Architecture Program Report

September 2018

Ryerson University

Department of Architectural Science
Faculty of Engineering & Architectural Science

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1.1 Program Identity and Mission

Accreditation requires an understanding of the specific scholastic identity and mission of the Program.

The APR must:

- include a summary of the Program's identity, uniqueness, strengths, and challenges;
- include the Program's current mission statement, the date of its adoption or revision, and the date of its endorsement by the institution (if such a statement and objectives do not exist, the Program's plans for completing one must be outlined); and
- demonstrate that it benefits from and contributes to its institutional context, including the Program's academic and professional standards for both faculty and students; the interaction between the Program and other programs in the institution; contributions by the students, faculty, and administrators to the governance as well as the intellectual and social life of the institution; and contributions of the institution to the Program in terms of intellectual and personal resources.

The Department of Architectural Science (DAS) has a long history of offering education for the AEC (Architectural, Engineering and Construction) Industry, and has championed the teaching of architectural science for over 60 years. The department prides itself on a close connection to industry, with many graduates having gone on to significant careers in design, construction, and/or development. The department's programs embrace a comprehensive vision of architecture as a social, technical, political, and cultural practice in the context of evolving environmental and social needs. Collectively, the department aspires to educate holistic architecture professionals – graduates who enjoy access to multiple professional pathways and enter industry with a comprehensive body of knowledge that allows them to take on many roles.

Ryerson's professional program in architecture follows a four-plus-two (4+2) model, comprising a four-year undergraduate (pre-professional) degree, the Bachelor of Architectural Science (B.Arch.Sc.), followed by a two-year professional Master of Architecture (M.Arch.), both of which are housed within the Department of Architectural Science. In addition, the department offers a non-professional Graduate Program in Building Science (with options to complete a one-year long, course based M.BSc. or a two-year long, research-based M.ASc.) which is not part of the accredited architecture program, but provides opportunities for student collaboration and interaction with students in the M.Arch. program.

The undergraduate B.Arch.Sc. program comprises a four-year, integrated, interdisciplinary, pre-professional architectural science degree program. It has a studio-based curriculum supplemented by lecture courses that draw from the liberal arts, physical sciences, social sciences and humanities, as well as engineering and building technology. The first three years of the program provide students with a common academic foundation to develop comprehensive knowledge of the fundamentals of architectural science. In the fourth year students specialize in Architecture, Building Science or Project Management. The inclusion of these three specializations within the program expresses the department's core belief in the holistic nature of architectural education, as well as the importance of an integrated approach.

This multidisciplinary body of knowledge is applied to a wide range of architectural and environmental problems and enables a variety of research contexts. Throughout the program, the discipline of architectural design is enhanced and strengthened by the complementary disciplines of building science and project management. Students are exposed to the interdependence of these disciplines, and throughout the curriculum they develop an appreciation for the social, ecological, economic, and technical implications of their work. Students apply theory and classroom practice to the design, construction, management and performance of a sustainable built environment, and their efforts are supplemented by a strong foundation of professional integration and industry support.

Graduates of the B.Arch.Sc. program enjoy access to multiple professional pathways and enter industry with a comprehensive body of knowledge. The long-standing reputation of the program rests in large part on its

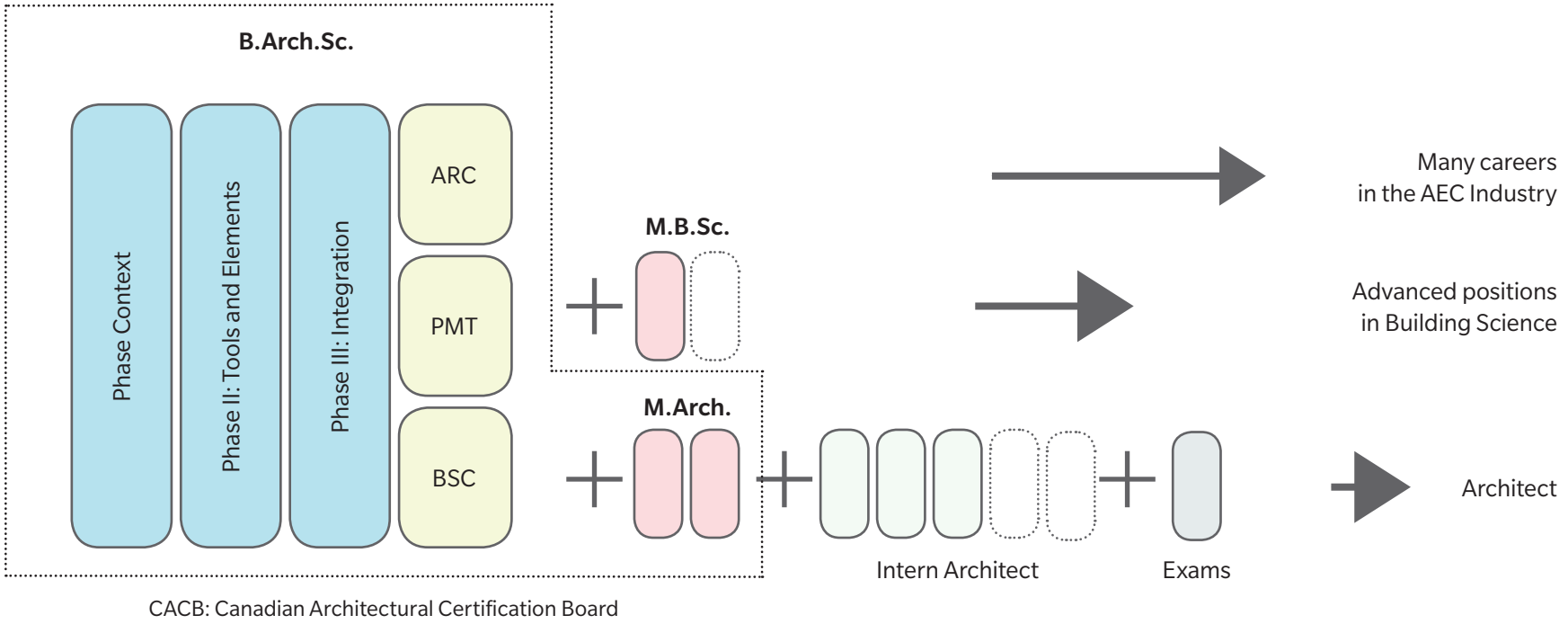


Figure 1.1. Structure of Departmental programs and routes to various career options.

unique curricular structure. Industry generally endorses the program's strong technical background, with specific reference to our graduates' technical understanding of systems and systems interactions, while appreciating the broader knowledge the program also provides. Industry also highlights the importance of our graduates' soft skills such as communication, collaboration, and work ethic.

The second part of Ryerson's professional program is a two-year professional Master of Architecture (M.Arch.). The program admitted its first cohort in 2007 and received initial Canadian Architectural Certification Board (CACB) accreditation in 2010. Students entering the M.Arch. program are expected to have a strong background in building design; the program accepts graduates of other institutions that offer an undergraduate degree equivalent to the B.Arch.Sc. The mode of delivery of the academic content is through studio teaching, courses focusing on theory and critical practice typical of architectural education, graduate seminars, and the completion of a research and design thesis over three (in some instances, two) semesters in the second year. The program stresses engagement in sustainable design, global perspectives, and emerging technologies.

Ryerson's long tradition of applied education exerts a significant influence on all aspects of the department's activities. The B.Arch.Sc. program, where many of the technical requirements of accreditation are addressed, has a larger number of building technology and management courses in the curriculum relative to comparable programs; design studios tend to require – and achieve – a relatively high degree of technical resolution. This distinctive element of the program provides a high level of preparedness of B.Arch.Sc. students and graduates for roles in industry.

Feedback from the profession provides a strong endorsement that our B.Arch.Sc. graduates fit well into industry and enter it well prepared. This is apparent from the very positive and enthusiastic response of employers to the Architectural Science Co-operative Education Internship (ASCEI) program students (who go into 16-month internships after completing the third year of the program). It also predisposes Ryerson Architectural Science graduates to leadership positions in various aspects of the AEC industry and is seen as a strength of the program. The benefit of our central location in downtown Toronto, within a rapidly transforming city core with a significant and active AEC industry, also provides students with plenty of opportunities to participate in local events, discuss urban issues in context, and visit a variety of interesting buildings and construction sites.

At the same time the program's challenges can be understood, at least in part, as a result of this intention to integrate these various elements into a unified structure. This leaves less room for the traditional liberal arts values of architectural education and critical thinking which we work hard to instill into the program. This has been noted in the past and the department has been working to address this, particularly through the addition of more theory-based curriculum content, greater emphasis on critical reading and writing in the history and theory courses, and careful consideration of the focus of studios. Furthermore, there has been

a tendency in the past to focus strongly on course content, leading to a very full curriculum, resulting in a reduced emphasis on conceptualization or speculation in student work. The department has been working to increase the latter without compromising the strength of the former.

Over the last five years, Ryerson's professional program in architecture, like the university as a whole, has been rapidly developing and maturing. The program values collaboration, both within the department and with other university departments, the profession, the AEC industry, and the wider community. Within Ryerson, there are opportunities to collaborate with the various engineering departments, the School of Urban and Regional Planning, and the School of Interior Design, but also more widely with many other departments and researchers, particularly at the graduate level. In addition, students are able to engage with the unique Ryerson Zone Learning initiative, a new model of interdisciplinary experiential learning and entrepreneurial incubator that provides opportunities for students to work on real-world projects, causes, companies or start-ups, and to solve real-world problems, learn new skills, and gain tangible experience applying their knowledge and ideas to problem solving (see https://www.ryerson.ca/zone-learning/about/). In particular, students and faculty have played a key role in the establishment and ongoing activities of the Digital Fabrication Zone (http://dfz.ryerson.ca/). Other collaborations include several with local community groups, designers, companies, and other universities.

The department's students are a source of immense energy and creativity, with dynamic student organizations (including the Architectural Course Union, American Institute of Architecture Students chapter and arc.soc) and many extracurricular initiatives. Similarly, our faculty engage in an increasing amount of scholarly, research and creative (SRC) activity. The 2013 opening of the Paul H. Cocker Gallery, along with the appointment of a curator, has resulted in many international as well as locally curated architectural exhibitions.The Paul H. Cocker Gallery has strengthened the already robust public lecture series, which attracts internationally acclaimed designers and academics each term. The Year End Show, an annual celebration of student work, has become a major event that is organized with significant input from students, staff, and faculty.

Within the department, governance is carried out via the Departmental Council, the consultative and collegial body responsible for academic matters specific to the department and its programs; the council meets at least once per term. Membership consists of all full-time members of the department faculty currently teaching; students representing each program in the department equal in number to one half the total faculty, and one alumnus or alumna. Its current bylaws were approved by the University Senate in 2017, and it is the principal mechanism for bringing together students and faculty to identify, discuss, and address matters of policy, and curricular matters pertaining to the B.Arch.Sc. program. Curricular issues pertaining to the M.Arch. program are addressed by a Graduate Program Council, comprised of faculty members teaching within the program, and elected student representatives.

Mission Statement

The Mission Statement of the Department of Architectural Science was prepared with input from the program's constituents, the Program Advisory Council, students, alumni associations and faculty members. It was approved on November 30, 2006 by the Departmental Council. It is reproduced in the Student Handbook and on the department website, and follows below. There is no record of its official adoption by the university, but it is passed to appropriate university bodies by virtue of being approved by the Departmental Council.

The development and implementation of new programs in the department, particularly graduate and professional programs, as well as the increasing emphasis on research, require that this Mission Statement be continually revised and updated.

