, Innovation and Social Justice, Critical and Cultural theory in Fashion and the Body leading to Post-Graduate studies, to name a few).

Elective Areas Outside Fashion
In our current curriculum, a selected range of both required and elective courses were drawn from areas outside Fashion (such as Marketing, Graphic Communication Management, Professional Communication, Retail Management, Sociology). Most of these courses have moved to the open elective table (see Figure 1, lavender shaded boxes). A few courses have been deleted because the subject matter is no longer relevant due to changing requirements of the discipline. The vast majority of these courses are still available to students through Table II and III electives. In a few special cases, these courses may still be used to count towards a Concentration area in Fashion (i.e., Marketing courses for Design Leadership).

Liberal Studies
In keeping with university requirements, we have maintained depth and breadth through the integration of six (6) liberal studies electives as illustrated in Figure 1, grey shaded boxes.

Capstone
In the proposed curriculum all students enroll in FSN 90A/B Capstone A/B in the fourth year of the program. This essentially remains unchanged as in the current curriculum all Fashion Communication students enrolled in FFC 41 A/B – Fashion Communication Senior Project and all Fashion Design Students

enrolled in FFD 40 A/B - Fashion Design Senior Project, both of which are equivalent to Capstone FSN 90A/B.

Structural Changes in Delivery

From a structural perspective, the proposed curriculum includes a reduction in courses and required hours. Three key developments are outlined in this section. The first involves the separation or combination of learning outcomes housed in specific courses. In our current curriculum, we have a few examples of courses with multiple segments, also called *umbrella courses* that are scheduled 6 or more hours per week. The structure of multi-segment courses is problematic with consideration to student workload, timetabling, and impact on GPA. Given that these courses have proven to be unsustainable from pedagogical and administrative perspectives, we have separated these umbrella courses into distinct classes with their own applicable course code designation.

The second structural change centers on course delivery. The vast majority of lecture-based courses in Fashion are currently delivered in a 3-hour block. Our revised curriculum has structured all large lecture courses as lecture and tutorial (2+1). We anticipate that scheduling requests of 2 hours rather than 3 will ease the constraints of timetabling so that students have more accommodating weekly schedules. Secondly, focusing on writing skills, small seminar discussions and presentations is difficult to incorporate and support within the structure of a 3-hour lecture format.

The third structural change involves student internship requirements. In the proposed curriculum, FSN 402 – Internship has been deleted and replaced with FSN 709 - Professional Aspects of Fashion, a core course in 4th year. This new course would integrate mandatory career preparedness seminars and a written reflection component. In recognition of these additional learning outcomes, the required hours were reduced from 400 to 250.

3. Comparison between the Proposed and the Current (2017/2018 Academic Year) Curricula

Existing Curriculum

Code	Course	Format	Hours	Required/Open Elective
FFC 200	Topics in Fashion Photography	Lecture	3	Required
FFC 300	Art Direction for Photography	Lab	3	Elective
FFC 301	Packaging Design	Lecture + Lab	3	Elective
FFC 303	Communication Design	Lab	3	Required
FFC 304	Intermediate Illustration for Communication I	Lab	3	Required
FFC 404	Intermediate Illustration for Communication II	Lab	3	Required
FFC 32A/B	Fashion Promotion	Lab / Lab	6	Elective
FFC 400	Communication and Emerging Media	Lab	3	Required
FFC 403	Communication Design II	Lab	3	Required
FFC 503	Digital Illustration and Product Development	Lab	6	Required
FFC 552	Typography and Graphic Production	Lab	3	Required
FFC 603	Advertising Design	Lecture + Lab	6	Required
FFC 652	Typography and Publication Design	Lab	3	Required
FFD 200	Textiles II	Lecture + Lab	3	Required
FFD 300	Computer Aided Design I	Lab	3	Required
FFD 303	Integrated Visual Communication I	Lab	3	Required
FFD 313	Intermediate Fashion Design I	Lab	9	Required
FFD 314	Intermediate Illustration for Design I	Lab	3	Required
FFD 414	Intermediate Illustration for Design II	Lab	3	Required
FFD 400	Computer Aided Design II	Lab	3	Required
FFD 405	Grading	Lab	3	Required
FFD 403	Integrated Visual Communication II	Lab	3	Required
FFD 413	Intermediate Fashion Design II	Lab	6	Required
FFD 501	Contour Design	Lab	3	Elective
FFD 502	Fur Design	Lab	3	Elective
FFD 503	Knitwear Design	Lab	3	Elective
FFD 504	Ladieswear Block Development	Lab	3	Elective

Proposed Curriculum

Code	Course	Format	Hours	Required/Open Elective
FDL 140	Managing Fashion Enterprises	Lecture	3	Elective
FDL 150	Project Management	Lecture	3	Elective
FDL 240	New Fashion Business Models	Lecture	3	Elective
FDL 340	Strategic Communications in Fashion	Lecture	3	Elective
FDL 540	Strategic Leadership in Fashion	Lecture	3	Elective
FDL 620	Special Topics in Design Leadership	Lab	3	Elective
FDL 640	Fashion Futures	Lecture	3	Elective
FDL 850	Social Innovation in Fashion	Lecture	3	Elective
FFC 200	Fashion Photography	Studio	3	Elective
FFC 300	Art Direction for the Still and Moving Image	Studio	3	Elective
FFC 301	Packaging Design	Studio	3	Elective
FFC 303	Communication Design I	Studio	3	Elective
FFC 224	Illustration: The Fashioned Body	Studio	3	Elective
FDL 806	Fashion Promotion	Lab	3	Elective
FFC 400	Communication and Emerging Media	Lecture + Lab	3	Elective
FFC 403	Communication Design II	Studio	3	Elective
FFC 324	Digital Illustration: Lifestyle and Products	Studio	3	Elective
FFC 605	Product Development	Studio	3	Elective
FFC 552	Typography and Graphic Design	Studio	3	Elective
FFC 505	Advertising Design	Studio	3	Elective
FFC 405	Web Design	Studio	3	Elective
FFC 652	Digital Publication Design	Studio	3	Elective
FFC 100	Image Making and Media Methods	Studio	3	Elective
FFC 620	Special Topics in Fashion Communication	Lab	3	Elective
FFC 705	Advanced Image Making	Studio	3	Elective
FFC 750	Collaborative Studio	Studio	3	Elective
FFD 300	Computer Aided Design I	Lab	3	Elective
FFD 213	Fashion Design II	Lab	3	Elective
FFD 410	Draping I	Lab	3	Elective
FFD 324	Illustration for Fashion Design	Lab	3	Elective
FFD 400	Computer Aided Design II	Lab	3	Elective
FFD 303	Digital Illustration for Fashion Design	Lab	3	Elective
FFD 610	Draping II	Lab	3	Elective
FFD 501	Contour Design	Lab	3	Elective
FMF 602	Fur Design	Studio	3	Elective
FFD 503	Knitwear Design	Lab	3	Elective
FFD 504	Ladieswear Block Development	Lab	3	Elective

Status columns (between existing and proposed): Retired Course, Multi-segment, Modified, Equivalent, New Course. Classification columns (right): Core, Table I, Table II & III.

Code	Title	Format	Units	Type
FFD 513	Advanced Fashion Design I	Lab	6	Required
FFD 520	Menswear Development	Lab	3	Elective
FFD 613	Advanced Fashion Design II	Lab	6	Required
FFD 802	Strategic Production Management	Lab	3	Required
FSN 101	Textiles I	Lecture + Lab	4	Required
FSN 120	Fashion Design I	Lab	4	Required
FSN 220	Fashion Design II	Lab	3	Required
FSN 121	Fundamentals of Design and Colour I	Lecture + Lab	4	Required
FSN 122	Illustration I	Lab	3	Required
FSN 222	Illustration II	Lab	3	Required
FSN 123	Intro to Fashion	Lecture	3	Required
FSN 132	History of Art I	Lecture	3	Required
FSN 232	History of Art II	Lecture	3	Required
FSN 199	Fashion: The Industry	Lecture	3	CI Module
FSN 203	History of Design	Lecture	3	Required
FSN 209	Textile Design I	Lab	3	Elective
FSN 221	Fundamentals of Design and Colour II	Lab	3	Required
FSN 223	Fashion Concepts and Theory	Lecture	3	Required
FSN 302	History of Costume I	Lecture	3	Required
FSN 304	Introduction to Fashion Journalism	Lab	3	Elective
FSN 400	Fashion in International Markets	Lecture + Lab	3	Required
FSN 402	Internship	Lab	3	Required
FSN 500	Accessories Design I	Lab	3	Elective
FSN 501	Advanced Colour Theory	Lecture	3	Elective
FSN 502	Accessories Design II	Lab	3	Elective
FSN 503	Design, Text and Ideas	Lecture	3	Elective
FSN 504	Fashion Culture - Suffragettes to CEO's	Lecture	3	Elective
FSN 505	Textiles Design II	Lab	3	Elective
FSN 506	Surface Design	Lab	3	Elective
FSN 507	Product Data Management	Lab	3	Elective
FSN 508	World Fashion: Contemporary Perspectives	Lecture	3	Elective
FSN 556	Design and Cultural Diversity	Lecture	3	Elective

Code	Title	Format	Units	Type
FFD 513	Tailoring	Lab	3	Elective
FFD 520	Menswear Block Development	Lab	3	Elective
FFD 613	Fashion Design III	Lab	6	Elective
FFD 620	Special Topics in Fashion Design	Lab	3	Elective
FFD 780	Couture Techniques	Lab	3	Elective
FFD 790	Bespoke Tailoring	Lab	3	Elective
FFS 102	Dress, The Body and Identity	Lecture + Lab	3	Elective
FFS 511	Fashion and Material Culture	Lecture	3	Elective
FFS 610	Special Topics in Fashion History and Theory	Lab	3	Elective
FFS 702	Fashion and the Abject Body	Lab	3	Elective
FMF 130	Exploration of Material Fundamentals	Studio	3	Elective
FMF 230	Creative Process: Motif to Textile	Studio	3	Elective
FMF 330	Prototyping and Modelling	Studio	3	Elective
FMF 530	Wearable Technologies	Studio	3	Elective
FMF 601	Textile Development	Studio	3	Elective
FMF 620	Special Topics in Materials and Fabrication	Lab	3	Elective
FMF 635	Advanced Accessory Design	Studio	3	Elective
FMF 702	Leather Design	Studio	3	Elective
FSN 101	Textiles	Lecture + Lab	3	Elective
FFD 113	Fashion Design I	Lab	6	Elective
FSN 121	Design Literacy I	Studio	3	Required
FSN 124	Illustration: Fundamentals of Figure Drawing	Studio	3	Elective
FSN 105	Fashion Systems	Lecture + Tutoria	3	Required
FSN 205	Fashion Systems Application	Lecture + Tutoria	3	Required
FFS 110	Art and Historical Change: Revival and Renewal	Lecture + Lab	3	Elective
FSN 203	History of Design	Lecture + Lab	3	Required
FSN 209	Digital Textile Design	Studio	3	Elective
FSN 221	Design Literacy II	Studio	3	Required
FSN 223	Fashion Theory	Lecture + Lab	3	Required
FSN 302	History of Dress	Lecture + Lab	3	Elective
FSN 304	Fashion Journalism and Copywriting	Lecture + Lab	3	Elective
FSN 400	Fashion in International Markets	Lecture + Lab	3	Elective
FSN 709	Professional Aspects of Fashion	Lecture + Lab	3	Required
FMF 235	Jewellery Design	Studio	3	Elective
FMF 335	Millinery Design	Studio	3	Elective
FSN 502	Small Goods: Leather and Fur Design	Studio	3	Required
FSN 503	Critical Issues in Design	Lecture	3	Required
FSN 504	Fashion Culture - Suffragettes to CEO's	Lecture	3	Elective
FSN 506	Surface Design	Lab	3	Elective
FSN 507	Digital Product Management	Lab	3	Elective
FFS 710	Post-Colonial Perspectives on Global Fashion	Lecture + Lab	3	Elective

Code	Title	Format	Credits	Type
FFS 402	Fashion and Modernity	Lecture	3	Elective
FSN 510	Fashion Film, Cinema and New Media	Lecture	3	Elective
FSN 555	History of Fashion Illustration and Photography	Lecture	3	Elective
FSN 598	Intermediate Special Topics I	Lab	3	Elective
FSN 599	Intermediate Special Topics II	Lab	3	Elective
FSN 698	Advanced Special Topics I	Lab	3	Elective
FSN 699	Advanced Special Topics II	Lab	3	Elective
FSN 700	Intermediate Illustration	Studio	3	Elective
FSN 703	Visual Merchandising and Display	Lecture	3	Elective
FSN 706	Fashion Event Planning	Lab	3	Elective
FSN 707	Research Methods in Fashion	Lecture / Tutorial	3	Required
FSN 710	Human Centred Design	Lecture + Lab	3	Elective
FSN 711	Curation and Exhibition	Lab	3	Elective
FSN 712	Creative Design	Lecture	3	Elective
FSN 224	Fashion History in Context	Lecture + Tutorial	3	Required
FSN 303	Design Thinking, Process and Methods	Lecture + Tutorial	3	Required
FSN 90A/B	Capstone	Lab / Lab	6	Required

Code	Title	Format	Credits	Type
FSN 704	Dress-Cultural Transformation	Lecture	3	Elective
FSN 509	Topics in Fashion History and Theory	Lecture	3	Elective
FSN 510	Fashion Film, Cinema and New Media	Lecture	3	Elective
FSN 555	History of Fashion Illustration	Lecture	3	Elective
FSN 598	Intermediate Special Topics I	Lab	3	Elective
FSN 599	Intermediate Special Topics II	Lab	3	Elective
FSN 698	Advanced Special Topics I	Lab	3	Elective
FSN 699	Advanced Special Topics II	Lab	3	Elective
FSN 700	Advanced Illustration	Lab	3	Elective
FSN 703	Visual Merchandising and Display	Lecture	3	Elective
FSN 705	Merchandise Analysis	Lecture	3	Elective
FSN 706	Fashion Event Planning	Lab	3	Elective
FSN 707	Research Methods in Fashion	Lecture / Tutorial	3	Required
FSN 710	Human Centred Design	Lab	3	Elective
FSN 711	Curation and Exhibition	Lab	3	Elective
FSN 712	Fashion: Creativity in Design	Lecture	3	Elective
FFC 41A/B	Fashion Communication Senior Project	Lab / Lab	6	Required
FFD 40A/B	Fashion Design Senior Project	Lab / Lab	6	Required

4. Program Balance

Currently, Fashion Design and Fashion Communication students take 45 courses in order to graduate, representing 152 course hours for Fashion Design Students and 143 for Fashion Communication Students. The proposed curriculum is structured upon 40 courses. This reduction in courses and corresponding course hour requirements should significantly improve the student experience while ensuring the flexibility to pursue one or more areas of concentration as well as exploring possible minors in a subject area of their choosing.

5. Changes to Admissions Requirements

In the proposed curriculum, one change to the academic requirements is proposed: deleting Grade 11U or M or Grade 12 U Mathematics from the subject prerequisites.

6. Revised Program Learning Outcomes

By the end of the program, students in fashion will be able to:

1. Contextualize the complex socio-cultural role of fashion, design and art through the study/application of history and theory.
2. Create solutions to address emerging issues in global fashion markets.
3. Facilitate ethical and sustainable business practices in fashion by assessing, employing and promoting strategies to mitigate environmental impact.
4. Facilitate ethical and sustainable business practices in fashion by assessing, employing and promoting equity, diversity and inclusion in working conditions, processes and practices.
5. Synthesize knowledge, concepts and skills by applying practice-based methods utilizing a variety of materials.
6. Demonstrate academic and professional integrity.
7. Apply knowledge and skills from a variety of inter-professional experiences such as exchanges, internships, fashion events and competitions.
8. Apply effective communication skills to share learning and to collaborate inter-professionally.
9 a. Think critically and present the resulting ideas in visual form.
   b. Think critically and articulate the resulting ideas in written form.
   c. Think critically and present the resulting ideas in oral form.
10 a. Think creatively and present the resulting ideas in visual form.
   b. Think creatively and articulate the resulting ideas in written form.
   c. Think creatively and present the resulting ideas in oral form.
11. Proactively monitor ongoing skill set, and identity areas for further development.
12. Work and collaborate effectively as part of a team through application of interpersonal skills including discussion, critique and negotiation.
13. Exercise initiative, personal responsibility and accountability in both personal and group contexts.

Concentration-Specific

14. Research, design and construct fashion products for diverse consumer groups. [Fashion Design]
15. Research, design and apply effective modes of communication using a variety of media for a wide range of diverse consumer groups. [Fashion Communication]
16. Apply and develop innovative leadership processes through design thinking in fashion business applications. [Design Leadership]
17. Investigate, explore, and discuss new understandings of the sociocultural significance of fashion, design and art through the study of history and theory. [Fashion Studies]
18. Ideate, explore, experiment and design with materials, techniques and fabrications. [Materials and Fabrication]

7. Other Programs Affected by Proposed Changes

The current Table III contains 76 professionally-related courses offered to Fashion students by the various academic units, of which students were required to select two. Our proposed curriculum requires students to take four Open Elective courses, allowing the flexibility to achieve a minor if they choose to do so. A number of popular courses offered by other academic units are still embedded within our proposed curriculum as electives under Tables II and III. Chairs of the various academic units were contacted, changes were discussed and ultimately approved.

Both the Fashion Minor and Creative Industries Module will be affected by the proposed changes.

The number of required courses for the Fashion Minor will be reduced from 3 to 2 and the number of required electives will be increased from 3 to 4 to allow for increased flexibility for out-of-program students to complete the 6 total course requirements. Other changes are related to substituting equivalent courses, removing discontinued courses, and adding new courses.

Current Minor
Minor in Fashion Studies

Required courses (3):

FSN 101	Textiles I
FSN 199	Fashion: The Industry
FSN 223	Fashion Concepts and Theory

Plus three (3) of the following:

FSN 302	History of Costume I
FSN 503	Design, Text and Ideas
FSN 504	Fashion Culture - Suffragettes to CEO's
FSN 508	World Fashion: Cont. Perspectives
FSN 509	Topics in Fashion History and Theory
FSN 510	Fashion Film, Cinema and New Media
FSN 555	History of Fashion Illustration
FSN 556	Design and Cultural Diversity
FSN 704	Dress-Cultural Transformation

Proposed Minor
Minor in Fashion Studies

Required courses (2):

		Prerequisite
FSN 199	Fashion: The Industry **OR**	None
FSN 105	Fashion Systems	None
FSN 223	Fashion Theory	None

Plus four (4) of the following:

FSN 302	History of Dress	None
FSN 503	Critical Issues in Design	FSN 203
FSN 504	Fashion Culture - Suffragettes to CEO's	FFS 102 or CRI 200
FSN 101	Textiles	None
FSN 510	Fashion Film, Cinema and New Media	FFS 110 or CRI 200
FSN 555	History of Fashion Illustration and Photography	FFS 110 or CRI 200
FFS 102	Dress, The Body, and Identity	FSN 223
FFS 110	Art and Historical Change: Revival and Renewal	None
FFS 402	Fashion and Modernity	None
FFS 511	Fashion and Material Culture	None
FFS 702	Fashion and the Abject Body	FFS 102 or CRI 200
FFS 710	Post Colonial Perspectives on Global Fashion	FFS 402
FSN 203	History of Design	FSN 224 or FFS 110
FSN 224	Fashion History in Context	None

For students in the School of Creative Industries, the Fashion Creative-Content Module, changes are related to substituting equivalent courses, removing discontinued courses, and adding new courses.

Current Creative Industries Module
The Fashion Industry: Markets, Aesthetics & Creativity

Required courses (2):

FSN 199	Fashion: The Industry

FSN 223	Fashion Concepts and Theory

Plus four (4) of the following:

CRI 860	The Big Night
FSN 101	Textiles I
FSN 132	History of Art I
FSN 203	History of Design
FSN 232	History of Art II
FSN 400	Fashion in International Markets
FSN 706	Fashion Event Planning
FSN 302	History of Costume I
FSN 503	Design, Text and Ideas
FSN 504	Fashion Culture - Suffragettes to CEO's
FSN 508	World Fashion: Contemporary Perspectives
FSN 509	Topics in Fashion History and Theory
FSN 510	Fashion Film, Cinema and New Media
FSN 555	History of Fashion Illustration
FSN 556	Design and Cultural Diversity
FSN 704	Dress-Cultural Transformation

Proposed Creative Industries Module
The Fashion Industry: Markets, Aesthetics & Creativity

Required courses (2):		Prerequisite
FSN 199	Fashion: The Industry **OR**	None
FSN 105	Fashion Systems	None
FSN 223	Fashion Theory	None

Plus four (4) of the following:

CRI 860	The Big Night	
FSN 203	History of Design	FSN 224 or FFS 110
FSN 400	Fashion in International Markets	FDL 850 or CRI 200
FSN 706	Fashion Event Planning	FSN 105 and FSN 223
FSN 302	History of Dress	None
FSN 503	Critical Issues in Design	FSN 203
FSN 504	Fashion Culture - Suffragettes to CEO's	FFS 102 or CRI 200
FSN 510	Fashion Film, Cinema and New Media	FFS 110 or CRI 200
FSN 555	History of Fashion Illustration and Photography	FFS 110 or CRI 200
FSN 224	Fashion History in Context	None
FFS 102	Dress, The Body, and Identity	FSN 223
FFS 110	Art and Historical Change: Revival and Renewal	None
FFS 402	Fashion and Modernity	None
FFS 511	Fashion and Material Culture	None
FFS 702	Fashion and the Abject Body	FFS 102 or CRI 200
FFS 710	Post Colonial Perspectives on Global Fashion	FFS 402

8. Phase-In/Phase-Out Plan

A phase-in/phase-out plan of the curriculum has been developed in consultation with Curriculum Management.

Recommendation

- Having satisfied itself of the merit of this proposal, the Academic Standards Committee recommends: *That Senate approve the School of Fashion's Major Curriculum Modification*

F. LIBERAL STUDIES – NEW COURSE PROPOSALS

1. Introduction

The Liberal Studies Curriculum Committee (LSCC) met on September 17, 2018 to review 18 liberal studies course proposals. The committee voted in favour of recommending 16 of the course proposals. While the remaining two proposals were not recommended for approval, feedback was provided to departments, and they were invited to revise and resubmit the proposals in the future. The ASC then reviewed the proposals, including those not recommended for approval, and upheld the recommendation of the LSCC.

The courses recommended for inclusion in the liberal studies curriculum effective Fall 2019 are listed in the table below, along with their calendar descriptions.

2. Proposed New Liberal Studies Courses (with calendar descriptions)

Course Code	Course Name + Calendar Description
DST300	**Whose Lives Matter?** - By asking "whose lives matter?" students are invited to explore how and why some lives have come to matter less than others, how this inequality is institutionalised in policies and practices of ableism, colonialism, racism, sexism and other forms of oppression, and how those marginalized have resisted this. The course will start from a disability standpoint as a way to think intersectionally about the various forms of oppression and domination, as well as resistance to them, with a focus on the Canadian context. (LL)
FRS606	**Franco Literature: Middle East, North Africa -** This course, taught in English, presents francophone works from the post-colonial period in the Middle East and North Africa. Students will study fiction by major authors such as Driss Chraibi, Tahar Ben Jelloun, and Assia Djebar using a socio-historical approach. They will examine the impact of major upheavals from the Franco-Algerian War to the Arab Spring and its aftermath. Topics include cultural and linguistic hybridity, orientalism, religious diversity, gender and sexuality, trauma, exile and diaspora. Antirequisite: FRE 605 (UL)
GRK200	**Athens through the Comic Poet's Eyes** - This course brings students to an intermediate level of proficiency in Attic Greek, deepening their understanding of the culture of Classical Athens. Language skills and cultural awareness will be developed by reading adapted Greek versions and English translations of 4 plays of the comic poet Aristophanes. Prerequisite: GRK100 (LL)
LAT100	**Introduction to Latin -** This course introduces students to the language and culture of classical Rome through adapted versions of the plays of the comic poet Plautus. Students acquire an elementary level proficiency in the Latin language with a working vocabulary of approximately 500 words. A wide range of cultural themes are explored through lectures, in-class discussions, and supplemental readings. (LL)
LAT200	**Latin and the Roman World -** This course brings students to an intermediate level of proficiency in Classical Latin. Grammar and vocabulary are acquired by reading adapted versions of speeches of the forensic orator Cicero. A series of cultural themes are also explored, providing both context to the language and content of the texts as well as insight into the Roman legacy of modern western culture. Prerequisite: LAT100 (LL)
LHUM1228	**Re: Thinking Gender -** Re: Thinking Gender critically examines the various and often contradictory ways we think and talk about gender in contemporary North American contexts. How do popular discourses shape the ways we experience, embody and "know" our genders? How – and by whom and to what ends – is our knowledge about gender constructed? To explore these questions, students analyze a range of historical and

	contemporary political, religious, scientific, medical and pop culture constructions of gender and investigate how conceptions of gender have been and continue to be used to structure and regulate key aspects of our social world. How are bodies that defy or deviate from established norms punished? Throughout this exploration of gender and power, students deepen their understanding of the intersections of gender, race, class, (dis)ability, sexuality and culture by reflecting on their personal experiences. They also learn about past and present examples of resistance and transformation by studying the work of scholars, artists and activists including Kimberlé Crenshaw, Chelsea Vowel, Richard Fung and Laverne Cox. How might attending to these voices shift the ways we think about and live genders in the future? Antirequisite: SOC603 (LL)
LIR205	**Greek and Latin Keys to Academic English -** This course develops students' proficiency in academic English through a detailed study of Latin and Greek word elements, and the morphological principles whereby they are used to express complex academic concepts in concise form. Following an overview of Greek and Latin roots, analytical skills are applied in the understanding of the origin of Modern English words taken from a variety of fields of study. (LL)
PHL622	**Classical Arabic Philosophy -** When Islam took over a region spanning from Spain to India, Islamic culture absorbed and transformed a wide array of philosophical traditions and sources, including Ancient Greek, Persian, and Indian thought. This course covers philosophers writing in Arabic from the 9th to the 12th c. CE, such as Al-Farābi, Avicenna, Al-Ghazālī, Ibn Ṭufayl, Maimonides, and Averroës. Topics may include logic and semantics, conceptions of the soul, causation and creation, essence and existence, or political and social thought. (UL)
POL620	**Sports & Politics -** How does sport reflect major social, economic, and political changes? How have scholars used sporting events as well as athlete performance data to test and advance theories from the social sciences? In this course we will look at both of these questions by examining society and politics through the lens of sports, on the one hand, and using sports data to test theories from political science, psychology and economics, on the other. (UL)
REL205	**Introduction to Sikhism -** This course offers an introduction to the historical, cultural, and religious context in which Sikhism emerged in Punjab at the turn of the 16th century, as well as an exploration of how this tradition evolved in South Asia and around the world until today. It will consider Sikh worldviews, beliefs, ritual, practices, and institutions, with a special emphasis on Sikhism in Canada. (LL)
REL210	**Introduction to Chinese Religions -** This course is a survey of the historical development of the Chinese religious landscape from the Shang Dynasty (~1600 – 1046 BCE) to the present. It focuses on the beliefs and practices of China's primary religious traditions (Buddhism, Daoism, Confucianism, and popular religion), while also attending to the influence of Western missionary traditions (Christianity and Islam), the anti-traditionalist and anti-religious movements of the 20th century, and the roles of religion in contemporary China. (LL)
REL215	**Introduction to Judaism -** This course introduces students to the beliefs, practices, and history of Judaism. Readings begin with the Hebrew Bible, or Tanakh, followed by the Rabbinic writings of the Talmud and its theological underpinnings, Mediæval literature, and mysticism. The course will emphasize the diversity of Jewish experience and thought, and the cultural contexts of Judaism from its beginnings to the present day. (LL)
REL220	**Introduction to Christianity -** This course is a survey of Christianity. Students will be introduced to distinctively Christian beliefs and practices, its history, institutions, and foundational texts, and its cultural and social influences. An important focus will be three

	major episodes in Christian thought: the Arian Controversy, the Reformation in Western Christianity, and contemporary developments such as Liberation Theology and Feminist Theology. (LL)
REL225	**Introduction to Islam -** This course will be a survey of the religion of Islam, in which students will be introduced to Muslim religious beliefs and practices, schools of Islamic learning, and historical and contemporary concerns. The course will emphasize the diversity of Muslim experience and thought, and the cultural contexts of Islam from its beginnings to the present day. (LL)
SEM301	**Cognitive Semiotics -** Why do human beings find meaning in things? What are the sources of meaning? How does it work? These are questions for cognitive semiotics, a new research paradigm that embraces experiential, experimental and observational methods, seeking to reconcile the natural and human sciences. We ground the development of human consciousness in movement, mimesis and modeling, drawing on diverse disciplines from linguistics and anthropology to biology and neuroscience, asking if a better understanding of meaning might make us better people. (UL)
SWP505	**Critical Equity and Movements of Resistance -** When faced with historical and ongoing forms of inequality and exclusion, the question always asked is "but why didn't they resist?" This course charts the various movements of resistance, historical and contemporary, that have advanced the cause of equity, diversity, and inclusion in Canada. It takes an intersectional approach to these movements, and looks at the challenges of sustaining and deepening critical equity work. Students will learn that resistance takes hard work, but it is always present, and it is never futile! (UL)

Recommendation

- Having reviewed the merits of the proposed new course outlines, the Academic Standards Committee recommends: *That Senate approve the 16 course proposals for addition to the Liberal Studies elective tables.*

Respectfully Submitted,

Marcia Moshé

Marcia Moshé, Chair for the Committee

ASC Members:
Charmaine Hack, Registrar
Donna Bell, Secretary of Senate
Marcia Moshé, Chair and Interim Vice Provost Academic
Anita Jack-Davies, Vice President/Vice Provost, Equity and Community Inclusion
Bettina West, Director, Curriculum Quality Assurance
Anne Marie Singh, Faculty of Arts, Criminology
Stephanie Walsh-Matthews, Faculty of Arts, Arts & Contemporary Studies
Gillian Mothersill, Faculty of Communication & Design, Graphic Communications Management
Wendy Freeman, Faculty of Communication & Design, Professional Communication
Thomas Tenkate, Faculty of Community Services, Occupational and Public Health
Annette Bailey, Faculty of Community Services, Nursing
Andy Gean Ye, Faculty of Engineering and Architectural Science, Electrical & Computer Engineering
Donatus Oguamanam, Faculty of Engineering and Architectural Science, Mechanical & Industrial Engineering
Noel George, Faculty of Science, Chemistry & Biology

Jeffrey Fillingham, Faculty of Science, Chemistry & Biology
Christopher Gibbs, Ted Rogers School of Management, Hospitality and Tourism Management
Donna Smith, Ted Rogers School of Management, Retail Management
Val Lem, Library
Linda Koechli, Chang School of Continuing Education
Dalia Hanna, Chang School of Continuing Education
Yelda Nura, Student
Huda Hajjaj, Student

Report #F2018-2 of the Academic Governance and Policy Committee (AGPC):
M. Benarroch

November 6, 2018

1.   Department of Chemistry and Biology Bylaws

Respectfully submitted,

M. Benarroch, Chair,
Provost & Vice President Academic

On behalf of the Committee:
M. Moshé, Interim Vice Provost Academic
I. Crookshank, Interim Vice Provost Students
C. Hack, Registrar
D. Bell, Secretary of Senate
T. Duever, Dean, Faculty of Engineering & Architectural Science
D. Checkland, Faculty of Arts
S. Dolgoy, Faculty, Faculty of Communication and Design
R. Meldrum, Faculty of Community Services
S. Sabatinos, Faculty, Science
K. Kumar, Faculty, Faculty of Engineering & Architectural Science
R. Hudyma, Faculty, Ted Rogers School of Management
A.M. Brinsmead, Chang School Program Director
F. Khan, Undergraduate Student Senator
J. Circo, Undergraduate Student Senator,
R. Kucheran, Yeates School of Graduate Studies Student Senator

DEPARTMENT OF CHEMISTRY AND BIOLOGY

FACULTY OF SCIENCE

DEPARTMENTAL COUNCIL BY-LAW

Approved By Departmental Council
20/09/2018

Approved by Senate
Dd/mm/yyyy

Revised: June 2018

TABLE OF CONTENTS

DEFINITIONS

Administrative Staff: all full-time administrative staff in the Department

Alumni: all graduates of Chemistry, Biomedical Sciences, Biology, or Applied Chemistry and Biology programs, or Applied Chemistry and Biology progenitor programs, or graduates of the Molecular Sciences and Environmental Applied Science and Management programs who were supervised or co-supervised by a member of the Department, who have identified themselves as potential nominees for Council. Alumni representatives must not be currently enrolled in a Ryerson program.