The Mission of the Department of Architectural Science is:

- To provide education for a wide range of professional roles in the design, construction and management of the built environment by developing, enhancing and maintaining undergraduate, graduate and certification programs of applied study, and research in the areas of design, building science, project management and landscape.
- To prepare professionals for leadership roles in the AEC (Architecture, Engineering and Construction) Industry in the Greater Toronto Area, in Canada, and internationally by focusing on the development of the fundamental skills, knowledge and critical judgment necessary for effective participation in a complex, collaborative, cross-disciplinary workplace.
- To foster a comprehensive vision of architecture as a social, technical, political and cultural practice in the context of sustainability and evolving environmental and societal needs, and to utilize our combined expertise for the benefit of the larger community.
- To cultivate an environment conducive to lifelong learning and the pursuit of scholarly, research and creative activity by faculty and students.

The Mission of the Master of Architecture Program:

Within the broad mission of the Department of Architectural Science, the specific mission of the Master of Architecture program is to prepare the next generation of architectural leaders to think critically, act collaboratively and respond with sustainable solutions to local opportunities and global challenges. To do so, the program focuses on the study of architectural practice as distinct from, but encompassing, architectural design and architectural culture. The program has identified three broad overlapping areas of research interest: Sustainable Design, Emerging Technologies, and Global Communities.

1.2 Program Action Plan and Objectives

Accreditation follows an action plan that guides the Program in achieving the objectives of its mission. This plan, which should be used to structure the Program's self-assessment process, helps the visiting team understand the Program's role within the institution and the parameters of its future development.

The APR must include:

- the Program's action plan and objectives developed in accordance with institutional norms; and
- its measures of success and a timeline for executing the plan.

In 2018 Ryerson University celebrated 25 years as a university and 70 years as an academic institution. Its core mission is "the advancement of applied knowledge and research to address societal need, and the provision of programs of study that provide a balance between theory and application and that prepare students for careers in professional and quasi-professional fields." This responds to the demand for highly skilled, creative, and critical thinkers who can frame increasingly interconnected, complex problems and determine effective solutions. Ryerson is recognized for the excellence of its teaching, the relevance of its curriculum, the success of its students in achieving their academic and career objectives, and the quality of its scholarship, research, and creative (SRC) activity. It is guided by the motto *Mente et Artificio* "with mind and skill" and aims to serve as well as anticipate and respond to societal needs by seeking and defining new opportunities to make the world better.

The professional architecture program at Ryerson aligns closely with the university's mission by virtue of its focus on knowledge and research applied to the enhancement of the built environment and satisfaction of societal and environmental need. This requires engagement with both theory and its application to the real-world context of the built environment. The program is professionally relevant and prepares students for careers in the architectural profession as licensed architects as well as a variety of other careers in the AEC industry. It aims for excellence in teaching and SRC activity.

Our Time to Lead

The university's evolution has been guided by a series of academic plans that build upon Ryerson's proud traditions. The current five-year academic plan, *Our Time to Lead* (2014 – 2019), outlines the university's vision to become Canada's leading comprehensive innovation university, recognized for its high quality, career-related programs and relevant SRC activities, where students, graduates and faculty contribute significantly to Ontario's and Canada's social, cultural, and economic well-being. The plan expands the university's strengths for relevant programs and SRC activities, its engaging and diverse learning and teaching environment, its integration of theory with practice, and its strong relationships with external communities. *Our Time to Lead* identifies the following four interconnected priorities for the university over the current five-year cycle:

1. Enable greater student engagement and success through exceptional experiences;
2. Increase SRC excellence, intensity, and impact;
3. Foster an innovation ecosystem;
4. Expand community engagement and city building.

A set of 29 strategies support the priorities and provide opportunity for the university's faculties, schools, departments, and administrative units to interpret and activate the plan locally. *Our Time to Lead* also includes a set of 14 values, which are:

- Excellence
- Academic Freedom
- Integrity
- Enterprise
- Sustainability
- People First
- Collegiality
- Lifelong Learning
- Community
- Inclusion
- Respect for Aboriginal Perspectives
- Equity
- Diversity
- Access

The architecture program embraces these values by encouraging collaborative learning, adopting an interdisciplinary approach, and promoting the diversity of experience among our students and faculty. The department also aims to engage with the academic plan's four priorities as follows:

- Priority 1: The program seeks to offer exceptional experiences through studio education, mobility opportunities, a visiting lecture series, collaborative events, a graduate symposium, gallery events, extracurricular opportunities, and exposure to other activities in the department;
- Priority 2: Although the program is professional rather than research-based, at its core is the development of design research as a fundamental methodology. All students are exposed to professors' SRC activities through lectures, events, exhibitions, etc. Graduate students and fourth-year undergraduate students enjoy opportunities to serve as research assistants and collaborate with other researchers at Ryerson and beyond. The establishment of "research clusters" aims to provide additional SRC opportunities;
- Priority 3: The discipline is by its nature innovative because it fosters constant exploration of new ideas and new ways to improve built environments. The program encourages and reinforces this exploratory mindset with an interdisciplinary approach and a variety of educational methods;
- Priority 4: Students in the program regularly collaborate with local (and sometimes global) community groups, commercial organizations, and public agencies. Studios and graduate research, in particular, provide an opportunity for contributing to discussions about city building.

Striving for Excellence

In response to Ryerson's five-year academic plan, the Faculty of Engineering and Architectural Science developed its Strategic Plan *Striving for Excellence* (2015 – 2020), which outlines the following faculty level goals:

1. Develop a strategy for ensuring our student experience is action-oriented, collaborative, interdisciplinary, and rewarding, with specific attention to defining the role of innovation and entrepreneurship;
2. Strengthen and enhance the graduate programs, with focused attention on outreach, recruitment, and new program development;
3. Increase the intensity and impact of SRC activity;
4. Maintain and continually enhance the development of societally relevant undergraduate programs and develop new opportunities that meet societal need;
5. Increase the reputation and awareness of Ryerson's Faculty of Engineering and Architectural Science with respect to students' experience and quality, research, and partnerships;
6. Ensure that organizational structures, recognition, advancement opportunities, and operational systems support staff and faculty to continue making meaningful contributions to a people-first agenda.

The Department of Architectural Science addresses these faculty level goals by:

- Enhancing the student experience through ensuring effective studio learning, and review and update of the curriculum;
- Ensuring our programs are well perceived within industry by involvement of faculty in various industry groups and invitation to industry to participate in various ways in our activities;
- Providing opportunities for interdisciplinary activities within and outside the department;
- Creating opportunities for students to participate in entrepreneurial initiatives and competitions;
- Building strong links with industry and the professions to enhance student learning and ensure societal relevance; and
- Working closely with potential employers of our Architectural Science Co-operative Education Internship (ASCEI) program students to allow us to understand the needs of the profession and feed that knowledge back into the program. This has helped build a strong reputation of our graduates in the industry.

The Department of Architectural Science Strategic Plan

In response to Ryerson's five-year academic plan and the FEAS strategic plan, the department prepared a Self-Study Report (2015) which informed its strategic and academic priorities for 2015-2020. The key priorities of the plan are to:

- 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;
    - Nurture a critically creative, culturally, socially, and environmentally conscious atmosphere of innovation.
- Renovate and add facilities to support the above.

Below is a summary of the goals of the DAS Strategic Plan 2015-2020:

Goal A1: Maintain and augment Faculty Academic/Administrative Team positions according to the Schedule in Table 1.

In 2015, the department established the role of Curator of the Paul H. Cocker Gallery. In 2018, the responsibilities pertaining to the role of Associate Chair of the B.Arch.Sc. program were reapportioned among two faculty members: one focusing on student issues, and the other on curriculum development and mobility. A further objective to create an Associate Chair for SRC activities has yet to be implemented.

Goal A2: Recruit New Faculty.

One new tenure track appointment and one limited term appointment (three years) have been filled and joined the department in Summer 2018. A further new tenure track appointment is expected in 2019.

Goal A3: Recruit New Staff.

Over the last three years the department has hired two new lab technicians, an additional IT technician, and an administrative coordinator. This addresses most of the objectives of the plan, although two positions are currently on a two year contract. The department is working to upgrade these to permanent positions. The

intended upgrade of two lead hand positions to formal management roles has not occurred outside of the administrative office.

Goal B1: Maintain and enhance the excellence of the undergraduate programs.

The department conducts curriculum meetings in the spring and summer to coordinate and develop course outlines and schedules for the following academic year. A new Associate Chair for Curriculum Management and Mobility was appointed in 2018 to oversee curriculum implementation and development, including coordination and review of course outlines. The department has also developed a mechanism for compiling a curriculum archive of course materials for ongoing reference. In the 2017-2018 academic year, the department produced Periodic Program Reviews (PPRs) for all three of its programs, each of which identified a series of corresponding development goals (see below).

Goal B2: Develop the co-op program.

The cohort of students invited to join the Architectural Science Cooperative Education Internship (ASCEI) program doubled from 16 to 32 participants in 2018. This change was implemented one year ahead of schedule.

Goal C1: Support current graduate programs to ensure they remain key components of the Department of Architectural Science.

The graduate funding model has evolved to better support graduate students.

Goal C2: Expand the number of graduate programs.

The department's proposal to establish a PhD program in Building Science has been approved by the Provost and Yeates School of Graduate Studies and is awaiting final approval from Senate. In addition, the department is working with the Department of Civil Engineering and Ted Rogers School of Management on a Letter of Intent for a graduate program in Project Management in the Built Environment.

Goal C3: Improve the lab facilities and availability and access to equipment.

A new lab technician was hired in 2017 to establish a fully functioning building science lab. In addition, the workshop has purchased additional digital fabrication equipment including a robotic arm.

Goal D1: Establish research themes and clusters.

The department submitted a proposal for an SRC cluster for the Ryerson Centre for Sustainable Built Environments (CSBE). Unfortunately, this has not yet been approved by FEAS. The department is nevertheless proposing to move forward with activities in this field. Also a research cluster in New Wood Architecture has recently been established in association with the Bergen School of Architecture in Norway.

Goal D2: Improve research funding.

Research funding in the department has increased in the last few years due mainly to the activities of a few faculty members.

Goal D3: Improve research support.

It has not yet been possible to establish an Associate Chair for SRC, whose mandate would include mentorship of faculty and support for and coordination of SRC activities. However, closer working relationships with the Office of the Vice-President, Research and Innovation (OVPRI) and other research support services have contributed to an increase in successful funding applications.

Goal E1: Review and fully implement current Mobility guidelines.

Mobility guidelines have been developed and adopted to help facilitate travel opportunities for students.

Goal E2: Continue to develop exceptional learning opportunities for students, exposing them to the diversity of learning environments and cultural contexts.

The number of agreements with international partners continues to grow, with more opportunities for travel for our students and for international students to come to Ryerson. Travel opportunities embedded in courses are encouraged.

Goal F1: Complete the David E. Handley Studio Project in anticipation of Goal F2 below.

This project has been completed with renovation of, and provision of new furniture to, all studio spaces on level four of the Architecture Building. The department is exploring further fundraising opportunities to improve the building.

Goal F2: Further to Goal F1 above, plan for the commissioning of a feasibility study to outline space needs and building upgrades required, as well as for the development of a comprehensive strategy to meet the department's facilities and space needs in the future.

This goal has not yet been addressed. However, informal discussions with a variety of university administrators including the Dean of FEAS and the Provost have suggested that funding is not readily available but the department should develop a strategy for the site and building.

Goal F3: Immediately undertake a needs and feasibility study of the building science lab to achieve consistent support for faculty SRC, and increased availability of the lab for undergraduate and graduate curricular requirements.

This activity is ongoing and facilitated by the hiring of the building science lab technician.

2 Progress Since the Previous Site Visit

Accreditation is contingent on the assurance that deficiencies, both minor and serious, are being systematically addressed.