Chair: Chair of Council, unless otherwise indicated

Council: Departmental Council of the Department of Chemistry and Biology

Department: the Department of Chemistry and Biology

Faculty: all full-time faculty members of the Department including probationary faculty, limited-term faculty, assistant, associate and full professors

Guest: An individual who is not a member of the Council but has been invited to address the council

Undergraduate Student: a student registered in a program administered by the Department

Graduate Student: a graduate student who is supervised or co-supervised by a faculty member of the Department or who is registered in a graduate program administered by the Department

Member: all individuals who are members of Council, including undergraduate and graduate students, alumni, technical staff, and faculty, both sessional and full-time

Technical Staff: all Technical Specialists and Technical Staff in the Department of Chemistry and Biology

1. OBJECTIVE

The purpose and objectives of Council are:

- To develop and recommend academic policies relevant to the Department,

- To promote an effective teaching, learning and research environment within the Department,

- To represent, maintain and advance the interests of members within the Department, and

- To work with the administration and other groups within the University around areas of common concern.

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2. STRUCTURE

a. Membership

The membership of Department Council shall comprise:

- all faculty, including the Departmental Chair of the Department of Chemistry and Biology, except those that hold positions within the university above the level of Chair (i.e. Associate Dean, Dean, Vice-Provost, Provost), who are excluded from council membership.

- The Administrative Coordinator ex-officio as a non-voting representative of the administrative staff

- one sessional or part-time instructor, elected by and from the sessional and part-time instructors of the Department,

- Student membership is subject to the requirement that the number of student members must be not less than one-quarter, and not more than one-third, of the total faculty members of council. Student members are elected to a one year, renewable term. Student representatives are elected by their respective constituencies as outlined in the following table:
    - At least two (2) undergraduate Biology students
    - At least two (2) undergraduate Biomedical Sciences students
    - At least two (2) undergraduate Chemistry students
    - At least one MolSci MSc student
    - At least one MolSci PhD student
    - At least one EnSciMan student

- The remaining student members of council necessary to achieve appropriate numbers will be undergraduate or graduate members-at-large who represent the student groups in CAB Programs

Should it be necessary to adjust the number of student representatives on council due to a change in the number of faculty members, the Chair of Council will instruct the undergraduate Course Unions to elect an additional member at large and file a motion to adjust the total number of student members included in the bylaw at the next meeting of council (as appropriate).

- a maximum of two alumni elected by the alumni, and

- one Technical Staff elected by and from the Technical Staff.

b. Standing and Ad Hoc Committees

Whenever possible, the Faculty component of the standing committees shall reflect the spectrum of disciplines taught in the Department. In general, the standing committees should have a chair and a vice-chair to ensure continuity of operations. The vice-chair position is responsible for ensuring that records of meetings and activities are held and that those records are available to future committee members. Ideally, the chair of a standing committee has served previously on that committee in another formal capacity. Departmental Council shall establish the following standing committees:

- **Undergraduate Biology Curriculum Committee**

Function:

- To make recommendations to Council regarding Biology curriculum issues and curriculum planning to meet the academic needs of the science programs,

- To liaise with departments receiving biology service courses from the Department, and to make recommendations to Council regarding those courses,

- To liaise with the Budget and Resources Committee on issues of concern to both committees, and

- To present to Council at least one written report per academic year.

Membership:

- The Biology program director (ex-officio),

- Three Faculty, elected by the Faculty,

- One Technical Staff, elected by the Technical Staff, and

- One undergraduate student, not necessarily a member of Council, elected by undergraduate student members of Council,

- **Undergraduate Biomedical Sciences Curriculum Committee**

Function:

- To make recommendations to Council regarding Biomedical Sciences curriculum issues and curriculum planning to meet the academic needs of the science programs,

- To liaise with departments receiving biology service courses from the Department, and to make recommendations to Council regarding those courses,

- To liaise with the Budget and Resources Committee on issues of concern to both committees, and

- To present to Council at least one written report per academic year.

Membership:

- The Biomedical Sciences program director (ex-officio),

- Three Faculty, elected by the Faculty,

- One Technical Staff, elected by the Technical Staff, and

- One undergraduate student, not necessarily a member of Council, elected by undergraduate student members of Council,

- **Undergraduate Chemistry Curriculum Committee**

Function:

- To make recommendations to Council regarding Chemistry curriculum issues and curriculum planning to meet the academic needs of the science programs,

- To liaise with departments receiving chemistry service courses from the Department, and to make recommendations to Council regarding those courses,

- To liaise with the Budget and Resources Committee on issues of concern to both committees, and

- To present to Council at least one written report per academic year.

Membership:

- The Chemistry program director (ex-officio),

- Three Faculty, elected by the Faculty,

- One Technical Staff, elected by the Technical Staff, and

- One undergraduate student, not necessarily a member of Council, elected by the undergraduate student members of Council,

- **Budget and Resources Committee**

Function:

- At the request of the Department Chair, to assist the Department Chair on budget matters, and

- To maintain up-to-date information on the physical resources available to the Department

- To identify the immediate needs for physical resources and equipment necessary to support the academic programs and courses delivered by the Department, and to make long term plans for the allocation, replacement, and maintenance of those resources and equipment,

- To determine the resources required to support any proposed new course or program, and to report those needs to Council prior to Council's decision regarding the proposed program or course,

- To liaise with the other committees of Council when matters of physical and budget resources arise,

- To present to Council at least one written report each academic year

Membership:

- The Department Chair (ex-officio),

- Three Faculty, elected by the Faculty,

- One Technical Staff, not necessarily a member of Council, elected by the Technical Staff,

- One graduate student, not necessarily a member of Council, elected by the graduate student members of Council, and

- One undergraduate student, not necessarily a member of Council, elected by the undergraduate student members of Council.

- **Research and Graduate Studies Committee**

Function:

- To foster the growth of research and graduate studies within the Department through promotion of these activities both within and without the Department,

- To promote graduate student leadership within the Department,

- To promote faculty research initiatives,

- To be an advocate for additional research space and resources,

- To be an advocate of the researchers and graduate students concerns and/or research needs and liaison with other committees of the Council when needed, and

- To present a written, annual report to Council about the research activities being carried out within the Department.

Membership:

- The Department Chair (ex-officio)

- One faculty member who is an active member of the Graduate Program in Molecular Science, elected by the faculty.

- One faculty member who is an active member of the Graduate Program in Environmental Science and Management, elected by the faculty.

- One faculty member who is an active member of the School of Graduate Studies, elected by faculty.

- One graduate student from the Molecular Sciences program, not necessarily a member of Council, elected by the graduate student members of Council.

- One graduate student from the Environmental Applied Science and Management program, not necessarily a member of Council, elected by the graduate student members of Council.

- **Health and Safety Committee**

Function:

- To assist the Chair of the Department and the Departmental Safety Officer in the development, implementation, and maintenance of the applicable programs as set out in the Occupational Health and Safety System, defined by Ryerson University Policy/Procedure 1-450,

- To assist the Chair of the Department and the Departmental Safety Officer in ensuring that the occupational health and safety concerns of workers within the Department are addressed as soon as is reasonably practicable either by: action of the Committee, action of the Chair of the Department, or referral to the Ryerson Joint Occupational Health and Safety Committee,

- To work with the Chair of the Department to establish and maintain safe working conditions within the Department,

- To advise Council on University and Departmental safety policies and initiatives, and

- To present Council with a written report of its activities at least once per year

Membership:

- Department Chair (ex-officio)

- Three Faculty members elected by the Faculty,

- Departmental Safety Officer for chemistry (ex-officio)

- Departmental Safety Officer for biology (ex-officio)

- One graduate student, not necessarily a member of Council, elected by the graduate student members, and

- One undergraduate student, not necessarily a member of Council, elected by the undergraduate student members.

vii) Executive Committee (Officers of Council)

Function:

- to review the by-laws, and to bring any suggestions for changes to Council.

- All members of the Executive Committee are considered voting members of Council.

Membership:

- The Chair: Elected by all voting members of Council
- Vice-Chair: Elected by all voting members of Council
- Secretary of Council: Elected by all voting members of Council

Additional *Ad Hoc* Committees

The Department Council may establish and determine the structure and operating procedures of any additional *ad hoc* committees it deems appropriate.

c. Terms of Office

- Officers of Council

The Chair and Secretary of Council shall be elected to office for a renewable two-year term. The Vice-Chair shall be elected to a renewable one-year term. No member shall hold a particular office for more than two terms in succession. A member elected to fulfill the term of a vacated office is eligible to hold the office for two full terms in addition to the remainder of the term he or she is elected to fulfill. Terms normally begin Sept 1 and end August 31.

- Members of Standing Committees

- Faculty and staff members shall hold office for a renewable two-year term.
- Student members shall hold office for a renewable one-year term.

- Members of Ad-Hoc Committees

Members of ad-hoc committees shall hold office until the report of the committee has been accepted by Council, or the ad-hoc committee has been dissolved by Council.

- Student and Alumni Members of Council

Undergraduate and graduate student and alumni members shall be elected for a renewable one-year term.

- Sessional and Part-Time Instructors

The member chosen from the sessional/part-time instructors shall be elected for a renewable one-year term.

- Technical Staff Representative

Technical Staff shall be elected for a renewable one-year term.

d. Duties of Office

A thorough knowledge of the constitution, the by-laws, and the rules of order is a prerequisite for all officers of Council.

- Chair

The Chair shall:

- Call the meetings of Council,

- Preside at all meetings of the Council, enforce the objectives, by-laws, and rules of order, and ensure that the committees perform their duties,

- Communicate actions of Council to the administration of the University when requested by Council.

- Vice-Chair

The Vice-Chair shall:

- Perform the duties of the Chair, in the absence of the Chair,

- Perform the duties of the Chair and arrange for the timely election of a new Chair, in the event that the Chair is vacated,

- Call for nominations and preside over elections. He or she shall receive nominations from the graduate students, sessional faculty, alumni and technical staff and ensure that elections are carried out in a timely manner,

- Liaise with the undergraduate and graduate course unions to receive the names of their elected members, and

- Assist the Chair in any matter, as requested by the Chair.

- Secretary

The Secretary shall:

- Be responsible for provision of written notice of Council meetings and distribution of the agenda no less than five days prior to meetings,

- Be responsible for the compilation and distribution of the minutes within 10 working days following meetings,

- Attend all meetings of Council and record all facts and minutes of all proceedings of the meetings (if necessary, the Secretary may request assistance of the Departmental Assistant as a recording secretary), and

- Maintain soft and hard master copies of the by-laws, procedures, and standing rules, revise them as Council approves changes, and ensure that the master copies are passed on to the succeeding secretary in a timely manner.

- Soft copies will be maintained in an online Google Team Drive, made accessible (with appropriate read/write privileges) to all members of Departmental Council.

- Committee Chairs

The Committee Chairs shall

- Call and preside over all meetings of their respective committees,

- Report in writing on the activities of the committees to the Council at least once per academic year, and

- Ensure all positions in their committee are filled, and report the membership to the Secretary of Council as soon as the membership composition is known.

- Ensure minutes of meetings are stored in the relevant online drive for posterity.

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3. **Meetings**

   a. **Attendance at Committee Meetings**

   - Committee members are expected to attend all committee meetings, and to inform the committee chair of their regrets in case of a scheduling conflict.

   - Any Council member may attend a meeting of any committee, of which he or she is not a formal member, as a non-voting participant.

   - Committee members may not appoint a voting designate to act in their stead at a committee meeting.

   b. **Input to Committees**

Matters to be reviewed by standing committees can come from the following sources:

- Committees will review matters pertaining to their mandates at their own initiative.

- Committees may also be requested by Council to review a matter.

- Any member of Council may request a committee to review a matter; however, the committee has discretion to decide not to investigate an issue from an individual member. In such a case, both the member and the Council Chair shall be informed of the committee's decision and the reasons for it. The member may ask Council to charge the committee with the task at the next meeting of Council.

Committees are expected to prioritize pending issues; however, when many important issues are pending, Council may be asked (either by the Committee or by a member) to set priorities for the Committee.

c.   Meetings of Departmental Council and Standing Committees

- Departmental Council

Departmental Council shall meet at least once per academic term. The meetings will normally be scheduled for a Thursday, 12:00-2:00 p.m. The first meeting of the Fall term shall be called before October 15th. Other meetings shall be called when necessary at the discretion of the Executive Committee. Meetings of Departmental Council will be governed according to Robert's Rules of Order.

- Standing Committees

Standing committees shall meet as required. Each committee shall submit and present a written report to Council at least once per academic year, the preferred time being at a regular meeting or after consultation with Council Chair. A standing committee may request that the Chair of Council call a meeting of Council to report on the work and recommendations of the committee.

- Special Meeting

A special meeting of Council shall be held following a written request by any ten members of Council to the Chair, with a copy of the request to the Chair of the Department. The meeting shall occur no sooner than three days and no later than 14 days after the Chair receives the written request.

d.   Notice of Meetings

Under normal circumstances, written notice of the Council meeting and agenda shall be given one week prior to the meeting. When there is an urgent matter, a meeting may be called with three days notice, given in writing, prior to the date scheduled for the meeting.

e.   Quorum

At meetings of Council, a quorum shall be 50% of the voting membership, where the majority of those present are faculty members. This quorum shall be calculated with the following adjustments:

- A faculty member on leave will not be counted toward the calculation of quorum unless present at the meeting

- Council members who cannot attend due to a conflict with their Ryerson schedule or because they are engaged on other University business at the time of the meeting, may inform the Chair of their situation and their desire to participate in meetings electronically

f.   Records of meetings

- Council meeting agendas and minutes shall be preserved in an online drive accessible to all members of Council. Current Secretary of Council will be responsible for maintaining this information.

- Chairs of Standing committees shall also maintain records of agenda and minutes. Chairs of committee will post this information onto an online drive accessible to the current members of that committee and Council Executive.

- This information will be inherited and maintained by future committee members.

4. Procedures

a. Procedure for Nomination to Council Office or Standing Committee Positions

The Vice-Chair of Council shall call for nominations annually no earlier than February 1 for the following academic year . Names of the nominees shall be freely available to all members of Council. If no nominations are received for a

position before the first meeting of the Council, the Chair may call for nominations from the floor. If positions remain vacant after the meeting the Chair may request that the Vice-Chair initiate a second call for nominations or that the respective constituencies appoint members to the committees.

b. Elections

The Vice-Chair of the Council, with the assistance of the Departmental Assistant, will ensure that the elections are conducted by the appropriate constituencies with adequate advance notice and in a democratic way.

- Members of Council

  - Election for the member representing sessional and part-time instructors will take place annually in September.

  - Election of the member representing the Technical Staff will take place annually in September.

  - Election of the members representing undergraduate and graduate students and alumni members of Council shall take place annually in September.

- Officers of Council

  - The Chair and Secretary of Council shall be selected from faculty members of Council. The Vice-Chair of Council shall be selected from Council membership. Elections for the Council Executive shall take place annually, during the first meeting of Council in the Fall term, as necessary.

  - The elected officers will take office upon adjournment of the meeting at which they are elected.

- Members of Committees

  - Members of committees shall be selected from the Council membership, unless otherwise allowed. Elections by the appropriate constituencies shall take place in October of each year.

- Officers of Committees

- Each standing committee will elect a chair and a secretary from its membership. The chair and secretary must be faculty or staff members of Council.

c. Electronic Participation

Voting members who are unable to attend Departmental Council Meetings in person will be allowed to participate electronically. It is the responsibility of the member to arrange electronic participation with the Chair of Council prior to the meeting.

d. Vacancies

The call for an immediate election to fill any vacancy on Council or in committee membership will be conducted by the Vice-Chair except as outlined below:

- Vice-Chair

  In the event that the position of Vice-Chair becomes vacant, the Chair shall call the elections and ensure that the elections are conducted in a democratic way.

- Student Members of Council

  In the event that an undergraduate student is unable to continue membership, the executive of the Course Union shall elect a replacement for the remainder of the term of office.

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5. Policy recommendations

a. Authority

- Authority for policy recommendations of Council is explained in Policy 45 of Academic Policies and Procedures of Ryerson University.

b. Decisions of Council

- Decisions of Council will normally be made by a simple majority (50% + 1) of the voting members present and those voting (including electronic participation). The Chair of Council is considered a voting member for all decisions. Major decisions will require a two-thirds majority of the members present and voting (including electronic participation) to pass.

- Council will decide when an issue is major by a simple majority of the members present and voting.

- Council may decide by a simple majority of those present and voting to poll the entire membership by means of a secret ballot on any issue.

- Procedures for electronic votes in lieu of a meeting

  At the discretion of the council executive, votes on non-substantive issues may be conducted electronically. Normal rules for establishing quorum will apply. There will be a minimum of 3 working days from the issuance of the e-motion, until the votes are tallied. Results of the e-motion will normally be issued within 3 working days.

c. **Recommendations of Committees**

- Recommendations of committees shall be approved by Council before being transmitted or implemented.

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6. **Dispute resolution**

- In the event of a disagreement between a CAB Council and a Chair or Director, the Dean of the Faculty of Science, in consultation with the parties involved, shall decide how to proceed.
- In the event of a disagreement between the Dean of the Faculty of Science and CAB Council, the Vice Provost Academic will facilitate a negotiated solution. If a negotiated solution is not possible, the Provost will resolve the issue.

7. **Amendments to By-Laws**

Amendments to By-laws require a two-thirds majority of the Council members present and voting (including electronic participation). Written notice of proposed amendments must be distributed to members of Council at least one week prior to the meeting. Amendments must be ratified by Senate.

Summary of Proposed Changes to the Bylaws of Senate

 October 2018 (on behalf of the Senate Bylaws Review Committee).

A. The More Major Proposed Changes

1. To accommodate the new Faculty of Law:

a) one faculty Senator position for Law (taking away one "at-large" position) and, to ensure representation, allowing for an alternate Senator to be elected);

 b) one student (undergrad) Senator for Law (taking away one student "at-large" position).

2. Changing the constituency by and from which the Vice-Chair is elected to "by all elected Senators from all elected faculty Senators". This means students and alumni can vote but cannot be Vice-Chair.

3. Membership of Senate Priorities Committee (SPC): add the Vice-Provost Academic and one additional faculty Senator; delete one Dean.

4. Membership of the Academic Governance and Policy Committee (AGPC): add Vice-Provost/Dean of Yeates School of Graduate Studies.

5. Sever the Bylaw into two, the new Bylaw 2 being what was section 9, "Meetings and Procedures" (the explicit rules of Senate).

B. Less Substantive Proposed changes

6. A number of minor wording changes and a couple of new terms defined in section 1, "Definition of Terms"

7. sections 2.2.1.2 (and following) re Faculty of Law (see 1 above)

8. Section 3 re " Elections and Appointments": There are multiple small changes here, mostly in section 3.2.5 and following re replacing Senators who leave their elected position. Also, in Section 3.3. to clarify the process for election to, principally, SPC and AGPC.

9. Section 4.2.3 Clarifying that there are no term limits on committee members who need not be Senators.

10. Section 5.3 A few minor additions/clarifications to the role of Secretary of Senate (e.g.5.3.6)

11. re Section 6, "Standing Committees". Drop the distinction between "Committees of General Responsibility" and "Committees of Special Responsibility" (see 3 and 4 above re SPC and AGPC)

12. 6.6.2.2.4 replaces the previous 6.2.1.2.4 with something more realistic.

13. For other Standing Committees clarifying their Terms of Reference (more detail) and their composition (biggest changes to Learning and teaching Committee), and method of appointment.

C. Bylaw #2 (old section 9)

13: 6.2.9 The changes proposed would make explicit something that was implicit in the existing Bylaw, which is that a Senator may call for a recorded, "roll call" vote on any matter. The meeting then decides by majority vote whether to so proceed. (An adequate E-voting system would make this redundant.)

7.10 We have made more explicit the nature of "Members' Business".

There are other changes, not all of which have been easy to track. They are all, I believe, quite small and merely clarifying the point made in the original Bylaws. There are two further issues that may lead to further recommendations on quite specific points that are now being discussed with the relevant bodies. I hope to be able to follow-up on these matters very soon.

David Checkland, October 22, 2018

On behalf of the Senate Bylaw Review Committtee: Donna Bell, Murtaza Haider, Carol Shepstone, Neil Thomlinson, Nancy Walton (Lauren Emberson, resigned September, 2018)

SENATE
BYLAW #1 – General

1. **DEFINITION OF TERMS**

2. **COMPOSITION OF SENATE**
   2.1   *Ex officio* Senators
   2.2   Elected voting Senators
       2.2.1   Faculty Senators
       2.2.2   Student Senators
       2.2.3   Alumni Senators
   2.3   Senate Associates
       2.3.1   Chang School Associates
       2.3.2   CUPE Associates
       2.3.3   Chair, Academic Standards Committee

3. **ELECTIONS**
   3.1   General Provisions
       3.1.1   Nominations and Elections Committee (NEC)
       3.1.2   Schedules, Guidelines, Procedures
       3.1.3   Membership Lists
   3.2   Senate
   3.3   Committees

4. **TERM OF OFFICE**
   4.1   Senate
   4.2   Senate Committees

5. **OFFICERS OF SENATE**
   5.1   Chair
   5.2   Vice-Chair
   5.3   Secretary
   5.4   Chief Electoral Officer

6. **STANDING COMMITTEES OF SENATE**
   6.1   General Provisions
   6.2   Senate Priorities Committee (SPC)
   6.3   Academic Governance and Policy Committee (AGPC)
   6.4   Scholarly, Research and Creative Activity Committee (SRCAC)
   6.5   Academic Standards Committee (ASC)
   6.6   Awards and Ceremonials Committee (AWCC)
   6.7   Learning and Teaching Committee (LTC)
   6.8   Nominations and Elections Committee (NEC)

7.   *AD HOC* COMMITTEES

8.   GOVERNANCE COUNCILS

1.   DEFINITION OF TERMS

1.1.   **AGPC:** The Academic Governance and Policy Committee as defined by Article 6.3 of this Bylaw.

1.2.   **Alumni:** The *Ryerson University Act* defines alumni as "persons who have received degrees, diplomas or certificates from Ryerson Institute of Technology, Ryerson Polytechnical Institute, Ryerson Polytechnic University, or Ryerson University and who are no longer registered as students."

1.3.   **Board:** The Board of Governors of Ryerson University as defined by the *Ryerson University Act*

1.4.   **Chang School:** The G. Raymond Chang School of Continuing Education.

1.5.   **Chief Electoral Officer:** Officer of Senate as defined by Article 5.4.

1.6.   **Committee Member:** Unless otherwise stated, members of a Senate committee do not have to be members of Senate.

1.7.   **Department/School**: Academic unit, headed by a Chair or Director, resident in a Faculty, that has responsibility for the delivery of academic programs, Chang School degree credit courses, and Department-based Chang School Certificates.

1.8.   *ex officio*: Holds office or Senate position by virtue of another office held. Fully participating (and voting) unless otherwise indicated.

1.9.   **Faculty** (where capitalised): Administrative unit, headed by a Dean, normally consisting of teaching Departments/Schools and established by Senate and the Board of Governors.

1.10. **faculty** (where not capitalised): "Teaching faculty," defined by the *Ryerson University Act* as the "full-time employees of the University whose principal duty is the performance of the teaching function or the research function of the University, including employees holding the offices of Dean, Chair or Assistant Chair of a department, or Academic Director."

1.11. **faculty Senator**: as defined by Article 2.2.1

1.12. *Ryerson University Act***:** Statute of the Province of Ontario establishing, and governing the operation of Ryerson University.

1.13. **Session** shall extend from July 1 of each year until June 30 of the following year.

1.14. **SPC:** The Senate Priorities Committee as defined by Article 6.2 of this Bylaw.

1.15. **SRCAC:** The Scholarly, Research, and Creative Activity Committee as defined by Article 6.4 of this Bylaw.

1.16. **Students**: Defined by the *Ryerson University Act* as "persons registered in a program or course of study at the University that leads to a degree, diploma or certificate of the University." All such students are eligible to serve on Senate committees and vote in student elections for these positions.

1.17. **Student Senator**: as defined by Articles 2.2.2 and 2.2.3

1.18. **Union:** Ryerson Faculty Association (RFA); Canadian Union of Public Employees, Local 3904 (CUPE); Ryerson Students' Union (RSU); and Continuing Education Students' Association of Ryerson (CESAR).

1.19. **University** (where capitalised): Ryerson University

1.20. **YSGS**: Yeates School of Graduate Studies

2.   COMPOSITION OF SENATE

2.1.   **Ex officio Senators**

    2.1.1.   ***As per the Ryerson University Act*:**

        2.1.1.1.   the Chancellor;

        2.1.1.2.   the President (who shall be the Chair of the Senate);

        2.1.1.3.   the Vice Presidents (including the Provost)**;**

        2.1.1.4.   the Deans;

        2.1.1.5.   the Chief Librarian; and

2.1.1.6.   the Registrar

2.1.2.   *All Vice Provosts*.

2.2.   Elected Voting Senators

As per the *Ryerson University Act*, there shall be fifty-one (51) elected voting Senators. These shall be apportioned as follows.

2.2.1.   *Faculty Senators*

2.2.1.1.   *At-Large faculty*: There shall be faculty Senators elected at-large by and from all full-time faculty, as defined above, in such number as to ensure that the total number of elected faculty Senators equals thirty-three (33). Deans may not vote, nominate, or serve. Chairs/Directors may vote but may not nominate or serve. There may be no more than two at-large faculty Senators from any one Faculty unless there are insufficient candidates from other Faculties to fill all at-large positions.

2.2.1.2.   *Faculty:* There shall be three (3) faculty members elected from each of the Faculties of Arts, Community Services, Communication and Design, Engineering and Architectural Science, Science, and the Ted Rogers School of Management, and one (1) faculty member elected from the Faculty of Law.

2.2.1.2.1.   The Faculty of Law may also elect one alternate Senator who may attend meetings of Senate, and vote in the absence of the regular, elected Senator. The alternate Senator may not replace the regular, elected Senator at committee meetings.

2.2.1.2.2.   All Faculty Senators and the Faculty of Law Alternate Senator shall be elected by and from the full-time teaching faculty in each Faculty. Deans may not nominate, vote or serve. Chairs/Directors may vote but may not nominate or serve.

2.2.1.3.   *Chang School faculty:* There shall be two (2) faculty Senators representing the Chang School who are full-time teaching faculty and who are teaching, or have taught, at least one course in the Chang School in the year preceding the election, or who serve on a Chang School committee, or the Chang School Council.

2.2.1.4.   *Chairs/Directors:* There shall be one (1) Chair/Director, elected from each of the Faculties by and from the Chairs/Directors in that Faculty.

2.2.1.5.   *Ryerson Faculty Association (RFA):* There shall be one (1) RFA Senator (who is a faculty member as defined by Article 1.9) specifically elected to the position using such procedures as are specified in the Bylaw(s) of the RFA.

2.2.1.6.   *Librarian:* There shall be one (1) librarian Senator who is a member of the RFA, and who is eligible to serve on Senate as defined by the *Ryerson University Act*. Such member shall be elected by and from the University librarians,

2.2.1.7.   *Canadian Union of Public Employees (CUPE) Local 3904:* There shall be one (1) CUPE Senator (who is eligible to serve on Senate as defined by the *Ryerson University Act*) specifically elected to the position using such procedures as are specified in the Bylaw(s) of CUPE Local 3904.

2.2.2.   *Undergraduate Student Senators*

2.2.2.1.   *At-Large Undergraduate Students:* There shall be undergraduate student Senators, elected at-large by and from all undergraduate students enrolled in a full- or part-time program, in such number as to ensure that the total number of elected student Senators equals sixteen (16). No more than two at-large student Senators may be from any one Faculty unless there are insufficient candidates from other Faculties to fill all at-large positions.

2.2.2.2.   *Faculty Undergraduate Students:* There shall be one (1) student Senator from each Faculty, elected by and from undergraduate students registered in a full- or part-time program within that Faculty.

2.2.2.3.   *Law Students:* There shall be one (1) student Senator elected by and from students who are enrolled in the J.D. program of the Faculty of Law.

2.2.2.4.   *Continuing Education Students:* There shall be two (2) Senators elected by and from those students of the University who are enrolled in a Chang School course at the time of election, and who are eligible to serve on Senate.

2.2.2.5.   *Ryerson Students' Union (RSU):* There shall be one (1) RSU Senator who is duly elected to the position using such procedures as are specified in the Bylaw(s) of the RSU, and who is eligible to serve on Senate.

2.2.2.6.   *Continuing Education Students' Association of Ryerson (CESAR):* There shall be one (1) CESAR Senator who is duly elected to the position using such procedures as are specified in the Bylaw(s) of the CESAR, and who is eligible to serve on Senate.

2.2.3.   *Graduate Student Senators* There shall be two (2) Senators elected by and from those students of the University who are enrolled in a graduate program

2.2.4.   *Alumni Senators*: There shall be two (2) Ryerson alumni Senators elected by and from the members of the Ryerson University Alumni Association who meet the definition of alumni specified in Article 1.2, and who are no longer registered as students or eligible to serve in any other capacity.

2.3.   <u>Senate Associates</u>:
There shall be Senate Associates as follows who, while not eligible to vote at Senate, otherwise have full rights of participation in Senate meetings and, if named to Senate committees, have full committee membership rights (including the right to vote):

2.3.1.   *Chang School Representatives*: There shall be two (2) Chang School representatives elected by and from the Chang School Directors and Associate Directors who have academic responsibilities using such procedures as the Chang School shall determine.

2.3.2.   *Part-time, Sessional and Continuing Education Contract Lecturers (CUPE Local 3904 Units 1 and 2)*: There shall be two (2) Part-time, Sessional and Continuing Education (CUPE Local 3904 Units 1 and 2) Contract Lecturers elected by and from that group, using such procedures as CUPE Local 3904 shall determine.

3. ELECTIONS AND APPOINTMENTS

3.1.   <u>General Provisions</u>

3.1.1.   *Nominations and Elections Committee (NEC)*: Early in each Session, Senate shall strike a Nominations and Elections Committee in accordance with Article 6.8 of this Bylaw.