The APR must include:

- The program's summary of its responses to the previous team findings (VTR) as documented in the Annual Reports (AR). This summary must address the conditions identified as "not met", as well as the "causes of concern". It may also address the conditions identified as "met" or it may address "team comments".

The program takes seriously the need to respond to deficiencies noted by the visiting team. The following is a summary of the program response, section by section. The program would like to note that progress on some of these issues has been delayed by the changes in departmental leadership caused by health issues of a previous chair, and the need for an interim chair appointment.

Causes of Concern

1. The Team has concerns about the sustainability of the Library's Architectural resources in consideration of the expanding demands of the new Master of Architecture program.

Progress to date:

The Ryerson University Library and Archives (RULA) is committed and well-positioned to support both the undergraduate program in architectural science and the graduate program in architecture. Despite some financial challenges and changes in the world of academic publishing, the library continues to support the programs through the acquisition of relevant databases and indexing tools, the acquisition of monographs in both print and electronic formats, and the delivery of services such as in-class instruction to students, individual drop-by or scheduled research assistance, interlibrary loan services, and ongoing communication with faculty. A demand driven acquisitions process for print and eBooks allows for quick purchase of monographs outside of the current collection where needed. The collection now far exceeds the minimum accreditation standards (5,000+ items in call number range "NA"), which at Ryerson is currently over 10,000+ monographs total. The collection continues to be dynamic; new content is added through library purchase, faculty requests, and selected donations. The department has found that faculty requests to provide access to new materials are readily accommodated.

The collection of hard copy books and journals is now supplemented by:

- A strong journal collection as compared to our peer institutions;
- Providing students with excellent access to a variety of electronic databases. The Avery Index to Architectural Periodicals, Art Full Text, JSTOR, DAAI: Design and Applied Arts Index, and GreenFILE are a few examples of electronic databases;
- Subscriptions to aggregators and publishers' collections;
- A no cost Interlibrary Loan (ILL) delivery service;
- Participation in national and provincial resource sharing consortia;
- Access to maps and geospatial and social science digital data and related support services;
- A Digital Media Experience Lab within the Student Learning Centre that provides

specialized equipment such as 3D printers and scanners, and borrowable tech (cameras, MaKey MaKeys, Arduinos, Raspberry Pis).

The "Search Everything" interface (RULA's default discovery service introduced in 2011) provides students with an efficient way to search the majority of available resources in ways consistent with Google and other one-box interfaces. RULA staff have developed Subject Research Guides in Architecture and Building Science to assist graduate student research. They also provide support through a subject librarian who promotes and assists in scholarly research assistance and Interlibrary Loan Services to faculty and researchers.

With financial pressures due in part to the Canadian dollar exchange rate, a sustained financial commitment from the university is necessary to maintain the current quality of library resources and services. Nevertheless, the overarching budgetary pressures on the university library as a whole have not presented any pointed threats to the architectural collection.

2. The assignment of inappropriately qualified faculty is a concern. The program is encouraged to ensure continuity in course curriculum and student assessment regardless of the instructor assigned to the course.

Progress to date:

The department has established a process whereby in the fall term all faculty members are invited to submit their teaching preferences for the following year through a survey. These are taken into consideration by the Chair and Administrative Team when determining course assignments, and to the extent possible faculty are assigned according to their preferences as long as they meet departmental curricular needs. The final teaching assignments are determined by the Chair and confirmed by the Dean. Past instances of faculty teaching courses outside of their area of expertise have largely been avoided in recent years.

Part-time instructors, known at Ryerson as Contract Lecturers are hired to teach in areas where there are insufficient faculty resources. They are provided with teaching assignments by the department's Contract Lecturers Appointment Committee (CLAC) that consists of three (four beginning in Fall 2018) faculty members appointed by the Chair, including the Chair or designee. Employment of contract lecturers is governed by the Canadian Union of Public Employees (CUPE) Unit 1 collective agreement, which requires that preference be given to instructors with seniority accrued from previous teaching at Ryerson. Contract lecturers are sometimes hired to cover for full-time faculty on sabbatical leave.

In 2018 the department hired one new tenure track faculty and one limited term faculty (to compensate for the loss of one faculty member to an administrative appointment as associate

dean). Along with two new hires in 2014, these appointments bring the faculty complement to 29 (including the faculty member acting as associate dean). We anticipate one additional tenure track faculty hire in 2019. This has improved the teaching resources in the department. The average age of faculty in the department is about 56, and retirements are expected in the next few years. In anticipation of these retirements, the Provost has indicated that he intends to adopt a proactive approach to approving replacement hires.

3. The Team supports a review of the lower level wood and digital fabrication workshop facilities practices and policies in consideration of staff workload and student access.

Progress to date:

Significant expansion of and upgrades to the wood and digital fabrication shop facilities were completed in the fall of 2015. These upgrades have alleviated concerns about student access and provided more space, although issues with the dust extraction equipment capacity and performance persist, as do HVAC system concerns despite considerable expenditure (see below). Shop staff have compensated for these shortcomings by increasing maintenance. However, this has resulted in down time for the workshop, and at times tolerating inadequate environmental conditions. After several years of receiving sporadic responses without solving the core problems, the 2017 appointment of a new Head of Maintenance at Ryerson has seemed to revive concern about conditions in the workshop (and the building as a whole) and improvement in responses to our concerns. Nevertheless, the Maintenance Team has noted that its role is to achieve optimal functionality of existing systems, but that current usage in the building exceeds the capacity of these systems.

The hiring of one additional workshop technician in 2016 and a dedicated building science lab technician in 2017 have also provided additional staff support. The department now has four dedicated technical support staff assigned to the workshop spaces, which is a significant increase since the last accreditation visit. This has allowed the continued expansion of digital fabrication equipment, including the installation of a KUKA Robotic Arm with robot controller, intelligent operator control unit, and protective cage in 2018, and the replacement of an old laser cutter with two newer, faster, and more cost effective machines.

The department has also established an extracurricular committee composed of staff, faculty, and students to review, monitor, and approve extracurricular projects. Prior to the formation of this committee, extracurricular projects often overwhelmed the workshop's capacities. Along with greater administrative support, this committee's involvement improves the workshop staff's ability to manage resource demand.

The material storage room used by students was redesigned and reconstructed by the workshop staff. This complemented a fundamental change to how students purchase materials for their projects. These changes have enhanced the display and accessibility of materials, expedited their sale, and, with changes to an ancillary fee structure, significantly reduced waste produced by students when building models.

4. The support staff is working at or beyond capacity.

Progress to date:

The departmental staff has increased from nine at the time of the last accreditation visit to the current complement of 12. The requests for new support staff in both the workshop and IT services included in the department's Academic Plan were approved. As noted above, the workshop now benefits from an additional (third) technician, and a dedicated full-time building science technician has been added bringing the complement of workshop staff to four: a Senior Workshop Technician, two Workshop Technicians, and a Building Science Lab Technician. In 2017 the department hired an additional IT support position. This expanded IT support staff to two, including a Lead Hand IT Specialist and an IT & Audio Visual Technician .

The department hired an Administrative Coordinator in September of 2016 to fill a vacant position. This position provides supervision of office staff and financial and administrative support to the Chair. In 2017 the position of Departmental Administrator (previously held by the person now appointed as Administrative Coordinator) was filled, bringing the complement of office staff to six, including a Graduate Program Administrator (GPA) dedicated to the administration of graduate programs in the department and one position serving the dual roles of Communications and Archive Specialist, and Exhibition Designer.

The hires in the last few years have considerably strengthened the capacity and ability of the department's staff to support our programs. The staff are a strong resource and are central to the successful delivery of the programs and the smooth operation of the department.

5. Air quality concerns continue to be raised. The Department is encouraged to communicate the proposed building upgrade schedule to students.

Progress to date:

Since its opening in the early 1980s, the Architecture Building has undergone numerous electrical and mechanical changes to meet increasingly demanding IT and fabrication needs. However, it is evident that the sum total of such work, in particular the HVAC and dust extraction equipment, does not adequately address environmental quality needs. A major HVAC upgrade was completed in the building in 2014 requiring an investment of about $1.5

million, including the addition of heat pumps in studio spaces and a new chiller. Nevertheless, there are ongoing deficiencies with the HVAC system including poor air quality and inadequate climate control in some spaces. In 2017, the department initiated discussions with the university's maintenance department, and in early 2018 the new Head of Maintenance dedicated resources to try to address the most pressing problems and ensure that existing systems are at least working optimally. This resulted in an investigation of the problems and a prioritized plan of work to address concerns.

Regular monitoring of the Building Management System (BMS) has also identified malfunctioning equipment which is addressed on a case-by-case basis. Noise levels from the heat pumps were measured to be above recommended targets, especially in open studio settings. Although this is caused by limitations of the mechanical system design and specification of inappropriate equipment, the maintenance team is exploring options to alleviate the problem. Also, a project to replace lamps with LED bulbs to improve lighting quality and reduce heat from lights which add to summer cooling loads is planned for summer 2018.

Meetings with facilities staff in 2016 regarding the workshop also included a discussion of indoor air quality issues. Facilities staff made recommendations which led to sourcing formaldehyde-free materials for the workshop when possible (though often impractical). The department continues to evaluate the materials in use and search for appropriate alternatives.

6. Students are concerned about non-departmental access to studio spaces.

Progress to date:

All studio spaces are now secured by 24-hour card access readers, accessible only with a Ryerson OneCard programmed for individual studio groups. Studios are not accessible to anyone from outside the department unless specific access is granted. The department's conjecture is that this concern arose from an incident involving a non-departmental Ryerson group using the building's greenhouse, which is only accessible through the studio, to germinate seedlings in support of Ryerson's rooftop urban farm. It is likely that students in the studio were not apprised of these activities and became concerned when some of the greenhouse activity spilled out into a portion of the studio. This group has been advised that their access to and use of the greenhouse is a privilege, and were asked to avoid disrupting students in the studio or using any part of the studio for their activities. The group has been most understanding and cooperative.

While the department has scheduling control of nearly all spaces in the Architecture Building,

University Scheduling controls access to room ARC 108, a lecture hall on the lower level, and this necessitates access to the building for students from other departments. However, this is limited to the building's public areas and these students do not have access to the secure studios. Furthermore, to build partnerships the department occasionally grants access to various external groups to use its meeting and presentation spaces—most often in the evenings and outside the fall and winter terms—as long as this does not interfere with departmental activities. Examples include the Royal Architectural Institute of Canada (RAIC) Syllabus studio courses, Canada Green Building Council (CaGBC) events, and Ryerson advancement events.

Conditions Not Met

A7. Cultural Diversity

Understanding of the diverse needs, values, behavioral norms, and social/spatial patterns that characterize different cultures and individuals, as well as the implications of this diversity on the societal roles and responsibilities of architects.

Team Comments:

Not met. The Program is focused on the study of Western thought and tradition. Design Studio 2 (ASC 301) and Seminar in Critical Practice (AR 8102) look at the challenges of housing in Nunavut and urbanity in contemporary cities around the world, an in-depth study of cultural diversity was not observed.

Progress to date:

This particular SPC has been redefined as *Cultural Diversity and Global Perspectives* in the 2017 Conditions for Accreditation. The department continues to strive to address cultural diversity through its curricula, lecture series, exhibitions, travel opportunities, and extra-curricular activities. The department has identified the Ideas, Technologies and Precedents series of courses (ASC206, 306 and 406) as principally suitable for additional emphasis on cultural diversity. Each of these courses now has topics related to non-western cultures included in its curriculum.