3.1.2.   *Schedules, Guidelines and Procedures*: The Chief Electoral Officer of Senate shall annually publish the election schedule, as well as such guidelines and procedures as are approved by the Nominations and Elections Committee.

3.1.3.   *Membership Lists*: The Secretary of Senate will provide a list of Senate and Committee members by the first meeting of a Session, and shall advise Senate of all changes to membership, and shall post a revised membership list on the Senate website whenever changes are made.

3.2.   <u>Senate</u>

3.2.1.   The Chief Electoral Officer shall call for nominations in accordance with published Election Guidelines and Procedures.

3.2.2.   Elections shall be held annually before April 1.

3.2.3.   Constituent union groups (RFA, CUPE, RSU, and CESAR) shall each be responsible for the election of their representatives and shall inform the Secretary of the process of their election and the election results.

3.2.4.   Senate seats shall be declared vacant when:

3.2.4.1.   An elected Senator resigns; or

3.2.4.2.   An elected Senator is no longer a member of the constituency s/he was elected to represent; or

3.2.4.3. An elected Senator fails to attend two (2) consecutive meetings without written notice to the Secretary, or three (3) in total during a Session, regardless of notice. In extenuating circumstances, Senate may, by resolution, excuse absences for health or other reasons.

3.2.5. Senate vacancies between general elections will be filled for the duration of the term following the procedures outlined below unless there are fewer than two Senate meetings remaining between the point at which the vacancy occurs and the end of the term or the point at which a call for nominations is issued for general elections.

3.2.5.1. If a Senate vacancy occurs in the Chair/Director constituency between general elections, the Chief Electoral Officer will ask the affected group to conduct a by-election.

3.2.5.2. If a Senate vacancy occurs in the Faculty of Law, the elected alternate will fill the position until the Senator elected in the next general election takes office. In the event the alternate is unable to serve, the position will be filled in accordance with Article 3.2.5.4.

3.2.5.3. If a Senate vacancy occurs among the students elected at large, the Chief Electoral Officer will call for nominations in accordance with published Election Guidelines and Procedures, and present the list of nominees to the elected student Senators who shall elect one of the nominees to fill the vacancy.

3.2.5.4. If a Senate vacancy occurs in any other constituency between general elections, the Chief Electoral Officer will call for nominations in accordance with published Election Guidelines and Procedures, and conduct a by-election as/if required.

3.2.5.5. In the event that the routine call for nominations fails to produce sufficient nominees, the Nominations and Elections Committee will solicit nominations and

3.2.5.5.1. The Nominations and Elections Committee will report eligible nominees to the next meeting of Senate.

3.2.5.5.2. Additional nominations may be made from the floor of Senate, provided the person nominated is eligible and consents to the nomination. A person who is not present may only be nominated if that person has given prior permission to the Secretary of Senate.

3.2.5.5.3. If there is more than one nomination for any individual position, the replacement member will be elected by Senate from among the nominees, with all elected Senators eligible to vote.

3.2.6. The Chief Electoral Officer shall inform Senate of the results of all Senate elections and by-elections, including an accounting of votes cast.

3.3. **Committees:**

3.3.1. Immediately upon the conclusion of Senate elections, the Nominations and Elections Committee (NEC) shall, in accordance with published Election Guidelines and Procedures, call for nominations to fill all non-student Committee positions not allocated through other means in this Bylaw. Senators-elect are eligible to nominate, stand as candidates, and serve on committees for the following year where Senate membership is a requirement.

3.3.1.1. Immediately following the orientation session for new Senators (normally held in September of each year), the Chief Electoral Officer shall, in accordance with published Election Guidelines and Procedures, call for nominations to fill all student Committee positions not allocated through other means specified in this Bylaw.

3.3.2. The Nominations and Elections Committee shall prepare, and present annually to the penultimate regular meeting of Senate in each session, a complete list of nominations received for, and appointments to, all non-student positions on all Senate Standing Committees for the following year.

3.3.3. Nominations from the Floor: For positions to be filled by election, nominations beyond those brought forward by the Nominations and Elections Committee may be made from the floor of Senate provided the person nominated is eligible and consents to the nomination. A person who is not present may only be nominated if that person has given prior permission to the Secretary of Senate.

3.3.4. If the number of nominations exceeds the number of positions to be filled by election as specified in this Bylaw, Senate shall, at the penultimate regular meeting of Senate in each session, elect the

committee members from among the nominees, with all Senators eligible to vote. For positions where a specific body is specified in this By Law as the electors for that position, the Chief Electoral Officer shall conduct, or cause to be conducted, an election for those positions prior to the penultimate meeting of Senate in the session.

3.3.5. membership on a committee of Senate shall terminate when:

3.3.5.1. An elected Senator resigns his/her committee membership; or

3.3.5.2. An elected Senator representing a particular constituency on the committee is no longer a member of the constituency s/he was elected to represent; or

3.3.5.3. An elected Senator fails to attend two (2) consecutive committee meetings without written notice to the Chair of the committee, or three (3) meetings in total during a Session regardless of notice. In extenuating circumstances, Senate may, by resolution, excuse absences for health or other reasons.

3.3.6. Where a position held by a committee member elected by Senate becomes vacant during a session, the Chief Electoral Officer shall, at the earliest point possible, inform Senate of the vacancy and invite nominations to fill the position. The Nominations and Elections Committee shall report to the next meeting of Senate the name(s) of nominee(s), and Senate shall elect a replacement Committee member following the process outlined in Article 3.3.3 and 3.3.4 above.

3.3.7. Where a position held by a committee member representing a specific constituency becomes vacant during the session, the Chief Electoral Office shall, at the earliest point possible, inform the constituency of the vacancy and invite nominations to fill the position. The Nominations and Elections Committee shall report to the next meeting of Senate the name(s) of nominee(s), and Senate shall elect a replacement Committee member following the process outlined in Article 3.3.3 and 3.3.4 above.

3.3.8. The Chief Electoral Officer shall inform Senate of the results of all Senate Committee elections, including an accounting of votes cast.

4. TERM OF OFFICE

4.1. Senate

4.1.1. The term of elected Senators will commence on July 1 of the year elected.

4.1.2. *Ex officio* members and Union representatives hold their positions on Senate as long as they hold the office or Union position that entitles them to be a Senator.

4.1.3. Faculty and Alumni representatives are elected for a two-year term and may be nominated for a second consecutive two-year term.

4.1.4. Student representatives are elected for a one-year term, and may be nominated for a second consecutive one-year term.

4.1.5. Senate Associates named pursuant to Article 2.3 serve a two-year term and are not subject to term limits.

4.1.6. Senators elected to fill a vacancy serve until the end of the vacant term, but may then stand for election in the scheduled general elections. If elected, the term following the general elections shall be considered their first.

4.1.7. After a second term, Senators may be re-nominated to the same position (e.g., a faculty Senator representing a certain Faculty) after an absence of one (1) year, but may be nominated to a new position (e.g., an "at large" Senator) with no break in service. However in no case shall an elected Senator serve more than four (4) consecutive terms in total.

4.2. Senate Committees

4.2.1. The term of committee members will commence on July 1 of the year elected and shall extend for one session, unless otherwise specified in this Bylaw.

4.2.2. Members of Senate committees who are required to be Senators may serve as long as they remain Senators.

4.2.3.   There is no limit to the number of terms that may be served by members of Senate committees who are not required to be Senators.

5. OFFICERS OF SENATE

5.1.   <u>Chair:</u>
The President of the University shall be, *ex officio*, the Chair of Senate. The duties of the Chair shall be to:

5.1.1.   establish, in consultation with the Senate Priorities Committee and the Secretary, the agenda of all meetings of Senate;

5.1.2.   report to Senate on current issues of the University;

5.1.3.   conduct meetings of Senate;

5.1.4.   break a tie vote; and

5.1.5.   call the Vice-Chair, or another member if necessary, to the Chair when the President wishes to engage in debate, or for meetings that the Chair cannot attend.

5.2.   <u>Vice-Chair:</u>
The Vice-Chair shall be elected from elected faculty Senators by all elected Senators, with the election held in conjunction with elections to the Senate Priorities Committee. The duties of the Vice-Chair shall be to:

5.2.1.   act as Chair of Senate if called upon by, or in the absence or incapacity of, the Chair; and

5.2.2.   serve as Vice-Chair of the Senate Priorities Committee.

5.3.   <u>Secretary of Senate</u>:
The President of the University shall appoint a search committee which shall advise the President on the appointment of a permanent Secretary of Senate, who shall serve, *ex officio*, as a non-voting member of all standing committees of Senate. The office of the Secretary shall:

5.3.1.   collect information for, advise on, and establish, in consultation with the Senate Priorities Committee, the agenda of Senate meetings;

5.3.2.   organize and schedule Senate meetings, and distribute the Senate agenda, normally one (1) week in advance of regular meetings;

5.3.3.   take responsibility for the Senate website;

5.3.4.   act as a resource to the Chair at Senate meetings;

5.3.5.   prepare, and distribute to all Senators, draft minutes of every meeting of Senate, and post approved minutes on the Senate website;

5.3.6.   provide, at the first meeting of each session, a record of the attendance of each Senator during the previous session, with such report becoming an attachment to the minutes of the last meeting of the previous session;

5.3.7.   conduct correspondence in the name of Senate;

5.3.8.   create, advise upon, draft, and prepare academic policies as appropriate for consideration by the AGPC and Senate assuring adherence to proper format and procedures;

5.3.9.   maintain all minutes, records, and accounts of Senate and its committees, including a directory of the current policies of Senate;

5.3.10.   assist committees in research supporting their efforts and act as a resource;

5.3.11.   oversee and provide advice on Senate policies and procedures;

5.3.12.   record and maintain the records of the Academic Standards Committee;

5.3.13.   oversee the operations of the Senate Appeals Committee;

5.3.14.   serve as a non-voting member of, and resource for, all Standing Committees and for those *ad hoc* Committees where the Secretary of Senate is named as a non-voting member; and

5.3.15.   carry out such other duties as may be required to ensure the proper functioning of Senate.

5.4.   <u>Chief Electoral Officer:</u>
The Secretary of Senate shall, unless Senate should otherwise direct, serve as Chief Electoral Officer. The duties of the Chief Electoral Officer shall be to:

5.4.1.   serve as a non-voting member of the Nominations and Elections Committee;

5.4.2.   assist the Nominations and Elections Committee in the solicitation of nominees for Senate Committees;

5.4.3.   conduct elections pursuant to Article 3 of this Bylaw and the Guidelines and Procedures adopted by the Nominations and Elections Committee;

5.4.4.   solicit nominations for Vice-Chair in conjunction with elections to the Senate Priorities Committee;

5.4.5.   solicit nominations and conduct elections, as required, to fill vacancies pursuant to Article 3.2 of this Bylaw;

5.4.6.   liaise with unions to ensure that elections are conducted in accordance with Senate timelines and procedures; and

5.4.7.   in accordance with the schedules, guidelines and procedures established by the Nominations and Elections Committee, conduct elections pursuant to Article 3.3 of this Bylaw, if necessary, to fill Committee positions.

6.   STANDING COMMITTEES

6.1.   General Provisions

6.1.1.   Senate shall have Standing Committees as follows:

    6.1.1.1.   Senate Priorities Committee (SPC);

    6.1.1.2.   Academic Governance and Policy Committee (AGPC);

    6.1.1.3.   Scholarly Research and Creative Activity Committee (SRCAC);

    6.1.1.4.   Academic Standards Committee (ASC);

    6.1.1.5.   Awards and Ceremonials Committee (AWCC);

    6.1.1.6.   Learning and Teaching Committee (LTC);

    6.1.1.7.   Nominations and Elections Committee (NEC);

    6.1.1.8.   Research Ethics Board (REB); and

    6.1.1.9.   Senate Appeals Committee

6.1.2.   Unless otherwise specified in this Bylaw, committee membership is not limited to members of Senate.

6.1.3.   Senators-elect are eligible to nominate, stand as candidates, and serve on committees for the following year where Senate membership is a requirement.

6.1.4.   Any standing committee may recommend to Senate – via the AGPC, as appropriate – changes to Bylaw provisions regarding its terms of reference and composition.

6.1.5.   All standing committees that do not have a Chair and Vice-Chair prescribed by this Bylaw shall, at their first meeting of each Session, elect a Chair and, if the Committee deems it necessary, a Vice-Chair.

6.1.6.   The Secretary of Senate is a non-voting member of all standing committees.

6.1.7.   The current composition and membership of all Standing Committees shall be posted by the Secretary of Senate on the Senate website.

6.2.   Senate Priorities Committee (SPC)

6.2.1.   **Composition:**

    6.2.1.1.   the President, who shall serve as Chair;

    6.2.1.2.   the Vice-Chair (who is the Vice-Chair of Senate);

    6.2.1.3.   the Provost and Vice President Academic;

    6.2.1.4.   the Vice Provost Academic;

    6.2.1.5.   the Vice Provost, University Planning;

    6.2.1.6.   one (1) member elected by and from the Deans, including Chang, YSGS, and Library;

    6.2.1.7.   five (5) members elected by and from the faculty Senators in accordance with Article 3.3.1;

6.2.1.8.   one (1) undergraduate student Senator elected by and from all student Senators in accordance with Article 3.3.1.1;

6.2.1.9.   one (1) graduate student Senator elected by and from all student Senators in accordance with Article 3.3.1.1; and

6.2.1.10. the Secretary of Senate (non-voting).

6.2.2.   **Terms of Reference**:

6.2.2.1.   to take responsibility to formulate, in consultation with the Secretary, the agenda for each Senate meeting, together with supporting documentation;

6.2.2.2.   to select, for at least two (2) Senate meetings per year, topics of importance and interest to the Ryerson community, and relevant to the responsibilities of Senate:

6.2.2.2.1.   Such topics shall be open for discussion in Committee of the Whole for an extended period, not to exceed ninety (90) minutes;

6.2.2.2.2.   the SPC shall notify Senate in advance of such topics and arrange for their presentation;

6.2.2.3.   to bring to the attention of Senate, and to consult with Senior administration regarding, emergent issues facing the University and, when appropriate, to recommend to Senate the referral of such issues to a Standing Committee, or to recommend to Senate the creation of an *ad hoc* Committee to address such an issue, or to recommend some other course of action;

6.2.2.4.   to establish a sub-committee, if desired either by Senate or the SPC, to examine and review the state of the University's overall finances and priorities with respect to their impact on academic programs and activities in light of the Academic Plan, and to present to Senate its findings and recommendations;

6.2.2.5.   to represent Senate in meetings with the Board of Governors (or representatives) that may be agreed upon from time to time regarding matters of mutual concern; and to report back to Senate as appropriate on the nature of, and any outcomes from, such meetings;

6.2.2.6.   to explore the implications and sustainability of the creation of new Faculties and/or Departments/Schools, and to advise Senate accordingly; and

6.2.2.7.   to act on behalf of Senate, if needed, during the summer months, and to report to Senate at the first meeting of the following Session any actions taken on its behalf.

6.3. Academic Governance and Policy Committee (AGPC)

6.3.1.   **Composition:**

There shall be *ex officio* members, and members selected in accordance with the provisions of Article 3.3 as follows:

6.3.1.1.   the Provost and Vice President Academic, who shall serve as Chair;

6.3.1.2.   the Vice Provost Academic, who shall serve as Vice Chair;

6.3.1.3.   the Vice Provost, Students;

6.3.1.4.   the Vice-Provost and Dean, Yeates School of Graduate Studies;

6.3.1.5.   the Registrar;

6.3.1.6.   one (1) Faculty Dean elected by and from the Faculty Deans;

6.3.1.7.   seven (7) faculty Senators representing at least five (5) of the Faculties, at least one of whom is a Chair/Director, elected by faculty Senators;

6.3.1.8.   one (1) Senate Associate Chang School Representative;

6.3.1.9.   two (2) undergraduate student Senators elected by and from all undergraduate student Senators in accordance with Article 3.3.1.1;

6.3.1.10. one (1) graduate student Senator elected by and from all graduate student Senators in accordance with Article 3.3.1.1; and

6.3.1.11. the Secretary of Senate (non-voting).