Furthermore, the Periodic Program Reviews undertaken in 2017-2018 involved mapping courses against learning outcomes. This process identified a number of other courses that have relevant content for addressing non-western cultures and varying global perspectives. These include The Built Context (ASC103) Sustainable Practices (ASC200), The Human World (PLX599) and Studio in Critical Practice (AR8101).

Our unique location in a multicultural and diverse city provides the program with an

opportunity to engage with the many diverse local communities within Toronto. The department is working on better capitalizing on its location and selecting projects for studios and other assignments that expose students to a diversity of Toronto cultures in studio projects. Recent discussions have identified the Collaborative Exercise (ARC205/405/605/805) as an opportunity to engage in cultural issues related to local communities in Toronto.

B4. Sustainable Design

Ability to apply the principles of sustainable design to produce projects that conserve natural and built resources, provide healthy environments for occupants/users, and reduce the impacts of building construction and operations on future generations.

Team Comments:

Not Met. While there are several courses (ASC200, ASC302, ASC402) that provide an understanding with regards to building science principles, there is no evidence that supports a clear directive with regards to the understanding and application of sustainable design within the students own design work. Courses such as ASC200, Sustainable Practice, and ASC403, Site Development and Planning lay the groundwork for the application of sustainable design, but do not venture beyond this.

Progress to date:

This particular SPC no longer appears in the 2017 Conditions for Accreditation, and we interpret it to now form part of several other SPCs, particularly B5 Ecological Systems and C5 Environmental Systems.

The department views sustainability as not just about technical issues but fundamental and integral to the way design proposals are conceived. Sustainability concepts are expected to feature throughout the students' work but with different emphasis appropriate to the assignment or project. One of the roles of the new Associate Chair for Curriculum Management and Mobility is to work with Studio Masters to ensure that clear sustainability objectives are included in studio projects as appropriate to the overall objectives of the studio. The department completed an analysis of appropriate sustainability outcomes for each studio, and created a matrix (see Appendix) of expected outcomes for sustainability issues in each studio. This matrix develops an understanding of how to better and more consistently incorporate sustainability and issues of environmental impact into studio projects. Its component outcomes are now being integrated into project expectations. The third-year integration studios (ASC 520/620) in particular include expectations for students to consider a series of sustainability goals and include appropriate analysis. At the graduate level, the Studio in Critical Practice (AR8101) adopts a critical stance in relation to contemporary issues and

sustainability features prominently.

B5. Accessibility

Ability to design both site and building to accommodate individuals with varying physical and cognitive abilities.

Team comments:

Not Met. Some evidence is found in ASC620 (Integration Studio II), and ASC622 (Documentation), and inconsistently demonstrated in ASC401 (Design Studio II). Evidence is minimal, and inconsistent across student work.

Progress to date:

This particular SPC no longer appears in the 2017 Conditions for Accreditation, and we interpret it to now form part of several other SPCs, particularly C1 Regulatory Systems and E2 Ethical and Legal Responsibilities. In 2017 the department carried out a process of mapping the curriculum against agreed Learning Outcomes for the Periodic Program Review. One of the Learning Outcomes adopted for the B.Arch.Sc. program relates to Regulatory Considerations (LO 7a) and includes an expectation that students should be able to interpret and apply *universal design standards and the principles that inform the design*. To increase consistency across student work related to this Learning Outcome, the department completed an analysis of appropriate accessibility outcomes for each studio, and created a matrix of expected outcomes in each studio to embed accessibility requirements into appropriate assignments. The role of Associate Chair for Curriculum Management and Mobility includes working with the Studio Masters to ensure that accessibility issues are appropriately integrated into each studio. The department has invited accessibility advocates to speak to students, and Studio Masters for ASC201, ASC401 and ASC620 have all integrated accessibility expectations in studio.

Furthermore, members of the *Accessibility for Ontarians with Disabilities Act Alliance* have delivered presentations in studio courses, focusing on the needs of people with disabilities to have full accessibility and universal design incorporated in the design of the built environment. This initiative was launched in 2017.

3.1 Program Self-Assessment

The program must provide an assessment of the degree to which it is fulfilling its mission and achieving its strategic plan. The CACB encourages absolute candor in conducting and reporting the self-assessment. If well done, it will largely anticipate the VTR.

The APR must include:

- A description of the program's self-assessment process and
- the faculty, student and alumni assessments of the program's overall curriculum and learning context. Feedback may be obtained through such techniques as surveys and focus groups, but individual course evaluations are not deemed sufficient to provide insight into the program's substantive focus and pedagogy.

The Department of Architectural Science engages in an ongoing process of self-assessment, making use of both formal and informal mechanisms to ensure that its programs are performing in a manner consistent with Ryerson University's institutional mission, the department's mission and goals, and the CACB's expectations. Following are detailed descriptions of the formal and informal methods used to maintain quality and currency.

University Quality Assurance Process

In its ongoing commitment to offer programs of high academic quality, Ryerson University has developed an Institutional Quality Assurance Process (IQAP) which adheres to the Quality Assurance Framework established by the Ontario Universities Council on Quality Assurance (Quality Council). Academic programs at Ryerson are also aligned with the statement of undergraduate and graduate degree-level expectations adopted by the Council of Ontario Universities (COU). This quality assurance process is set out in Ryerson University Policies 110 and 126.

These policies require academic programs at Ryerson University to conduct formal *Periodic Program Reviews* (PPRs), typically on an eight-year cycle. The reviews serve primarily to ensure that programs achieve and maintain the highest possible standards of academic quality and continue to satisfy societal need. They also serve to address public accountability expectations through a review process that is transparent and consequential.

The Periodic Program Review starts with a self-study report, which addresses the following areas: program history; program outcomes; societal need; development since previous program review; program learning outcomes; academic quality; student engagement; student assessment; admission criteria; resources; and strengths, weaknesses and opportunities. The process culminates in a developmental plan for future changes.

The self-study report is subject to reviews and approvals at various levels within the university, including approval by Departmental Council or Graduate Program Council, the Dean of the Faculty of Engineering and Architectural Science (FEAS), the Vice Provost Academic (VPA), and Dean of the Yeates School of Graduate Studies (YSGS) for graduate programs. An external evaluation is conducted by a Peer Review Team (PRT), comprised of two or three external academic reviewers from the relevant disciplines (one can represent a different department at Ryerson). The PRT conducts a site visit and prepares a report documenting its findings, which is added to the self-study report along with the department's response. These are reviewed by the Dean of the Faculty and Office of the Vice Provost Academic before submission to the Academic Standards Committee (ASC) for consideration. The ASC makes its recommendation to the University Senate, which is responsible for final academic approval.

The Department of Architectural Science undertook PPRs of all three of its academic programs in 2017-18, including the two programs that make up its professional (accredited) program in architecture (B.Arch.Sc. and M.Arch.). This self-study process included consultations with students, staff, faculty, alumni, employers, and members of the Program Advisory Council (PAC), and led to the identification of strengths, weaknesses and opportunities. It also led to the establishment of development plans for each program, identifying actions to be addressed over the next three to five years.

Below is a summary of the outcomes of this process for the B.Arch.Sc. and M.Arch. programs. Full details are available in the PPR reports.

Periodic Program Review - Bachelor of Architectural Science Program

The department completed and submitted a PPR self-study report to the Dean of FEAS and the Vice Provost Academic (VPA) in winter 2018. A Program Review Team (Andrew Furman, Ryerson School of Interior Design; Patrick Harrop, McEwen School of Architecture, Laurentian University) carried out a site visit in April 2018. The outcomes have been submitted with the department's response to the Vice Provost Academic for Senate approval. The self-study process included a review of the Program Goals and Learning Outcomes which can be measured against course deliverables. These Learning Outcomes were then mapped against the mandated Undergraduate Degree Level Expectations (UDLEs).

The six Program Goals and related Learning Outcomes for the B.Arch.Sc. are presented below:

Program Goal #1 - Design and Documentation
By the end of this program, students should be able to design and document a comprehensive building project of moderate scale and complexity.

- LO 1a - Design: demonstrate a design process grounded in theory and practice, involving identification and application of design principles and methods, and the critical analysis of architectural precedents;
- LO 1b - Design Skills: apply appropriate design theories, methods, and precedents to the conception, configuration and design of buildings, spaces, building elements, and tectonic components;
- LO 1c - Design Tools: select and apply a broad range of design tools available to the architectural discipline, including a scope of techniques such as two- and three-dimensional representation, computational design, modeling, simulation, and fabrication;
- LO 1d - Design Documentation: produce and present the outcomes of a design project using the broad range of architectural media and assemble documentation for the purposes of construction, through drawings and specifications;
- LO 1e - Design Processes: identify, assess, and make appropriate use of emerging tools in relation to design, analysis, and documentation.

Program Goal #2 - Critical Thinking and Communication
By the end of this program, students should be able to critically analyze the built environment, and related texts; communicate that analysis in written and graphic form.

- LO 2 - Critical Thinking: Research, Analysis and Synthesis: determine and apply appropriate research strategies; record, assess, and comparatively evaluate information; synthesize research findings and test potential alternative outcomes against relevant criteria and standards; reach well-supported conclusions related to a specific project or assignment;
- LO 3a - Graphic Communication: effectively use a range of visual media to appropriately communicate subject matter related to the architectural discipline, both within the profession and with the general public;
- LO 3b - Written Communication: write effectively using a range of written media to appropriately communicate subject matter related to the architectural discipline, both within the profession and with the general public;
- LO 3c - Oral/Presentation Communication: communicate orally appropriately and effectively on subject matters related to the architectural discipline, both within the profession and with the general public;
- LO 3d - Communication Innovation: identify, assess, and make appropriate use of emerging technologies to communicate architectural ideas.

Program Goal #3 - Integration of Building Technologies
By the end of this program, students should be able to analyze, design, and integrate building technologies in the context of building projects.

- LO 4 - Building Materials: analyze, evaluate, and integrate building materials into an architectural design project, relative to/addressing issues of fundamental performance, aesthetics, durability, energy, resources, and environmental impact;
- LO 5 - Building Components and Assemblies: analyze, evaluate, and design building envelope systems and associated assemblies relative to/addressing issues of fundamental performance, aesthetics, durability, energy, material resources, and environmental impact;
- LO 6a - Structural Systems: analyze, evaluate, select, and integrate appropriate structural systems into an architectural design project;
- LO 6b - Environmental Systems: analyze, evaluate, select, and integrate appropriate passive and active environmental modification and building service systems;
- LO 7a - Regulatory Considerations: interpret and apply building codes, regulations, and standards, for a given building and site including universal design standards and the principles that inform the design and selection of life-safety systems;
- LO 7b - Design Innovation: identify, assess, and make appropriate use of emerging building technologies.

Program Goal #4 - Engaging Architectural Culture and Theory
By the end of this program, students should be able to engage in the discourse of architectural culture and theory in relation to a broader understanding of historic, current, and evolving human culture.

- LO 8 - Architectural History: identify, discuss, critically analyze, interpret, and write about the history of architecture and urban design in relation to cultural, political, ecological, morphological, and technological factors that have influenced their development;
- LO 9 - Architectural Theory: recognize, investigate, and synthesize conceptual and theoretical frameworks in the context of architecture and urban design;
- LO 10a - Human Cultures and Ecologies: analyze and interpret the diverse needs, values, behavioural norms, and social/spatial patterns that characterize different global cultures and individuals, and the broader ecologies that inform the design of buildings; recognize and discuss the implications of this diversity on the discipline of architecture;
- LO 10b - Methodological Innovation: identify, assess, and make appropriate use of emerging tools for investigating architectural history and culture.

Program Goal #5 - Principles of Management in the AEC Industry
By the end of this program, students should be able to apply principles of collaborative management to the development of the built environment within the context of the AEC professions.