6.3.2.   **Terms of Reference:**

6.3.2.1.   To propose, oversee, and periodically review Senate bylaws, policies and University procedures regarding any matter within the purview of Senate, except those matters for which responsibility is specifically assigned by this Bylaw to another entity;

6.3.2.2.   to recommend to Senate the establishment of Policy Review Committees, each mandated by Senate to undertake a periodic review or special review of an existing policy or policies in a policy area; to ensure that such Review Committees draw substantially on appropriate experience and expertise in the policy area; and to ensure that appropriate co-ordination with other existing policies occurs by, as appropriate, having a Policy Review Committee report to the AGPC rather than directly to Senate;

6.3.2.3.   to propose new Senate policy in areas when and where there is no current policy and it is advisable, prudent and/or necessary that there be policy; and to nominate to Senate a special sub-committee of the AGPC to research and draft such policy; and to forward the draft policy to Senate for consideration;

6.3.2.4.   to report to Senate with a Committee recommendation on all matters referred to AGPC by Senate or any Senate Committee; and

6.3.2.5.   to request reports from other University committees, sub-committees or departments whose business has an academic policy dimension, or a substantial effect on the academic mandate or performance of the University.

6.4.   Scholarly Research and Creative Activity Committee (SRCAC)

6.4.1.   **Composition**:

There shall be *ex officio* members, and members selected in accordance with the provisions of Article 3.3 as follows:

6.4.1.1.   the Vice President Research and Innovation (VPRI), who shall serve as Chair;

6.4.1.2.   the Associate Vice President Research and Innovation (AVPRI)

6.4.1.3.   one (1) faculty member from each Faculty, at least two (2) of whom are Senators, one (1) of whom shall be elected as Vice Chair by the Committee as the first committee meeting of the session;

6.4.1.4.   the Vice-Provost and Dean, Yeates School of Graduate Studies or designate;

6.4.1.5.   one (1) Dean / Chief Librarian elected by and from the Deans and Chief Librarian;

6.4.1.6.   the Chair, Research Ethics Board or a designated faculty member of the REB;

6.4.1.7.   one (1) Associate Dean Research (or equivalent) from each Faculty;

6.4.1.8.   one (1) Associate Chief Librarian;

6.4.1.9.   one (1) Librarian, not necessarily a Senator;

6.4.1.10.   one (1) graduate student, not necessarily a Senator;

6.4.1.11.   one (1) undergraduate student Senator elected by and from all undergraduate student Senators in accordance with Article 3.3.1.1;

6.4.1.12.   the Secretary of Senate (non-voting); and

6.4.1.13.   such other non-voting Associates as the Committee may, from time to time, designate.

6.4.2.   **Terms of Reference:**

6.4.2.1.   to examine and report annually to Senate regarding the state of SRC activity at Ryerson and upon issues regarding SRC activity that are likely to arise;

6.4.2.2.   to establish a sub-committee, the SRC Leaders' Group, consisting of the VPRI, the AVPRI, the Associate Deans Research (or equivalent) from each teaching Faculty, the Associate Dean Graduate Studies, and the Associate Chief Librarian, which shall:

6.4.2.2.1.1.   develop its own terms of reference to be approved by the SRCAC;

6.4.2.2.1.2.   provide input regarding SRC activity into the academic and strategic planning process; and

6.4.2.2.1.3. provide input to the VPRI and the SRCA Committee on the funding of SRC activity generally, and specifically with regard to procedures affecting SRC activity, and the internal allocation of funds intended to enhance SRC activity;

6.4.2.3. to advise Senate on existing and emerging trends in research funding, and on government policies and priorities relevant to SRC activity at Ryerson;

6.4.2.4. to review, and report to Senate on, the extent to which SRC activity informs, and is integrated into, opportunities for student experiential learning, the innovation ecosystem, and the undergraduate and graduate curriculum; and

6.4.2.5. in coordination with the Academic Governance and Policy Committee (AGPC), to recommend to Senate, when necessary, the establishment of policies to promote, support and regulate SRC activity involving Ryerson, and to review any such existing policies.

6.5. Academic Standards Committee (ASC):

6.5.1. <u>Composition:</u>

Senate shall consider each year a list of members as detailed below. Senate may approve or reject the list in its entirety, but may not alter the list.

6.5.1.1. the Vice Provost Academic (VPA), who shall serve as chair

6.5.1.2. two (2) members of the faculty from each of the Faculties of Arts, Community Services, Communication and Design, Engineering and Architectural Science, Science, and the Ted Rogers School of Management, and one (1) faculty member from the Faculty of Law;

6.5.1.2.1. faculty members are appointed by the Deans of their respective Faculties for a two-year term

6.5.1.3. two (2) representative of the Chang School, appointed by the Dean of the Chang School for a two-year term;

6.5.1.4. one (1) Librarian, appointed by the VPA upon recommendation of the Chief Librarian for a two-year term;

6.5.1.5. two (2) students, appointed for a one-year term by the VPA, who shall solicit nominations from the Associate Deans responsible for undergraduate studies;

6.5.1.6. the Director, Curriculum Quality Assurance (non-voting), who shall serve as Vice-Chair; and

6.5.1.7. The Vice President Equity and Community Inclusion (VPECI) or designate;

6.5.1.8. the Registrar;

6.5.1.9. the Secretary of Senate (non-voting).

6.5.2. <u>Terms of Reference:</u>

to provide advice to Senate with respect to the quality of both operating and proposed undergraduate programs (degree, diploma, certificate, and special-purpose programs), including, but not necessarily restricted to:

6.5.2.1. undertaking periodic program reviews;

6.5.2.2. assessing new undergraduate program proposals;

6.5.2.3. assessing curriculum modification proposals;

6.5.2.4. reviewing and formulating policies governing undergraduate curriculum structure; and

6.5.2.5. such other matters as referred to it by Senate or by the Provost and Vice President Academic.

6.5.3. <u>Subcommittees:</u>

The ASC may establish such subcommittees as are required for it to carry out the mandate assigned to it by this Bylaw or by other Senate policy. The activities of any subcommittees should be included in reports to Senate by the ASC.

6.5.4.   **Reporting:**
The ASC reports directly to Senate its recommendations about undergraduate curriculum (e.g., new programs, program reviews, program changes) and about the work of its subcommittees, if any. It directs to the AGPC recommendations regarding change to policy or to the structure specified in this Bylaw.

6.6. Awards and Ceremonials Committee (AWCC):

6.6.1.   **Composition:**

6.6.1.1.   the Provost and Vice President Academic, who shall serve as chair;

6.6.1.2.   the Vice-Provost and Dean, Yeates School of Graduate Studies;

6.6.1.3.   one (1) tenured faculty member, not necessarily a Senator, from each Faculty, nominated by the Deans of their respective Faculties;

6.6.1.4.   one (1) Chair/Director/Dean/Associate Dean from each Faculty, nominated by the Deans of their respective Faculties, at least one of whom must be a Chair/Director;

6.6.1.5.   two (2) Program Directors from the Chang School, nominated by the Dean of the Chang School;

6.6.1.6.   one (1) undergraduate student Senator, selected pursuant to Article 3.3.1.1;

6.6.1.7.   one (1) graduate student Senator, selected pursuant to Article 3.3.1.1;

6.6.1.8.   the Registrar (non-voting);

6.6.1.9.   the Director, Convocation and Awards (non-voting);

6.6.1.10.   the Secretary of Senate (non-voting).

6.6.2.   **Terms of Reference:**

6.6.2.1.   to approve, on behalf of Senate, the award of graduate and undergraduate degrees and certificates, Honorary Doctorate degrees and various medals and awards for excellence;

6.6.2.2.   to recommend to Senate, via the SPC (which includes both President and Provost), policies and procedures respecting the awarding of, as well as the ceremonies associated with, the awarding of degrees, certificates, medals, and other marks of academic achievement.

6.6.3.   **Reporting:**
The AWCC reports directly to Senate regarding its regular business. It directs to the SPC recommendations regarding policy changes or changes to its terms of reference or composition.

6.7. Learning and Teaching Committee (LTC):

6.7.1.   **Composition:**

Senate shall consider each year a list of members as detailed below. Senate may approve or reject the list in its entirety, but may not alter the list.

6.7.1.1.   the Vice Provost Academic, who shall serve as Chair;

6.7.1.2.   the Vice-Provost and Dean, Yeates School of Graduate Studiesor designate;

6.7.1.3.   two (2) faculty members from each Faculty, nominated by the Dean of their respective Faculty;

6.7.1.4.   one (1) Chang School Program Director, nominated by the Dean of the Chang School;

6.7.1.5.   one (1) Librarian nominated by the Chief Librarian;

6.7.1.6.   one (1) member of the Aboriginal Education Council nominated by the Council

6.7.1.7.   the Vice President Equity and Community Inclusion (VPECI) or designate;

6.7.1.8.   the Vice Provost Students or designate;

6.7.1.9.   one (1) undergraduate student from each Faculty, nominated by the Dean of their respective Faculty;

6.7.1.10.   one (1) graduate student nominated by the Vice-Provost and Dean, Yeates School of Graduate Studies;

6.7.1.11.   one (1) continuing education student nominated by the Dean of the Chang School;

6.7.1.12. the Director of the Learning and Teaching Office (LTO);

6.7.1.13. the Director of e-Learning;

6.7.1.14. the Director of Experiential Learning;

6.7.1.15. Director of the Academic Integrity Office (AIO);

6.7.1.16. the Manager of the Learning and Teaching Office (LTO);

6.7.1.17. one member from Digital Media Projects (DMP) Office; and

6.7.1.18. the Secretary of Senate (non-voting).

6.7.2. **Terms of Reference:**
6.7.2.1. to advise Senate on select university-wide issues through the lens of learning and teaching;

6.7.2.2. to initiate, as required, activities that address specific issues; and

6.7.2.3. to develop and make academic policy recommendations for the consideration of Senate.

6.7.3. **Reporting:**
The LTC reports directly to Senate regarding its regular business. It directs to the AGPC recommendations regarding policy changes or proposed changes to its terms of reference or composition.

6.8. Nominations and Elections Committee (NEC):
6.8.1. **Composition**
Immediately following the orientation session for new Senators (normally held in September of each year), the Chief Electoral Officer shall, in accordance with published Election Guidelines and Procedures, call for nominations from the relevant constituent groups to fill the positions listed below. If more nominations are received from any group than the number of positions available, an election shall be conducted within that group to determine the name(s) recommended to Senate.
6.8.1.1. one (1) Dean selected by and from the Deans (including Chang, YSGS, Chief Librarian);

6.8.1.2. two (2) faculty Senators elected by and from elected faculty Senators;

6.8.1.3. two (2) student Senators elected by and from student Senators; and

6.8.1.4. the Secretary of Senate (non-voting).

If the committee, once constituted, feels that additional members would aid in the solicitation of nominations, it may add up to two faculty members who need not necessarily be elected Senators.

6.8.2. **Terms of Reference:**
6.8.2.1. to develop guidelines and procedures governing the conduct of all elections conducted under the auspices of Senate;

6.8.2.2. to adjudicate any disputes that may arise in the application of all guidelines and procedures;

6.8.2.3. to solicit nominations from potential Senators;

6.8.2.4. to prepare and present to the penultimate regular meeting of Senate in each session, a complete list of nominations received for, and appointments to, all non-student positions on all Senate Standing Committees for the following year, unless those positions are otherwise specified in this Bylaw;

6.8.2.5. to assist the Chief Returning Officer with the filling of vacancies on Senate or its Committees.

6.8.3. **Reporting:**
The NEC is appointed by, and reports directly to, Senate or, in the period between Senate meetings, to the SPC.

6.9. Research Ethics Board (REB):
6.9.1. **Composition:**
To ensure compliance with current Tri-Council Policy requiring the independence of REB decision-making, institutional senior administrators shall not serve on the REB. The REB shall have diverse representation across all Faculties at the University. The specific composition will be specified by the

Senate policy governing the ethical conduct for research involving human participants. Senate shall consider each year a list of members nominated by the Vice President Research and Innovation. Senate may approve or reject the list in its entirety, but may not alter the list.

6.9.2. Terms of Reference:

6.9.2.1. to protect research participants and ensure that research is conducted in an ethical manner; and

6.9.2.2. to review and evaluate all proposed or ongoing research involving human participants that is conducted within or under the auspices of Ryerson University by faculty, staff, or students of the University. No research involving human participants shall be undertaken without the prior written approval of the REB;

6.9.3. Reporting:

The REB reports directly to Senate regarding its regular business. It directs to the SRCAC recommendations regarding policy changes or proposed changes to its terms of reference or composition.

6.10. Senate Appeals Committee (SAC):

6.10.1. Composition:

The Committee consists of no fixed number of members drawn from both faculty and students, who have applied, been screened, and trained in the application of the university policies listed in the Terms of Reference. Members hear appeals in 3-person panels consisting of two faculty members and one student. The panels are constituted by the Office of the Secretary of Senate.

Senate may approve or reject the list in its entirety, but may not alter the list.

6.10.2. Terms of Reference:

6.10.2.1. to hear appeals of decisions on matters related to Senate policies:

6.10.2.1.1. Graduate and Undergraduate Academic Consideration and Appeals;

6.10.2.1.2. Academic Integrity; and

6.10.2.1.3. the Student Code of Non-Academic Conduct.

6.10.3. Reporting:

The SAC reports directly to Senate regarding its regular business. It directs to the AGPC recommendations regarding policy changes or proposed changes to its terms of reference or composition.

7. *AD HOC* COMMITTEES

7.1. General:

7.1.1. Formation and Life*:*

An *ad hoc* committee may be formed for a limited term by a Senate resolution. Members need not be members of Senate. Unless reconstituted by Senate, the committee is dissolved upon presentation of its report. The motion to establish an *ad hoc* committee must include the Terms of Reference of the committee, and may include:

7.1.1.1. the proposed number of members on the committee;

7.1.1.2. details of proposed distribution of members, if any;

7.1.1.3. names of proposed members of the committee; and

7.1.1.4. the committee report date.

7.1.2. Nominations:

7.1.2.1. Nominations for members of the committee may be accepted from the floor and voted upon. A person who is not present may only be nominated if that person has given prior permission to the Secretary of Senate; or

7.1.2.2. The Chair of Senate may appoint the committee; or

7.1.2.3. The Chair of Senate may announce that the members of the committee will be announced at a later date.

7.1.3. **Chair:**
The committee Chair shall be:
7.1.3.1. elected, normally from those members who are also members of Senate, at the first meeting of an *ad hoc* committee; or
7.1.3.2. specified in the motion to establish the committee; or
7.1.3.3. appointed by the Chair of Senate.

7.1.4. **Secretary:**
7.1.4.1. Unless the Secretary of Senate is named a non-voting member of the *ad hoc* committee, the Committee shall, at its first meeting, name a Secretary who will be responsible to keep records of the committee meetings and to file those records with the Secretary of Senate.

7.2. Joint Committees with the Board of Governors:

Joint Committees with the Board of Governors may be formed with mutual consent. Such committees shall be formed by a motion in each body, according to the rules of each body.

8. GOVERNANCE COUNCILS

8.1. Yeates School of Graduate Studies Council (YSGS Council)

8.1.1. **General Purpose**:
The Yeates School of Graduate Studies Council will act on behalf of graduate education and programs at Ryerson and SGS. Among other duties, it shall review and make recommendations to Senate regarding proposals for new and existing graduate programs and degree designations, facilitate the review and evaluation of proposed programs, and develop and recommend to Senate policies relevant to the operation of graduate programs.

8.1.2. **Operation:**
The YSGS Council shall operate under Bylaw(s) approved by Senate. Such Bylaw(s) shall govern such matters as: i) the composition, terms of office, and method of appointment of Council members; ii) the composition, terms of reference for, and method of appointment of members of any standing committees of Council.