- LO 11 - Roles and Responsibilities in the AEC industry: describe the organization of the AEC industry in Canada and the regulatory frameworks within which it operates; identify the participants of the AEC industry and articulate their roles and responsibilities;
- LO 12 - Project Management: apply essential project management concepts and perform relevant calculations and analyzes pertaining to cost, schedule, risk, scope, and procurement;
- LO 13 - Management Innovation: identify, assess, and make appropriate use of emerging processes and tools for resource management.

Program Goal #6 - Demonstration of Enhanced Proficiency
By the end of this program, students should be able to demonstrate achievement in one or more areas of specialization within Architectural Science beyond basic proficiency.

This goal is aimed at advanced learning taking place in the fourth year in each of the three areas of specialization: architectural design, building science, and project management. Three learning outcomes (LO14, LO15, and LO16) are related to these three areas of specialization.

- LO 14 - Demonstration of Enhanced Proficiency in Architecture: demonstrate enhanced proficiency in architecture;
- LO 15 - Demonstration of Enhanced Proficiency in Building Science: demonstrate enhanced proficiency in

building science;
- LO 16 - Demonstration of Enhanced Proficiency in Project Management: demonstrate enhanced proficiency in project management.

These Learning Outcomes were mapped against the mandated Undergraduate Degree Level Expectations (UDLEs) and against each course to identify how they are achieved. Following data collection and consultations with the various stakeholder groups, the department conducted an analysis of strengths, weaknesses and opportunities. The following strengths of the B.Arch.Sc. program were identified:

- Interdisciplinary and highly experiential nature of the program;
- Rigorous and multifaceted academic experience, with strengths in technical and process issues;
- A wide variety of faculty expertise;
- A diverse student body;
- Graduates are well prepared for practice and professional competency;
- The ASCEI (co-op) program;
- The multiple professional paths provided by the three areas of specialization;
- A high level of student engagement;
- Opportunities for collaboration with industry and other students;
- Extracurricular opportunities;
- Faculty SRC activities;
- Downtown location as a teaching tool.

However, several weaknesses show there is room for improvement. These include:

- Inadequacy of the physical space and environmental conditions suited to current program needs;
- Historic perception of Ryerson University as a technical school and a lingering perception of the program as less sophisticated or comprehensive than those offered by other universities;
- Lack of cohesion concerning the identity of the department and the undergraduate program leading to tensions in the department;
- Missed opportunities for integration between program specializations;
- Inadequate number of faculty to deliver the programs effectively, with a need for new faculty;
- Inflexibility of the program structure to address differing student paths to graduation;
- Cumbersome curriculum development process;
- Poor website and inconsistent communications.

The strengths and weaknesses of the program indicate specific opportunities for the B.Arch.Sc. program:

- Develop consensus on the program identity and programmatic priorities;

- Use renovations to the building to create a living lab and galvanize faculty and students around this transformative project;
- Create partnerships and collaborations with other departments, industry partners, as well as universities across Canada and abroad;
- Focus on sustainable design and be a leader in low carbon design;
- Integrate design sensibilities and research capacity to address local environmental issues;
- Expand digital technologies;
- Recruit new faculty;
- Integrate specializations more effectively focusing on the interdependence of the disciplines;
- Expand experiential learning;
- Target the strongest applicants to accept offers to the program;
- Improve communications and website.

Overall the assessment concluded that many students in the program exhibit a consistently high rate of academic success and persistence. Feedback from the profession provided a strong endorsement that our graduates fit well into industry and enter it well prepared. Industry representatives generally endorse the strong technical background of the program, with specific reference to graduates' technical understanding of systems and systems interactions, although this needs to be balanced by contextual understanding and situational awareness. Industry also highlight the importance of our graduates' soft skills such as communication, collaboration, and work ethic.

Nevertheless, opportunities for program improvement are plentiful, particularly related to the program's location in the dense and fast-changing urban context of downtown Toronto. This allows greater collaboration with the numerous architecture, building science, and project management firms located nearby and with the local community and development industry. Faculty members need to explore inter-departmental and inter-institutional, multidisciplinary partnerships which represent models of future research and design and are therefore important to the continued development of the department. Furthermore, a focus on digital skills development and technology integration may enable opportunities for collaboration. Remote partnerships can drive innovation and improve the program's visibility, which may in turn encourage applications for admission.

Sustainable design is a stated strength of the program and its faculty, and could be leveraged more effectively for the benefit of the students. In the same vein, the extracurricular activities and enterprising spirit of students, regardless of their disciplinary focus, can be better documented and promoted as a selling point of the program. The department website and communications overhaul presents a significant opportunity to enhance the image, message, and overall reputation of the program. Along with the promotion of experiential

and extracurricular engagement among its students, the department should emphasize its downtown location and its focus on studio practice.

Some areas continue to be challenging. The inadequacy of the department's physical resources remains a serious concern. Despite recent renovations and upgrades, it is clear that the Architecture Building is no longer able to meet the needs of the program. Some improvements since the last accreditation visit include renovation of the fourth floor studio space, renovations to the HVAC systems, addition of the new Paul H. Cocker Gallery, and improvements to the workshop facilities. However, chronic problems with availability of and quality of space, environmental conditions, building envelope failure, and image, need to be addressed.

Most spare spaces within the building have now been taken over for studio space, research labs or graduate student offices. This has caused operational problems, particularly when scheduling spaces for formal studio reviews and concurrent meetings. The limited availability of classroom and lecture spaces elsewhere on campus complicates this issue further. This must be addressed in both the short term (with minor alterations and better space utilization) and in the medium to long term (perhaps with a major renovation and addition of space) with the goal of creating a sustainable flagship building that will attract students. Also, the integration of computer technology must continue to evolve as digital tools, both in terms of equipment and software, are constantly developing. An IT committee assesses and addresses the needs of students to ensure the department is accommodating this dimension of our students' needs.

The PPR process proposed the following Development Goals for the B.Arch.Sc. program:

Curriculum

1. Consider how to provide better support for students in developing the necessary digital skills to succeed in the program and develop a strategy for supporting students in this area.
2. Review the group of building structures courses, including PCS107, ASC203, ASC303, and CVL407 to address concerns about interconnections, content, and delivery.
3. Review how well core courses taught outside the department including ACS104, PCS107, CVL407 and PLX 599 meet the requirement of the curriculum, and how they could be revised, rescheduled, or replaced.
4. Develop guidance for transparency and consistency around grading practices and the provision of feedback received in critiques/reviews, including consistent evaluation criteria, and in the management of studios and courses, so students can be clear about what to expect, and any new or part-time instructors will have a document on which to base their approach.
5. Propose to clearly define learning outcomes for each of the core studios that address CACB Student Performance Criteria (SPC) to show how a student develops knowledge in these areas.

6. In 2016-17, a committee was formed to review the fourth year curriculum. A variety of proposals were reviewed and presented to the department. The department needs to establish next steps in moving forward with these recommendations.
7. Consider how the B.Arch.Sc. program could be made more flexible to enable more variety in paths through the program for students that need to take five or six years to complete due to other commitments. Also, consider how to better utilize the spring/summer term to enhance the student experience and increase flexibility.
8. Student Performance Criteria for individual courses must be reviewed and embedded into course outlines. A concurrent review of the demands on student workloads and types of assessment methods would be valuable to identify whether the number and types of assignments are appropriate.
9. Conduct a strategic review of the possibility of expanding experiential learning opportunities both within and outside the curriculum, including considering whether further expansion of the ASCEI (co-op) program is feasible and desirable, and identify related resource implications.

Facilities

10. Initiate a review of the opportunities to improve, renovate, or redevelop the Architecture Building. Consider quality of space, quantity of space, types of spaces needed, environmental control, and external perception of the Architecture Building, and engage with university facilities and finance authorities about how this can be addressed.
11. Identify potential external funding opportunities for resourcing future initiatives including building improvements, travel opportunities, and digital equipment.

Communications

12. A variety of visiting reviewers have observed the need for the department to present a stronger identity in its communications and marketing. This should include establishing a new, up-to-date website, which is more effective at communicating our unique identity, faculty SRC, and other departmental activities.

Operations

13. Maintain a healthy and collegial environment where everyone (students, staff, faculty, and visitors) enjoy coming to the department. This includes creating a culture of concern about mental health in which student workloads are such that they do not create undue pressure to "pull all-nighters". This can be achieved with a variety of strategies including management and scheduling of assignments.
14. Ensure that the temporary staff positions including the second IT & Audio Visual Technician and Building Science Lab Technician are converted from two-year temporary positions to permanent positions so the department can continue to effectively deliver its programs and enhance the student experience.

15. Consider how to most effectively use teaching release time for administration and graduate assistant (GA) positions to facilitate student learning experiences.
16. Provide better guidance about career paths and possible further study options to students after they complete the B.Arch.Sc.

Any structural changes to the B.Arch.Sc. must be approved by the Departmental Council. More significant changes need further approval of Senate.

Periodic Program Review - Master of Architecture Program

The department submitted a PPR self-study report of the M.Arch. program to the Dean of FEAS and the Yeates School of Graduate Studies in winter 2018. Peer Review Team (Brian Lilley, Dalhousie University; David Theodore, McGill University; and Andrew Millward, Ryerson, Geography) carried out a site visit in May 2018. The team's Report has been submitted with the department's response to YSGS for approval.

The six Program Goals and related Graduate Learning Outcomes (GLO) for the M.Arch. program are presented below:

Program Goal #1 - Design
We expect our graduates to be highly skilled designers. By the end of the program, they should be able to:

- GLO 1a - Design Process: develop and carry out a well-developed design process grounded in theory and practice in the context of the design of significant architectural projects.
- GLO 1b - Design Skills: produce well considered, innovative, provocative, sustainable and technically competent designs for buildings, spaces, building elements, and tectonic components that respond knowledgeably and critically to the particularities of their given site and program.
- GLO 1c - Design Tools: demonstrate mastery of a broad range of design tools, methods, and techniques available to the architectural discipline, including a scope of techniques such as two- and three-dimensional representation, computational design, modeling, simulation, and fabrication.
- GLO 1d - Design Documentation: produce and present the outcomes of a design project in a professional manner using the broad range of architectural media, including emerging or innovative media.

Program Goal #2- Architectural Culture:
We expect our graduates to be knowledgeable about architectural culture and to be able to contribute to the further development of that culture. By the end of the program, they should be able to:

- GLO 2a - Architectural History: demonstrate, through written work and oral presentation, a systematic overall understanding of the history of architecture, as well as a deeper level of knowledge and analysis in one or more areas of expertise.

- GLO 2b - Architectural Theory: discuss, in writing or verbally, important current and emerging conceptual and theoretical frameworks in the context of architecture and urban design, with reference to the key proponents of these theories and their principal works, both built and written.
- GLO 2c - Architectural Projection: apply competencies in architectural history and theory to design problems and make use of design to investigate theoretical questions.

Program Goal #3 - Critical Thinking and Communications
We expect our graduates to be critical thinkers, especially in architectural contexts, and to be strong communicators to various audiences. By the end of the program, they should be able to:

- GLO 3a - Critical Thinking: apply intentional and structured skills and processes of critical analysis and synthesis to architectural concerns, in both written and design work.
- GLO 3b - Graphic Communication: mobilize a range of visual media to effectively and critically communicate concerns and ideas related to the architectural discipline with precision and clarity, within the professional and academic contexts.
- GLO 3c - Written Communication: write with clarity and conviction to effectively and critically communicate concerns and ideas related to the architectural discipline with precision and clarity, within the professional and academic contexts.
- GLO 3d - Oral Communication/Presentation: clearly and compellingly present a project, position, critique, or any other concerns or ideas in architecture, to peers, clients, academic supervisors, or the general public.

Program Goal #4 - Building Technologies
We expect our graduates to have a high level of competency with the technical aspects of building, and to be able to mobilize that understanding to further their architectural ambitions. By the end of the program, they should be able to:

- GLO 4a - Building Technologies: mobilize their skills in the analysis, evaluation, design and synthesis of building systems and assemblies relative to numerous yardsticks in the service of architecture.

Program Goal #5 - Architecture as a Profession
We expect our graduates to be ready to enter the profession as interns. We expect them to understand the legal and ethical responsibilities of architects, and the basic principles of starting and running an architectural office; and we expect them to be aware of the changes that are currently affecting the practice. By the end of the program, they should be able to:

- GLO 5a - Leadership Roles: discuss, orally and in written work, the legal, ethical, and leadership roles of the architectural profession.
- GLO 5b - Emerging Practice: describe, analyze, and discuss the changing conditions for architectural practice, and speculate on how these issues might affect practice in the near future.

- GLO 5c - Practice Organization: describe the principal issues involved in organizing an architectural practice.
- GLO 5d - Business Skills: develop a business plan for an architectural practice.
- GLO 5e - Collaborative Skills: collaborate effectively with peers, associated professionals, and other project participants in the context of a building or design project.

Program Goal #6 - Architectural Synthesis
We expect our graduates to understand what it takes in terms of a sustained and committed effort of research, iterative design, and criticism (including self-criticism) to produce a significant architectural project. By the end of the program, they should be able to:

- GLO 6a - produce an architectural project of significant scope, that is embedded in a body of research, that embodies and communicates a critical position in relation to architectural conditions in a current cultural context, and that is situated within a clear analysis and presentation of current and emerging architectural discourses.

These Learning Outcomes were mapped against the mandated Graduate Degree Level Expectations (GDLEs) and against each course to identify how they are achieved. Following data collection and consultations with the various stakeholder groups, the department conducted an analysis of strengths, weaknesses, opportunities, and aspirations for the program. The following strengths of the M.Arch. program were identified:

- The thesis requirement offers students the freedom to pursue topics of their own interest, requiring them to develop a position in architecture and work closely (one to one) with knowledgeable, supervising faculty;
- Graduates are well-prepared to enter the profession as interns, and there is a corresponding high percentage of graduates securing employment upon completion of their studies;
- A wide range of extracurricular activities are offered by the program, including a strong series of evening lectures and exhibitions, and travel opportunities connected to studios;
- The program offers a variety of perspectives on the discipline of architecture through a diverse and multi-disciplinary faculty who are engaged with the studios and courses they teach as well as thesis supervision;
- Students entering the program are well versed in the design of buildings, which enables them to pursue graduate studies in architecture and complete an advanced architecture thesis to complete their M.Arch. degree.

However, several weaknesses show there is room for improvement. These include:

- The elective courses do not provide enough choice and do not match the graduate level of studios and seminars in the curriculum due to their shared delivery with the fourth year of the B.Arch.Sc. program.

- At six semesters the length of the program is long relative to comparator programs, and both students and graduates have indicated a desire to see this reduced by a semester without impacting on the quality of the thesis requirement;
- The transition from three continuous semesters of studios and courses immediately into the final thesis is an exhausting schedule and provides too little formal preparation for thesis;
- Students have not been adequately prepared for engagement in architectural theory;
- The program lacks an informative, attractive presence on the internet;
- Workshop hours are limited and there is little space in the building to accommodate preparation of full-scale mock-ups, models, and component development;
- The Architecture Building's spaces are inadequate to effectively support activities of the three programs it houses, and suffers other limitations such as poor indoor air quality.

The strengths and weaknesses of the program indicate specific opportunities for the M.Arch. program:

- Develop new graduate-only elective courses;
- Strengthen the relationship between the B.Arch.Sc. and the M.Arch. programs;
- Increase collaboration within DAS, within Ryerson, and outside of Ryerson;
- Develop new programs;
- Make better use of faculty research programs;
- Establish mechanisms to allow early admissions to secure qualified students;
- Admit more international students;
- Improve the program website.

A set of aspirations in both shorter and longer-term strategies were identified:

- Develop a comprehensive communications strategy that promotes the quality of the program to attract prospective students;
- Establish an active and distinctive identity that reflects the M.Arch. program's unique qualities and mission;
- Create a program open to evolving challenges and demands;
- Provide time for architectural discourse and collaboration in research and teaching; reduce focus on administrative procedures;
- Attract excellent new faculty;
- Acquire significant research grants to support collaborative endeavours between students and supervisors;
- Increase scholarships and other financial resources to support students;
- Pursue a refurbished, modernized building with space appropriate to current and anticipated needs and the academic ambitions of the program and department.

The conclusion of the data gathering and analysis phase led to the proposal of a Development Plan for the

M.Arch program. This plan addresses major themes emerging from the comprehensive review of the program and sets out a number of initiatives to further strengthen the program and address its weaknesses:

- Create a comprehensive communications strategy to promote the quality of the M.Arch. program;
- Refine the curriculum and course offerings to continue to support excellent graduate education in architecture;
- Develop collaborations with complementary opportunities outside of the program;
- Establish a PhD program in architecture;
- Enhance recruitment strategies and activities;
- Continue to develop research opportunities in the program;
- Pursue funding opportunities for student scholarships and faculty research;
- Work with the university to transform the Architecture Building into a space appropriate for the program's and department's academic ambitions.

The department aims to develop a more consistent student experience year to year by developing clearer expectations for courses and studios and clarifying their roles in the program sequence. Clearer interrelationships between studios, courses, and semesters will also serve to ameliorate the perceived lack of cohesion. Replacing the spring semester combined studio and seminar with two new courses will allow students to begin their thesis earlier and potentially complete the program in five semesters. The two new courses will aim to further reinforce the advanced study of architecture and better prepare students for work on their thesis. Offering new graduate-only electives on a regular basis each semester and encouraging students to consider electives in other departments will address concerns about elective choices.

Developing opportunities to increase connections from outside the university to support the curriculum can further enrich the academic experience for students. This can be achieved by establishing exchanges and other connections with partner institutions. A regular program of hosting visiting faculty and connecting to local cultural opportunities such as the future Toronto Art Biennal and TO DO event has the potential to increase the program's reputation locally, nationally, and globally.

The department is working to develop a communications strategy across multiple channels and formats to promote its unique identity. The annual graduate thesis exhibition and the departmental Year End Show (YES) provide venues for dissemination of student work, but these can be complemented by other opportunities. Students should be encouraged to publish and share their work through electronic media and traditional publications to reach the wider architectural community, both locally and globally.

Broadening the recruitment of potential students to a wider applicant pool can potentially increase the range and quality of applicants. The program currently admits students with a pre-professional degree in architecture similar to the Ryerson B.Arch.Sc. Developing multiple paths of admission for applicants without

a pre-professional degree would further diversify the student body. These applicants may be required to complete selected courses in our undergraduate program to qualify for admission to the M.Arch. program. Targeting international applicants for a percentage of admissions each year and enhancing recruitment strategies and activities will serve to further this goal.

As noted elsewhere, the Architecture Building is no longer able to meet the needs of the department and its programs, and requires urgent attention. The department is working to raise awareness at various levels of the university administration to develop a facilities plan addressing numerous crucial issues with the building. The aspiration is to modernize and possibly expand the building as an academic space and laboratory appropriate for a leading academic architectural centre addressing current and evolving needs.

Changes to the M.Arch. program are reviewed on an ongoing basis by the Master of Architecture Graduate Program Council (M.Arch. GPC), which consists of faculty teaching in the program as well as elected student representatives. The M.Arch. GPC typically meets twice in each of the fall and winter semesters to discuss and approve curricular changes. Major changes require the approval of YSGS council.

External Consultations

In addition to the formal mechanisms described above, the Department of Architectural Science also consults with a Program Advisory Council (PAC), which includes representatives of industry, the professions, the alumni association, the academy, and others. In its capacity as an advisory body, the PAC is consulted regarding the department's success at achieving and maintaining the highest possible standards of academic quality and relevance to the professions and industry it serves.

Current members of the Program Advisory Council are listed below:

- Tom Emodi—Chair, TEAL Architects
- Daniel Teramura—Principal, Moriyama & Teshima Archtects
- Ian MacDonald—Principal, Ian MacDonald Architect Inc.
- Michael Miller—Professor Emeritus, DAS
- Paul Hastings—Principal, Hastings Architect
- Roberto Chiotti—President, Larkin Architecture
- Sheila Penny—Vice President, Facilities Management, Toronto Community Housing
- Tania Bortolotto—Principal, Bortolotto Design Inc.
- Paul Cocker—President and CEO, McKay-Cocker
- Mark Jones—Director, Turner & Townsend
- Adrian Piccolo—Chief Architect, Toronto Transit Commission
- Derrick Lai—Principal, PROP

- Jamie Lee—Associate Principal, WZMH
- Alice Liang—Principal, Montgomery Sisam Architects
- Cliff Harvey—Vice-President, Planning, Facilities and Support Service, North York General Hospital

University Planning Office Surveys

As part of the university's ongoing commitment to providing a high quality educational experience, Ryerson conducts student surveys on a regular basis. Both undergraduate and graduate students are asked to reflect on their experiences at Ryerson and provide feedback, which is used by the university to set goals and monitor progress. Some surveys target particular groups of students (e.g. those in first year, or those who are about to graduate) while others are developed for students across multiple years of study. These include:

- National Survey of Student Engagement (NSSE)
- First-Year Student Survey
- Comprehensive Student Survey
- Graduating Student Survey (fourth Year)
- The Canadian Graduate and Professional Student Survey

National Survey of Student Engagement (NSSE)

The National Survey of Student Engagement (NSSE) examines a wide range of student activities every three years. All undergraduate students in first and fourth year at Ryerson are invited to participate in the survey. Because of its distinctive focus on what students actually do, NSSE is a powerful tool for assessing a university's contribution to students' learning and provides a range of information about the student experience.

The latest version was carried out in 2017 with the preliminary results available in early 2018.

Summary of NSSE Results for DAS

From the list below, please check up to 2 items you believe your university most needs to address to improve the student academic/learning experience in the classroom:

	First Year			Fourth Year		
Column 1	**Architectural Sci.**	**FEAS**	**Ryerson**	**Architectural Sci.**	**FEAS**	**Ryerson**
Improving the quality of course instruction by professors	52%	54%	41%	38%	56%	38%
Improving the quality of classrooms or lecture halls	43%	34%	27%	50%	25%	24%
Improving the quality of teaching assistants	13%	42%	24%	12%	27%	14%
Ensuring a better fit between course content, assignments and tests/exams	39%	30%	32%	23%	29%	27%
Increasing the number or variety of course offerings in your major	17%	16%	24%	42%	32%	38%
Increasing the number or variety of course offerings outside your major	22%	9%	13%	15%	10%	16%
Increasing opportunities to learn more about global issues	13%	9%	13%	8%	8%	13%
Improving student access to information technology	4%	10%	9%	12%	9%	7%
Reducing class sizes overall	0%	13%	13%	4%	8%	10%
Improving the quality of labs	0%	14%	10%	12%	20%	9%
Providing more current/relevant courses and curriculum	0%	11%	13%	23%	20%	21%
Changing the mix of lectures, seminars, tutorials and labs	0%	9%	16%	8%	11%	13%

A summary analysis of the NSSE survey results indicates that Architectural Science students express higher rates of participation and/or satisfaction than Ryerson University students at large in the following areas, among others:

- Made a class presentation;
- Worked with other students on projects during class;
- Put together ideas or concepts from different courses when completing assignments or during class discussions;
- Worked harder than you thought you could to meet an instructor's standards or expectations.