8.1.3. **Reporting:**
The YSGS Council reports directly to Senate regarding its operations. It directs to the AGPC recommendations regarding policy changes or changes to the Council's Bylaw(s).

8.2. G. Raymond Chang School of Continuing Education Council (Chang School Council):

8.2.1. **General Purpose**:
The G. Raymond Chang School of Continuing Education Council serves as the academic policy coordinating group for the School, working collaboratively with Department/School Councils. It:
8.2.1.1. considers academic policy for continuing education programs and courses;
8.2.1.2. considers the creation, modification, and deletion of all degree-credit and non-degree credit programs and courses offered by the School;
8.2.1.3. undertakes to review periodically all degree-credit and non-degree-credit programs and courses offered by the School; and
8.2.1.4. recommends appropriate changes to relevant academic departments.

8.2.2. **Operation**:
The Council shall operate under Bylaw(s) approved by Senate, which shall include: terms of reference for, and composition of, Council; method of appointment and election of Council members; any standing sub-committees, their terms of reference, composition, and specification of scheduled meetings.

8.2.3. **Reporting**:
The Chang School Council reports directly to Senate regarding its operations. It directs to the AGPC

recommendations regarding policy changes or changes to the Council's Bylaw(s). It directs to the ASC recommendations regarding the approval, modification, and discontinuation of all degree-credit and non-degree credit programs and courses offered by the School.

8.3. Program Councils:

8.3.1.   **General Purpose**:
Each undergraduate or graduate academic program that is not governed by a Department/School Council shall establish a Program Council in accordance with Senate policy to develop and recommend policy relevant to the academic program that is in accord with the general policies of Senate and the University.

8.3.2.   **Operation**:
Program Councils shall develop Bylaw(s) for approval by Senate upon recommendation of the AGPC.

8.3.3.   **Reporting**:
A Program Council may report directly to Senate regarding those of its operations that affect more than its own Program, and regarding matters of general interest. It directs to the AGPC recommendations regarding policy changes or changes to the Council's Bylaw(s).

8.4. Department/School Councils:

8.4.1.   **General Purpose**:
Each Department/School shall establish a Department/School Council in accordance with Senate policy to develop and recommend policy relevant to the Department/School that is in accord with the general policies of Senate and the University.

8.4.2.   **Operation**:
Department/School Councils shall develop Bylaw(s) for approval by Senate upon recommendation of the AGPC.

8.4.3.   **Reporting**:
A Department/School Council may report directly to Senate regarding those of its operations that affect more than its own Department/School, and regarding matters of general interest. It directs to the AGPC recommendations regarding policy changes or changes to the Council's Bylaw(s).

Approved: Academic and Governance Committee on dd Mmmmm YYYY

Approved: Senate on dd Mmmmm YYYY

SENATE
BYLAW #2
Meetings and Procedures

1. **Principles**: These principles inform the rules of Senate, and the interpretation and application of the rules shall be consistent with these principles.
    1.1.   Senate has a responsibility to conduct its business and carry forward its mandate of academic governance as described in the *Ryerson University Act*.

    1.2.   Senators shall be provided with due notice of matters to be decided at a meeting.

    1.3.   Senate meetings are open unless:
    1.3.1.   the criteria for an *in camera* meeting specified by the *Ryerson University Act* are met; and

    1.3.2.   Senate duly resolves to move into closed session pursuant to Article 3.9 of this Bylaw.

    1.4.   Senators have a duty to attend meetings of the Senate and to vote on resolutions that come before the Senate
    1.4.1.   Senators may not appoint a proxy if they are unable to attend, except as provided for by Article 2.2.1.2.1 of Bylaw 1 (the Faculty of Law alternate).

    1.5.   Senators shall have the opportunity to debate issues under consideration before a decision is made.

    1.6.   All Senators have the same rights and obligations under Senate's rules.

    1.7.   The Chair of all meetings of Senate and its committees shall enforce the rules in the spirit of these principles and, in so doing, will act fairly and impartially.
    1.7.1.   Senators have an obligation to act with civility and decorum.

2. **Authority, Approval and Codification of the Rules and Procedures**
    2.1.   Any Change (additions, deletions, alterations) to the rules of Senate shall be considered an amendment to this Bylaw.

    2.2.   No rule governing the procedure of Senate or its Committees shall be suspended unless two-thirds of the members present and voting consent thereto.

    2.3.   In issues not covered by these rules, the provisions of *Bourinot's Rules of Order* shall apply.

3. **Meetings of Senate**
    3.1.   **Notice of Meetings:**
    3.1.1.   The accidental omission of notice to a member shall not invalidate a meeting that has otherwise been duly convened.

    3.1.2.   *Regular Meetings:*
    A schedule of dates of regular meetings and the deadlines for the submission of materials shall normally be published by the Secretary on the Senate website by the final meeting of the previous session. The Secretary shall distribute an agenda package to all Senators and Senate Associates at least four (4) business days in advance of any regular meeting.

3.1.3. *Special Meetings:*
A special meeting requires at least seventy-two (72) hours notice.

3.2. **Regular Meetings**: At least seven (7) regular meetings of Senate shall be held between 01 October and 15 June according to the schedule published pursuant to Article 3.1.2 of this Bylaw, except where the Secretary, in consultation with the SPC, determines that circumstances warrant a change from the normal schedule.

3.3. **Summer Authority:** Between the last scheduled Senate meeting of a Session (normally in June) and the first regular meeting of Senate in the next Session (normally in October), the SPC may act on behalf of Senate, if needed, but shall report to Senate, at the first meeting of the following Session, any actions taken on its behalf.

3.4. **Special Meetings:** A special meeting may be called by the Chair, the Provost, the SPC, or by any twenty (20) members writing a requisition to the Secretary. Any Senate meeting may pass a resolution calling a special meeting. Only such business as is specified in the notice of the meeting may be transacted at a special meeting.

3.5. **Quorum at Start:** A quorum of any meeting from September 1 to June 15 shall be one-half of the members. The quorum for a special meeting from June 16 to August 31 shall be twenty-five (25) members. If, after a lapse of thirty (30) minutes from the announced starting time, the Chair decides there is still not a quorum, the Secretary shall call the roll. If the members present do not constitute a quorum, the Senate shall adjourn until the next meeting.

3.6. **Calling Quorum:** If, during any meeting, the number of members present should drop below a quorum, business shall not be interrupted nor the passage or rejection of any motion questioned at subsequent meetings, unless a Senator requests, while the meeting is proceeding, that the presence of a quorum be verified. At such a call by any Senator, the Secretary shall call the roll.

3.7. **Meeting Duration**: No meeting of Senate shall be of more than four (4) hours duration, except by the affirmative vote of two-thirds of those present and voting to extend for a specific period of time pursuant to Articles 6.4.2 and 7.21.9. All outstanding business shall be deferred until the next meeting unless a special meeting is called.

3.8. **Visitors:** Visitors may attend Senate meetings, and should be seated in the section reserved for observers. Such visitors may address Senate after being recognized by the Chair but may not vote on any matter.

3.9. **Meeting *in camera*:**
3.9.1. A motion to conduct part of any meeting *in camera* requires the assent of a majority of Senators present and voting.

3.9.2. When Senate meets *in camera*, only Senators, Senate Associates, the Secretary, staff specifically assigned to Senate, and others at the discretion of the Chair may be present.

4. **Agenda**
4.1. **Formation and Circulation:** Items for the consideration of Senate must normally be submitted to the Secretary by the deadline published on the Senate website (normally two weeks in advance of the meeting). The Secretary, in consultation with the SPC, will publish an agenda, which shall be circulated with the meeting package.

4.2. **Order**: The SPC may alter the order of the agenda for a particular meeting in order to prioritise matters coming before Senate provided that the order of business appears on the notice of meeting. The items of business considered at a regular meeting of Senate will normally follow this order, however Senate, by a vote of two-thirds of Senators present and voting, may resolve to alter the published agenda:
4.2.1. Call to Order and Establishment of Quorum

4.2.2. Approval of Agenda

4.2.3. Announcements

4.2.4. Minutes of the Previous Meeting

4.2.5. Matters Arising from the Minutes

4.2.6. Correspondence

4.2.7. Reports
  4.2.7.1. Report of the President
  4.2.7.2. Report of the Secretary
  4.2.7.3. Committee Reports

4.2.8. Old Business

4.2.9. New Business as circulated

4.2.10. Members' Business

4.2.11. Adjournment

4.3. **Consent Agenda**: The notice of meeting may identify items to be dealt with by consent. A consent agenda item is deemed to be approved unless, prior to the commencement of a meeting, one or more Senators advises the Chair or Secretary of a request to debate it.

5. **Documentation**
  5.1. **Distribution/Circulation**
    5.1.1. Documentation related to agenda items will normally be included in the agenda package.
    5.1.2. Documents approved for circulation by the SPC, the Chair, or the Secretary, but not part of the circulated agenda package, will be available at the Registration Table, the operation of which shall be the responsibility of the Secretary of Senate.
    5.1.3. Any Senator may request that material not approved for circulation by the SPC, the Chair, or the Secretary be made available for the information of other Senators by submitting such request to the Secretary of Senate in writing before the meeting is called to order. Such material may be placed at an Information Table, the operation of which shall be the responsibility of the Secretary of Senate.

  5.2. **Minutes**
    5.2.1. All formal actions and decisions by Senate and its standing committees shall be recorded in the minutes,[1] which shall be prepared and kept by the Secretary.
    5.2.2. Audio recordings of Senate meetings may be made by the Secretary. Such recordings shall be used only to aid in the preparation of minutes and shall be maintained only until a motion approving the minutes is passed by Senate, at which time the recording will be erased.
    5.2.3. Draft minutes of each Senate meeting shall be circulated to Senators, as part of the agenda package of the subsequent meeting.
    5.2.4. Once approved by Senate, minutes of each Senate meeting shall be posted on the Senate website.

6. **Debates and Votes**
  6.1. **Recognition**: Members or visitors who wishes to speak shall raise their hand, await recognition by the Chair and then address the Chair.

  6.2. **Voting**:
    6.2.1. All Senators – and only Senators – may vote at Senate meetings.
    6.2.2. The Chair may vote only to break a tie.
    6.2.3. Votes must be cast in person
    6.2.4. When the Chair is satisfied that the debate on an item has covered the full range of issues, or when a motion to call the question has been approved, the Chair shall call the question.
    6.2.5. When a question has been called, no motion can be made and no other intervention is permitted until the tally is completed and the results announced.

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[1] *Bourinot's Rules of Order*, 4th revised edition, provides: "The minutes should accurately record the actions taken and decisions made by the meeting in regard to the items of business it considered. They should not attempt to be a verbatim account of the meeting, but can include references to the major points made in the course of debate. Usually, speakers are not identified, but their names can be recorded if that information is directly relevant to the issue being debated. The minute-taker should aim for completeness, clarity, and succinctness" (p. 59).

6.2.6. Questions shall be decided by a show of name placards or, where facilities exist, by electronic voting. The Chair shall determine the aggregate outcome and announce the outcome as "carried" or "defeated."

6.2.7. Any Senator may make a motion that the issue on the floor be decided by ballot. The motion is not debatable and requires only a simple majority to be passed.

6.2.8. Any Senator may request that the numbers, or that his/her own vote, be recorded in the Minutes.

6.2.9. Except in cases where a decision has already been made to vote by ballot, any Senator may make a motion requiring a "roll call vote" in which the vote of each Senator is recorded by name. The motion is not debatable and requires only a simple majority to be passed.

6.3. <u>**Abstentions:**</u> Senators may choose not to vote. Abstentions are not votes, are not recorded, and are not factored in the tallying of votes (although Senators who are present and who choose not to vote are counted as part of quorum).

6.4. <u>**Majorities:**</u> Questions shall be decided by a simple majority of those present and voting, except those questions specified in this Bylaw as requiring a two-thirds majority. Motions that shall require a two-thirds majority are:

6.4.1. A motion to revise or augment the Agenda for the meeting;

6.4.2. A motion to extend sitting beyond four (4) hours duration;

6.4.3. A motion to amend the Senate Bylaw; and

6.4.4. Any matter a simple majority designates, in a decision taken without debate, as a major question.

7. Conduct of Proceedings

7.1. <u>**Quorum:**</u> For Senate, see Articles 3.5 and 3.6. For all Committees and Councils of Senate, quorum shall be 50% of the total membership plus one.

7.2. <u>**Speakers Address the Chair**</u>:

7.2.1. All matters coming before Senate are to be addressed to the Chair who will ensure that Senate's business is conducted in an orderly manner consistent with the principles and procedures outlined in this document.

7.2.2. Every member of Senate shall use a microphone, when provided, when addressing the Chair.

7.2.3. No item of business is on the floor of Senate unless it has been recognized by the Chair.

7.3. <u>**Decorum**</u>: Decorum is to be observed at all Senate meetings. If a Senator or an observer does not respect the Chair's request to observe decorum, the Chair may require that the Senator(s) or observer(s) leave the meeting.

7.4. <u>**Order**</u>: If the Chair or any other Senator calls to order a member or visitor, the member or visitor shall yield the floor. At the discretion of the Chair, the member or visitor who has been called to order may be permitted to make an explanation. The Chair shall decide the point of order, subject to appeal to Senate whose decision shall be final and made without debate.

7.5. <u>**Appealing a Ruling of the Chair**</u>: Any ruling by the Chair may be appealed and that appeal must be seconded. The Vice-Chair (or in the absence of the Vice-Chair, the Secretary) shall conduct the appeal. The appellant may state succinctly the reason for the appeal, and the Chair may state succinctly the rationale for his/her ruling. With no further debate, a vote shall be taken on whether the Chair's ruling will be sustained. Senate's decision shall be by a simple majority of members present, and the vote shall be final. At the conclusion of a vote involving an appeal, the Chair shall resume the chair.

7.6. <u>**Senate Policies and Associated Procedures (Definition and Authority)**</u>:

7.6.1. Policies are subject to the approval of Senate, and may not be enacted or amended without Senate's approval.

7.6.2. Procedures for the implementation of policies do not normally require Senate approval, unless such approval is required by the related policy, but shall be reported to Senate for information when they are adopted or amended.

7.7.   **Motions and Rationales**: Matters requiring decision are normally to be framed in the form of a motion accompanied by a rationale or report. However, when a matter seems to have received the assent of Senate, and is not seen to be a matter of such substance or consequence that a detailed motion is needed, the Chair may seek consensus and briefly state the matter upon which s/he perceives agreement. If no Senator dissents, the Chair's statement shall be taken to be a decision of Senate and the minutes shall simply record, "It was agreed that …."

7.8.   **Types of Motions**: Motions are categorised as follows:

7.8.1.   *Substantive* motions propose that Senate exercise its authority to achieve a specified substantive objective. Substantive motions shall normally be in writing with due notice to Senate as per Article 7.9 of this Bylaw. Substantive motions may be referred to a committee for study and report.

7.8.2.   *Procedural* motions (see Articles 7.21 and 7.22) relate only to process and not to substance (e.g. adjournment, referral, point of order, point of privilege, etc.).

7.8.3.   *Hortative* motions (see Article 7.23) express Senate's opinion on matters lying outside its jurisdiction.

7.8.4.   Motions to approve "in principle" are not in order.

7.9.   **Notices of Motion**: No notice is required for a procedural motion. All other motions and resolutions shall be preceded by a notice of motion given in writing at a previous meeting of Senate, or submitted to the SPC for consideration at its regular meeting prior to the next meeting of Senate, or submitted to the Secretary in time to be included in the agenda circulated before the next meeting. Otherwise motions and resolutions shall not be proceeded with, except as provided for in Article 7.10 of this Bylaw.

7.10.   **Introducing Business for Which Due Notice Has Not Been Given**:

7.10.1.   A motion to consider matters for which due notice has not been given shall be considered under the agenda item of "Members' Business."