Architectural Science students are happier with their class size and their lab/studio spaces, but less happy than other FEAS and Ryerson students with lecture and class spaces. More of them would like to see an increase in the number or variety of course offerings compared to other students. They are also more satisfied with the mix of courses, labs and studios compared to students in other programs. Nevertheless, there is a general concern among Ryerson students about the need to improve the quality of course instruction, and Architectural Science students also expressed this concern, although less so in the fourth year.

The survey results also indicate that Architectural Science courses place less emphasis on learning through memorization of facts, ideas, or methods, and more emphasis on analysis, synthesis, and making judgments relative to the university at large. Architectural Science students also indicate much higher rates of participation in study abroad opportunities (by fourth year, 23% of DAS respondents participated compared with 7% for the university at large), and report higher levels of satisfaction with the quality of their relationships with other students. Also, by fourth year 50% of Architectural Science students have reported participating in some form of internship, co-op or field experience, and 29% have worked on a faculty member's research project compared to 14% university-wide.

On the other hand, Architectural Science students report less activity in community service and volunteering than the university population at large, which is consistent with their reporting much higher workload outside of class time than the rest of the university (49% of fourth year DAS students report spending over 26 hours per week on academic activities outside of class, compared with 16% for the university at large). Finally, in response to the question of what "you believe your university most needs to address to improve the student academic/learning experience in the classroom," 50% of fourth year Architectural Science students selected "Improving the quality of classrooms or lecture halls", while only 24% of Ryerson University students at large identified this item.

Ryerson Performance Indicators

Ryerson Performance Indicators have been developed to provide a set of annually updated measures of university performance over a wide range of issues of interest. They allow the Board of Governors to track progress over time on issues central to the mission of the university. The Ryerson Performance Indicators provide technically sound measures that were chosen for their relevance, the reliability of underlying data, the ongoing accessibility to underlying data, and the clarity of what is measured. Where possible, the indicators provide comparisons against other universities. The university tracks academic-related indicators at the faculty, program, or school/department level through Senate's Progress Indicators.

There are 33 Ryerson Performance Indicators that are classified into four primary categories: Strategic Direction, Financial Capacity, Effective Management, and University Profile. These are available through the University Planning Office (https://www.ryerson.ca/upo/performance/indicators/).

Informal Assessment Processes

Administrative team
Informal curriculum assessment mechanisms operate on an ongoing basis throughout the department. These include regular meetings of the administrative team, comprised of the department Chair, the Associate Chair

for Student Affairs, Associate Chair for Curriculum Management and Mobility, Associate Chair for Experiential Learning, Associate Chair for the Graduate Program in Architecture, Associate Chair for the Graduate Program in Building Science and the Administrative Coordinator. This group administers the regular operations of the department, which involves ongoing discussion of how the programs are performing in relation to the stated mission and goals of the department and the university. In 2018, the role of Associate Chair for undergraduate programs was divided into two positions, one dealing with student issues and the other focusing on curriculum and mobility. This change is intended to allow greater focus on curricular monitoring and development.

The administrative structure for the curriculum is reinforced by Studio Masters, who are appointed to head each first, second, and third year undergraduate studio. A Studio Master is responsible for providing pedagogical and administrative leadership to the studio instructional team and maintaining intellectual rigour and coherence while remaining fresh and ensuring currency from year to year. The Studio Master is also responsible for all administrative aspects of the studio and provides coordination among all the sections of the studio. This role includes horizontal coordination with other courses taken concurrently by the student group within their semester. The role of the Associate Chair for Curriculum Management and Mobility includes initiating regular meetings of the Studio Masters to ensure vertical coordination and consistency in studio management.

Faculty retreats

The administrative team also organizes faculty retreats to discuss program performance, which include discussions related to curriculum, program structure, pedagogy, assessment strategies, student performance, and so on. Retreats are typically held in May and August and may occur at various other times during the academic year. In 2017, three retreats were held: one in March which focused on review of the learning outcomes for the program; a second in May that looked at curriculum issues resulting from the previous year; and a third in August to map learning outcomes against courses and assignments, and also to hear about the outcomes of sabbatical work. This work helped to prepare the PPR self-study reports. In 2018, a May retreat addressed a series of curriculum development issues, including implementation of the Ryerson Open Elective policy, discussions about the fourth year structure, and coordination of studio requirements. A retreat in August 2018 addressed planning for the upcoming year, including preparing for the CACB accreditation visit and considered student wellness issues. It is expected that subsequent retreats will continue to raise discussions of ideas as well as curricular logistics.

Past retreats in 2016 focused on the issue of excessive student workload, which has been an ongoing concern in the B.Arch.Sc. program. Revisions to the curriculum in 2007 were aimed at placing greater emphasis on critical and independent thinking and research by reducing the quantity of student work and number of

courses without sacrificing the students' development of fundamental disciplinary knowledge. An analysis of the number of parameters in relation to student workload was carried out in 2010, including the total number of assessments within each course and in any given semester. The department concluded that while a small number of individual courses could justify a larger number of smaller assessments, in most cases students would benefit from fewer assessments that required them to consider material in greater depth (as opposed to a larger quantity of more superficial assessments). As a result of this analysis, faculty developed a variety of strategies to reduce overall workload without compromising learning. This led to a reduction from an average of 5.75 assignments per course to 4.4 assignments per course or roughly 23% fewer assessments overall. In 2016 a further analysis was carried out to assess whether there had been any further changes and this showed that the number of assignments continued to fall to 4.2 per course.

Chair's Committees

In recent years curricular development has often been undertaken by ad hoc committees established by the Chair to consider specific issues that merited review. In the last three years these have included:

Fourth Year Review Committee (2017) – In response to a series of issues and opportunities in relation to the structure of the fourth year of the B.Arch.Sc., a committee was formed to consider and analyze the issues and make specific recommendations. The committee produced a report that made three firm recommendations including: introducing coordinators for the three areas of specialization in fourth year; introducing core courses in architecture theory for the Architecture specialization in fourth year; and providing additional opportunities for mobility accessible to all specializations in the fourth year. In addition, two other ideas were discussed but no recommendations made: establishing formal "concentrations" as defined by Senate Policy 149, which would include introducing an undefined flex option into fourth year; and switching the sequence of third and fourth year. The recommendations are being considered further by the department (see below).

History Theory Working Group (2018) – In response to one of the recommendations of the Fourth Year Review Committee (see above) which proposed the introduction of one or two theory-based courses in the fourth year Architecture option, a working group began meeting in 2018 to develop proposals for these courses and consider their impact on other aspects of the curriculum. Two draft course descriptions have been proposed, one focusing on Theorizing Technology in Architecture and the other on The Architect in Society. These will be discussed further prior to submission for formal approval.

Structures Working Group (2018) – In response to repeated student concerns about the suite of structures courses (ASC203, ASC303, CVL407), a working group was created to consider these concerns and whether changes to the organization of the courses is necessary. The work of the group is ongoing but it is hoped that recommendations can be implemented in 2019.

Co-op expansion (2018) – In 2014 the department launched, in collaboration with Ryerson's Co-operative Education Office, the Architectural Science Co-operative Education Internship (ASCEI), a limited co-op option for 16 selected students (by application) having completed their third year of study in the B.Arch.Sc. program. Professor Vincent Hui was appointed Associate Chair of Experiential Learning to coordinate this initiative. The success of this program, combined with a Faculty of Engineering and Architectural Science initiative to significantly increase co-op options in the faculty (as set out in the FEAS Academic Plan), led to a review of the ASCEI program to assess its capacity for expansion. As a result, the program was doubled to 32 students in 2018.

IT Working Group – An IT working group consisting of faculty, staff, and students meets regularly to consider IT issues and to organize support for students to develop their digital skills. Ongoing discussions explore opportunities for integrating digital skills into the department's programs. Emerging technologies evolve rapidly but are consequently prone to rapid obsolescence. Therefore, skills development is best addressed on an ongoing basis, which poses certain challenges to curricular structure. Although our students become highly skilled in computer techniques by the third or fourth year of the undergraduate program, expectations are not explicitly defined.

The use of digital technology in the design studios is addressed at the outset of the undergraduate program with the introduction of 3D modeling software in ASC101 Communications Studio. This is supported by online tutorials and extracurricular workshops that allow students to enhance their digital skills. However, there is no systematic instruction in this area within the curriculum. In the third-year integration studios (ASC520 and ASC620), students are expected to use BIM software including some of the analysis tools (energy use, solar). This links to related courses such as ASC622 Documentation & the Construction Contract or ASC522 Project Economics. In addition, students in the fourth year and at the graduate level have opportunities to enhance these skills in elective courses such as ASC734 Advanced Digital Design and ASC755 Digital Tools, as well as in courses that make use of Building Performance Modeling software.

It must be recognised that a degree of specialized exposure to emerging technologies is available only to self-selected students rather than the entire student body, and there are opportunities for improvement in this area of our programs. Nevertheless, it is evident that our students are achieving levels of proficiency in the use of computing technologies consistent with, or exceeding, those exhibited by graduates of comparator programs. Employers have expressed a high degree of satisfaction with our students' ability to function within a professional context, particularly in digital fabrication.
Mobility Committee – The creation of more comprehensive and stable study abroad opportunities has evolved in recent years. This committee was tasked with developing guidelines and policies to increase opportunities for curriculum-based travel. The Associate Chair, Curriculum Management and Mobility is responsible for

coordinating mobility opportunities. In 2015-16, a Mobility Policy was adopted that sets out procedures for approval of travel opportunities. These include: short day trips to local sites of interest; weekend to one week travel as part of a studio or course (often during reading week) such as visits to the Venice or Chicago Biennale, or trips to New York or Montreal; summer term travel studios (ARC720) for up to six weeks; and elective courses offered to fourth year students that include travel for up to two weeks. Examples of recent destinations include China, California, Germany, and Italy. In addition to these group opportunities, the department also has exchange agreements with several other universities that permit individual students to pursue a semester of study at an institution abroad. These include the Bergen School of Architecture in Norway, the Technical University (TU) Delft in the Netherlands, TU Munich in Germany, Coventry University in the UK, and the École Nationale Supérieure d'Architecture Paris-La Villette in France. The department is currently considering additions to this list, including the Laval School of Architecture in Quebec and CEPT University in Ahmedabad.

In addition, student groups in the department regularly organize trips mainly to North American cities, and to participate in American Institute of Architecture Students (AIAS) events with other universities.

The department has also signed Memorandums of Understanding (MOUs) with several universities for SRC exchanges and initiatives.

Human Resources: New Faculty

The department's faculty complement is listed in section 3.5. Since the last CACB visit in 2013, the department lost Dr. Jane Hao and Dr. Ian MacBurnie. In addition, Dr. James Norrie was officially listed on the department roster at the time of the 2013 visit, but was with the department for only the 2012-13 academic year and was on leave for that year. Since 2013, the department appointed Dr. Umberto Berardi and Professor Jennifer MacArthur as tenure track faculty in 2014 and Dr. Terri Peters as tenure track faculty in 2018. Dr. Miljana Horvat has been serving as Associate Dean, Graduate Studies for FEAS since 2015 and her teaching role in the department is small. As a result, the department expressed some concern about insufficient faculty numbers. In response, the Dean approved the hiring of a limited term faculty member (LTF) for three years to cover the absence of Dr. Horvat. Professor Carlo Parente was hired for this position in 2018. In addition, with support from the Dean, the Provost allocated one more position in 2018 to accommodate an upcoming retirement, which is the subject of a current search.

Thus, the RFA teaching complement is currently 28 tenured (or tenure track) faculty members and one LTF cover for an administrative appointment. Departmental faculty teach in all three programs located in the department. Approximately two FTEs of faculty teaching take place in the Master of Building Science program, leaving an effective faculty complement of 26 for the professional architecture program.