7.10.1.1.   If a Senator puts forward a motion for which due notice has not been provided, the matter should be treated as a notice of motion pursuant to Article 7.9 unless considerations of timeliness warrant, in the majority opinion of Senate, waiving the normal requirements of notice.

7.10.2.   Senators may, under the agenda item of "Members' Business," raise questions or concerns related to the academic mission of the university without making a motion to direct any particular action. Further disposition of such matters will be up to the meeting to decide, with options including, but not restricted to, the following:

- if the member wishes to have a discussion of the matter, the Chair may test the meeting to determine whether discussion may take place; or
- the matter may be added to the next meeting's agenda; or
- the matter may be referred to a committee; or
- if a question is involved, an appropriate Senator may undertake to answer the question, or may take it under advisement and undertake to provide an answer to a subsequent meeting and/or to the Senator raising the matter.

7.11.   **Determining that Motions Are in Order**:

7.11.1.   The Chair, with the advice of the SPC and the Secretary, is responsible for determining if motions submitted for Senate's consideration in advance of regular or special meetings by committees, Councils, Senators, and others are in order.

7.11.2.   All motions circulated with the agenda are deemed to be in order.

7.11.3.   All rulings that a motion is out of order will be reported to Senate by the Chair together with a rationale for the ruling. Any such ruling is subject to appeal as per Article 7.5.

7.11.4.   Substantive and hortative motions for which notice has not been given must be delivered to the Chair in writing for a determination of whether the motion is in order.

7.11.5.   No motion or other intervention is in order when a vote is in progress.

7.12.   **Motions that are Debatable**: The following motions are debatable:

7.12.1.   substantive and hortative motions (as defined in Article 7.8);

7.12.2.   amendments to substantive and hortative motions and sub-amendments thereto;

7.12.3. referral [debate is limited to the issues raised by referral (see Article 7.21.4 below)];

7.12.4. changes to the order of the agenda;

7.12.5. rescinding previous actions;

7.12.6. limitations on the duration of a debate or on the length of time Senators may speak.

7.13. **Debating a Motion**: Senators may speak to any debatable motion but normally may speak no more than twice during the same meeting to the same motion or matter, for not more than ten (10) minutes in total. Exceptions are as follows:

7.13.1. the mover of a motion is entitled to speak first and last;

7.13.2. the mover, or an expert designated by the mover, may respond to questions as necessary or clarify material issues; and

7.13.3. the time limit may be extended with the consent of a simple majority of Senators present and voting.

7.14. **Dividing a Motion**:

7.14.1. If a motion raises more than one issue for decision, the Chair may, with the agreement of the mover and seconder, divide the motion in a manner that will help Senate deal effectively with the issues.

7.14.2. A motion may also be divided by means of a procedural motion to do so.

7.14.3. A motion to divide shall take precedence over the substantive or hortative motion under debate.

7.14.4. No debate is permitted on a motion to divide.

7.15. **Amendments**:

7.15.1. An amendment to a substantive or hortative motion may be moved without notice during debate on the main motion.

7.15.2. Whenever feasible, the mover of an amendment should provide a written version of the amendment to the Chair.

7.15.3. If a motion to amend is seconded and recognized by the Chair to be in order, discussion will be limited to the issues raised by the amendment until the amendment is resolved.

7.15.4. Only one amendment to a motion may be on the floor at one time.

7.15.5. Each amendment must be resolved before another amendment or the main motion may be considered.

7.16. **Scope of Amendments**: An amendment is designed to alter the main motion without substantially changing its intent and shall be strictly relevant to the business under consideration. The Chair shall rule out of order any amendment that would negate or substantially alter the main motion.

7.17. **Sub-Amendments**:

7.17.1. A sub-amendment is intended to amend an amendment under consideration.

7.17.2. A sub-amendment can only be moved when an amendment is on the floor.

7.17.3. A sub-amendment is out of order if it has the effect of negating the amendment or altering the amendment to such an extent that it significantly frustrates the purpose of the amendment.

7.17.4. If a sub-amendment is seconded and recognized by the Chair to be in order, discussion will be limited to the issues raised by the sub-amendment until such time as the sub-amendment is resolved.

7.17.5. Only one sub-amendment may be on the floor at one time and must be resolved before another may be considered.

7.17.6. Sub-amendments must be resolved before the amendment can be resolved.

7.18. **"Friendly" Amendments**:

7.18.1. During the course of debate, the mover and seconder may receive suggestions from the floor about the wording of motions. If the mover and seconder of a motion agree that the intent of the motion would be clarified by a change of wording, they may, with the agreement of the Chair, alter the wording of the motion accordingly.

7.18.2. Any proposed change to the wording that significantly alters the intent of a motion is not a friendly amendment and may be ruled out of order by the Chair.

7.19.   **Reading the Question**: Any member may require the question under discussion to be read at any time during its debate. The Secretary shall also read the question immediately before a vote is taken.

7.20.   **Resolving a Motion, Amendment, or Sub-Amendment**:

7.20.1.   Motions, amendments, or sub-amendments that are moved, seconded, and recognized by the Chair to be on the floor of Senate for discussion must be brought to a vote unless debate is ended by an intervening and overriding procedural motion.

7.20.2.   A motion may be withdrawn by the mover and seconder if no Senator objects. If there is an objection the question of withdrawal may be put to a vote.

7.20.3.   The Chair may request that the mover and seconder withdraw a motion – or direct that the motion be referred to a Standing Committee – if it appears that further debate is not in the best interests of Senate.

7.21.   **Procedural Motions**:

7.21.1.   Most procedural motions are not debatable.

7.21.2.   If a non-debatable motion has been moved, the Chair may invite the mover of the motion to explain in brief the reason for the motion.

7.21.3.   Procedural motions require a mover and seconder, and take precedence over the substantive or hortative motions that are under discussion at the time they are moved.

7.21.4.   *Motion to Refer* (Debatable in part):

7.21.4.1.   Although procedural in nature, a motion to refer has substantive elements that are debatable. In particular, a motion to refer must identify the person or body to whom the reference is made.

7.21.4.2.   A motion to refer is in order when a substantive or hortative motion is on the floor of Senate for discussion. A motion to refer is not in order when an amendment or sub-amendment is on the floor.

7.21.4.3.   When a motion to refer is on the floor, only issues relating to the nature of the proposed referral may be debated (e.g., to whom the reference is made, the advisability of referral, when a report back should be expected, etc.).

7.21.4.4.   If a motion to refer is defeated, no further motion to refer may be considered with respect to the specific substantive or hortative motion being considered unless, in the opinion of the Chair, significant new information has been provided in the debate that would warrant the re-consideration of a referral.

7.21.5.   *Motion to Put the Question*:

7.21.5.1.   A motion to put the question may be considered when a main motion, amendment, sub-amendment, or a debatable procedural motion is on the floor.

7.21.5.2.   If a motion to put the question is resolved in the affirmative, the Chair invites the mover of the main motion to make concluding remarks and then puts the question to Senate.

7.21.5.3.   If a motion to put the question is resolved in the negative, debate on the main motion resumes.

7.21.5.4.   No further motion to put the question can be considered regarding the same motion unless, in the opinion of the Chair, the nature of the subsequent debate warrants the consideration of such motion.

7.21.6.   *Motion to Move into Committee of the Whole*: A motion to move into Committee of the Whole is in order when any substantive or hortative motion, amendment, or sub-amendment is under consideration.

7.21.7.   *Motion to Adjourn Debate*: A motion to adjourn debate is always in order. If a motion to adjourn debate is carried, Senate shall move immediately to the next item of business. The Chair, with the advice of the SPC shall determine when and how the debate will be resumed.

7.21.8.   *Motion to Adjourn the Meeting*: A motion to adjourn the meeting is always in order. If a motion to adjourn the meeting is carried, the meeting ends immediately following the vote.

7.21.9. *Motion to Extend and Further Extend the Meeting*: A motion to extend a meeting is always in order. A motion to extend a meeting shall specify the new time by which the meeting will conclude. If a motion to extend a meeting is defeated, only one other such motion to extend may be considered subsequently. See also Articles 3.7 and 6.4.2.

7.22. **Other Procedural Motions**: The Chair may recognize other procedural motions (such as a motion to recess for a specified time) in circumstances where the implementation of such a motion would assist Senate in conducting its business effectively.

7.23. **Hortative Motions**: The Senate cannot properly make a decision on any matter that does not fall within the Powers of Senate as defined by the *Ryerson University Act.* Senate may, from time to time, consider motions of congratulation, thanks, or persuasion (i.e., urging a particular action by another decision-making body on a matter related to the educational policy of the University). Such motions are subject to the notice provisions of Articles 7.9 and 7.10 of this Bylaw, and do not take precedence over any substantive or procedural motion.

7.24. **Motions to Adopt/Accept/Approve vs. Motions to Receive**
In dealing with substantive reports that may contain recommendations, Senate may consider:

7.24.1. individual substantive motions dealing with each recommendation in the report; or

7.24.2. a Motion to Adopt (or Accept or Approve) which, if passed, means that Senate is accepting any and all recommendations contained in the report with the same force and effect as if individual motions were made and passed for each recommendation; or

7.24.3. a Motion to Receive which, if passed, simply puts the document in the record of the meeting, but does not authorize any action on any recommendations contained therein.

7.25. **Precedence of Motions**: The Chair shall give precedence to motions as follows (from highest precedence to lowest):

7.25.1. to adjourn the meeting;

7.25.2. to adjourn debate (or "table" a motion);

7.25.3. to put the question;

7.25.4. to move *in camera*;

7.25.5. to move into Committee of the Whole;

7.25.6. to permit a non-member of Senate to speak;

7.25.7. to refer;

7.25.8. to amend an amendment;

7.25.9. to amend.

7.26. **Points of Order, Information, and Privilege**:

7.26.1. *Points of Order*:

7.26.1.1.   Points of order are made when it is alleged that there has been a breach of the rules of Senate.

7.26.1.2.   Senators have a right and responsibility to rise on a point of order if they believe that the proceedings of a meeting are not consistent with these rules.

7.26.1.3.   A point of order should be made as soon as the alleged irregularity occurs and should not be dealt with if other matters have intervened.

7.26.1.4.   The Chair shall rule on a point of order without debate, with the ruling open to appeal as per Article 7.5.

7.26.2. *Points of Information*

7.26.2.1.   A point of information is a request directed to the Chair, or through the Chair to another officer or member, for information relevant to the business at hand but not related to any procedural matter.

7.26.2.2.   Senators may not interrupt a speaker to raise a point of information, however the Chair may permit it to take precedence on the Speakers' List.

7.26.3. *Points of Personal Privilege:*

7.26.3.1.   Senators may raise a point of privilege based on the belief that the integrity of Senate or a Senator has been compromised.

7.26.3.2.   If the Chair agrees that a privilege has been violated, the Chair's ruling may include remedies such as requesting an apology or the withdrawal of a remark, correction of a document, or other actions consistent with the principles of Senate membership.

7.26.3.3.   The Chair shall rule without debate. However, the Chair may seek the advice of Senators, and may also consult with the SPC for disposition at a later time, but no later than the next regular meeting of Senate.

7.27.   <u>**Items for Information**</u>: Information published in the agenda for a meeting of Senate, or any matter distributed via the Registration Table at a meeting of Senate, is deemed to have been received by Senate.

8.   **Committee of the Whole:** From time to time Senate may – and shall normally at least twice each year pursuant to Article 6.2.2.2 of Bylaw #1 – meet as the Committee of the Whole. The purpose of meeting as the Committee of the Whole is to facilitate discussion by relaxing some rules. Normal rules apply to proceedings in Committee of the Whole with the following exceptions:

8.1.   The Vice-Chair of Senate (or, in the absence of the Vice-Chair, an elected member of Senate elected by Senate) is the Chair of the Committee of the Whole.

8.2.   Limits of time and discussion of the Committee of the Whole can only be made at the time of the motion to establish.

8.3.   Senators are not limited in the numbers of times they may speak to a particular issue under consideration, however Senators who have not spoken will be given preference over those who have.

8.4.   The only motions allowed in the Committee of the Whole are motions to adopt, amend, or "rise and report." Motions do not require a seconder.

8.5.   The text of a resolution referred to the Committee cannot be altered by the Committee, but amendments can be presented to the Senate.

8.6.   Proceedings of the Committee of the Whole are concluded by a non-debatable motion "to rise and report." The presiding officer then reports to the Chair on the outcome of the proceedings.

DRAFT: Statement on Freedom of Expression
Ryerson University Senate

Ryerson University's primary purpose is the advancement of learning and the dissemination of knowledge. To fulfill this academic function, a free interchange of ideas is necessary, and the University must ensure the fullest degree of intellectual freedom.

Ryerson is committed to equity, diversity and community inclusion and to freedom of expression. It does not see free expression and the goals of diversity, equity, and inclusion to be at odds with one another. The university embraces the concept of inclusive freedom which espouses a commitment to the protection of free expression, and the assurance that all members – including those who could be marginalized, silenced, or excluded from full participation – have an opportunity to meaningfully engage in free expression, enquiry, and learning.

Freedom of thought, association, and expression are fundamental principles of an open, fair, and inclusive campus, and are core to the discovery, critical assessment, and effective dissemination of knowledge. These freedoms establish conditions necessary for critical thought, and for diverse voices to be heard without the fear of repression or reprisal. They are vital to the creation of knowledge, and to challenging the improper use of power.

Ryerson embraces the principles of free expression required in an academic environment. The university supports the expression, testing, and challenging of a range of perspectives and ideas, including those that may be deemed difficult, controversial, extreme, or even wrong-headed.

The Ryerson community will sometimes be divided over ethical, social, and pedagogical obligations. These disagreements reflect the differences of opinion that exist regarding the tension between free expression and other fundamental values and principles. The university acknowledges that members of its community will sometimes struggle with these issues and will even voice dissent about the merit of particular speakers or subject matter in advancing intellectual enquiry or critical discourse and dialogue. Ryerson recognizes that at times free expression may harm and/or further marginalize community members from visible and invisible minority groups including, but not limited to those from groups based on Indigeneity, class, race, ethnicity, place of origin, religious creed, spiritual belief, sexual orientation, gender identity and expression, age, and ability. In such cases, all members of the university community should be encouraged to respond with an educational and intellectual approach that increases awareness and consideration of diverse positions.

When confronted with ideas or viewpoints with which they disagree, community members are free to reject and vigorously contest ideas while still recognizing the right to express or hear those ideas. They may choose to dissent through, for example, participating in debate, hosting their own events, inviting speakers to express opposing views, engaging in non-violent protests or simply ignoring or boycotting events, but they may not prevent others from hearing or expressing alternative viewpoints. The development of constructive strategies of debate and dissent contributes to individual intellectual growth and serves as preparation for ongoing civic engagement. The university is committed to creating an inclusive environment for all Ryerson community members, and to providing access to services that support well-being and safety.

Some challenging cases of free expression will have to be navigated, but it is not the role of the university to censor speech. To grant the institution such power would set a dangerous precedent. Even if institutional censorship were deemed acceptable in one context, there is no guarantee that such restriction would be applied fairly or wisely in other contexts, or as power changes hands over time.

The freedom to debate and discuss the merits of competing ideas does not, of course, mean that individuals may say whatever they wish, wherever they wish. The University may restrict expression that violates the law, that falsely defames a specific individual, that constitutes a genuine threat or harassment, that unjustifiably invades substantial privacy or confidentiality interests, or that is otherwise directly incompatible with the functioning of the University. In addition, the University may reasonably regulate the time, place, and manner of expression to ensure that it does not disrupt the normal activities of the University. These are narrow exceptions to the general principle of freedom of expression, and it is important that these exceptions not be used in a manner that is inconsistent with the University's commitment to a free and open discussion of ideas.

Portions of this statement were previously drafted and adopted by Wilfrid Laurier University, Yale University and Princeton University.