The average age of faculty members in the department is approximately 56 years, and retirements are expected within the next five years. The new Provost has declared that vacant positions resulting from retirements will be filled quickly, and in some cases in a proactive way if a faculty member signs a retirement contract ahead of time. This is an improvement upon previous policies at Ryerson that did not guarantee replacement positions when faculty retired or left. The recent hires will help to address the concern that a large proportion of course and studio hours are delivered by contract lecturers. In recent years this has reached between 40% and 50%. As a result of the new hires and some program changes this has gone down in 2018-19 to below 40%.

Contract lecturers provide a positive supplement to the full-time faculty complement, and in general the department aims to staff undergraduate studios with approximately 50% full-time faculty and 50% part-time instructors. Further, the department expects that core undergraduate courses are usually taught by full-time faculty. In recent years, however, the ratio of core courses taught by contract lecturers has been significant due to a shortage of full-time faculty (exacerbated by sabbatical leaves and teaching release for faculty appointed to administrative positions). Thus, it is clear that the department needs additional faculty to reduce the percentage of course hours taught by part-time instructors. An analysis at the time of CACB initial accreditation in 2010 indicated that a complement of at least 31 full-time faculty is needed to effectively deliver the program's curriculum. The current complement is effectively 28 (plus one on secondment to the Dean's office).

The teaching norm in the department requires faculty to typically undertake four teaching assignments per year. This usually means one studio and one course per semester. However, few faculty teach fewer studios and may teach courses instead. This is broadly in keeping with sector norms for architecture programs in Ontario. However, a number of faculty members in our department are engineers rather than architects, or engineer/architects. As they tend to hold research grants from NSERC, they are in direct competition for funding with faculty in engineering departments, where teaching loads are traditionally lighter than in architecture departments. The program has a concern that the long-term maintenance of an engineering-based research career may be affected under current teaching loads.

Human Resources: Administration

A complete list of department staff appears section 3.5. In the last three years the department has successfully increased its staffing support, including one additional administrative staff member, one additional IT technician, one additional workshop technician, and a building science lab technician. Members of this team provide effective support to our current program needs, and are a strong asset to the department.

Financial Resources

Program funding has increased significantly in recent years and now seems adequate for the operation of a professional program in architecture (see section 3.5). However, we have an ongoing concern about maintaining this position, especially with the changing political situation in Ontario. Despite the financial strictures under which the university has been operating in recent years, the upper administration has remained supportive of our program and has continued to allocate resources to us. A library report is included in section 3.7 and in the Appendix.

Library

The Ryerson University Library and Archives (RULA) has improved its collections significantly in recent years. With the completion in 2015 of the Student Learning Centre designed by Snøhetta and Zeidler Partnership Architects, the library has become an even more accessible and critical part of campus life. It provides students with a range of traditional and non-traditional library services including the architecture collection, which while not exhaustive, is satisfactory for our needs and continues to grow, and the Canadian Architect Magazine Image Collection, forming part of the university's Archives and Special Collections. Other facilities include electronic access to a wide range of material, meeting and study spaces for students, GIS and mapping facilities, and access to digital fabrication facilities and support. A full report is provided in section 3.7.

IT Resources

We continued to expand our IT and digital fabrication resources incrementally (as set out in section 3.6) and will continue to do so in the future as opportunities arise. We believe that our resources meet the minimum requirements of a professional program at this time, but are aware that such needs will continue to increase rapidly in the coming years. A full report is included in section 3.7.

Physical Resources: Architecture Building

The Ryerson Architecture Building, designed by the Ron Thom partnership and opened in the early 1980s, is now close to 40 years old. A number of improvements have been realized in the past six years, including the creation of the new Paul H. Cocker Gallery in 2014; an attempt to improve the HVAC systems in 2015; renovation of the fourth floor studios in 2016; staff office renovations in 2018, and several improvements to workshop space and air extraction. Also, up-to-date digital projectors have been installed throughout the building. Nevertheless, despite these significant improvements to the physical resources, there are still major deficiencies.

These deficiencies relate to both the quality and quantity of space available. We have been working with the new Director of Maintenance and Operations at Ryerson to address current operational issues, in particular

the poor air quality and environmental control, but it is becoming increasingly apparent that the building needs significant renovation and investment. The building envelope is failing, the HVAC system (despite upgrades) is not able to provide comfort, birds are constantly infiltrating the building, which is, in many areas, overused and tired. There is a shortage of space for SRC activities, and some studio spaces are very cramped. We have major problems when studios organize reviews due to lack of space for critiques for all students. Students have lost their informal resource space as this has been converted to accommodate studios. The building is being used at well over full capacity, and we are working to develop a strategy to address this.

Scholarly, Research, and Creative Activity

A culture of Scholarly, Research and Creative (SRC) activity is rapidly expanding in the department. SRC outputs and funding have increased significantly in recent years, with faculty receiving substantial grants from major funding agencies including NSERC, SSHRC, MITACS and the Canada Council for the Arts.

The majority of SRC outputs have been produced by an active group of faculty members but SRC activity and output varies considerably between faculty members. However, since many new faculty appointments have completed PhDs or are keen to pursue SRC, they bring with them a record of research and are achieving considerable success in securing research funding and involving students in their work.
Research facilities within the Architecture Building are limited to the digital fabrication spaces, the building science lab, and one research office. Other spaces in the university have on occasion been used by DAS researchers, and some faculty have pursued successful collaborations with external organizations to gain access to research facilities.

Strong Student Culture

Finally, a word must be said about the extraordinarily strong student culture in the program. With three major student societies – the Architecture Course Union (ACU), arc.soc, and the only Canadian chapter of the American Institute of Architecture Students (AIAS) – and there are attempts to start a fledgling chapter of the Canadian Architecture Students Association (CASA-ACEA) – students are continually active with charrettes, road trips, conferences, symposia, and, of course, parties.

3.2 Public Information

The Program must provide clear, complete, and accurate information to the public and include the following text in its official Program information.

> *In Canada, the Canadian Architectural Certification Board (CACB) is the sole agency authorized by the Canadian Architectural Licensing Authorities (CALA) to accredit Canadian professional degree programs in architecture for the purposes of architectural licensure.*

In addition to the previous text, all Programs that have been granted candidacy status must include the following in its entirety:

> *The CACB grants candidacy status to new programs that have developed viable plans for achieving initial accreditation. Candidacy status indicates that a program should be accredited within six years of achieving candidacy if its plan is properly implemented.*

The APR must include:

- the program description as it appears in the university academic calendar or any other institutionally authorized official description of the Program and
- evidence that the Program has communicated to all faculty and incoming students the information regarding the CACB process for accreditation.

Ryerson University, The Faculty of Engineering and Architectural Science, and the Department of Architectural Science are committed to providing clear and comprehensive information to the public, students, and the faculty regarding the programs offered by the department and faculty. The various modes of communication and media that are used to this end are coordinated to assure that the interests of all stakeholders are accommodated.

Undergraduate Calendar

The 2017/2018 Ryerson University Full- and Part-Time Undergraduate Calendar (https://www.ryerson.ca/calendar/2017-2018/programs/feas/architectural/) describes the Bachelor of Architectural Science program as follows:

> The Bachelor of Architectural Science program prepares students for a wide range of professional roles in the construction industry. The program emphasizes studies in design, technology, and management. The long-standing reputation of the program rests in part on this unique emphasis of the curriculum.
>
> The first three years of the program provide students with a common foundation. The final year offers three different options: Architecture, Building Science and Project Management. The initial years place students in a position to make informed choices of option, and they are encouraged to do so as early as possible. The curriculum is structured around four themes:
>
> - Introduction and context
> - Preparation (tools and elements)
> - Integration
> - Concentration/specialization/transition
>
> The first semester provides students with an introduction and sets the context for their education in architectural science. Semesters two, three and four prepare students for advanced studies through an exploration of the tools and elements necessary for further studies. Semesters five and six provide a comprehensive integration of the multiple components of an undergraduate education in architectural science. In the final two semesters, students select from one of the three options available – Architecture, Building Science or Project Management – and undertake intensive work in their chosen specialization. In addition, the program requires a number of courses in liberal studies, as well as a range of professional electives, offered by the department and other departments at the university.

The department offers a competitive co-operative program which provides top-performing students who have completed their third year in the architectural science program, with 16 months of work experience that enhances their acumen in the architecture, engineering, and construction (AEC) industry. Although neither the department nor the Co-operative Education Office can guarantee a placement, they provide major assistance in locating suitable positions and counselling of students in their search for suitable jobs. This co-operative program enables students to earn competitive wages to offset the costs of a university education. Students will work directly with architects, engineers and other skilled professionals from the AEC industry, gaining experience in several different settings.

The architectural science program promotes an integrated approach to architectural science, through studio and lecture courses. Students have the opportunity to apply theory learned in the lecture courses to studio projects which engage with real-life problems in design, construction, management, and the environment.

As enrolment in each program option may be limited, placement of students in fourth year program options is determined by academic performance to best suit their career goals and academic strengths.

The Architecture Option offers a focus on architectural design principles that incorporate a technical base. Through lectures, seminars, and hands-on studio projects, students learn program planning, design, presentation techniques, and contract documentation.

The Building Science Option offers a more detailed technical base of studies including the selection and design of building construction assemblies, the evaluation of their suitability and performance, and the development of construction and technical drawings.

The Project Management Option examines the managerial and economic aspects of construction projects, including the planning, organization, management, supervision and control of the process.

Graduates of this program will find career opportunities in:

- The design, documentation, and management of projects in architectural, engineering, environmental management, and planning firms;
- The production, marketing, sales, research, development, testing, and evaluation of building products or systems in material fabrication, product manufacturing, and construction firms;
- Office and field supervision in trade and general construction organizations

- Development and management of real estate/planning/conservation feasibility studies; environmental and management strategy planning;
- Local, regional, provincial, federal, and international government agencies post graduate education and research.

The Master of Architecture Program

The M.Arch. is described on its website (ryerson.ca/architectural-science/architecture/home/) as follows:

Architecture for a changing world

This is an exciting time in history. Technological growth, environmental shifts and increased global connectivity pose challenges and offer unprecedented opportunities. We need a new way of seeing the world—starting with an understanding of the critical role that architecture plays in creating a dynamic future.

The master of architecture (M.Arch.) program will prepare you to create this future. Designed to strengthen your ability to think critically, act collaboratively and respond with impactful solutions, the two-year, five-semester program is framed by the following intersecting themes.

Program Themes

To frame your studies, the two-year, six-term program targets three key intersecting research areas:

Sustainable Design

We are faced with unprecedented environmental, economic, social and cultural challenges on a global scale. What can we do to ensure that our world is viable for future generations? How do we support and design a healthy, equitable future?

Emerging Technologies

Technological developments in design such as digital fabrication, parametric design and mass customization have altered the practice of architecture. How can we harness and mobilize them for the future? Advances in building materials and construction methods have altered built form and the urban landscape. How will architecture propel culture and society into these new spheres?

Global Communities

Telecommunications, transportation, migration and trade networks are expanding in their global reach. What is the significance of community in a globally connected world? How does architecture respond to these profound social shifts? How can we investigate the increasingly charged relationship between the local and the global?

The Ryerson M.Arch. is located within the dynamic and rapidly changing Department of Architectural Science. With many new and exciting faculty members, a growing reputation for architectural research and design, and facilities that are in the midst of significant renovation and development, the department is building on its 60-year tradition of training valued members of the architectural community. The department capitalizes on Ryerson's unique location in the heart of Canada's largest city, a dynamic urban centre with a rich cultural life and vibrant multicultural flavour, to critically and imaginatively explore architectural design possibilities with international impact.

The Yeates School of Graduate Studies Website

(https://www.ryerson.ca/graduate/architecture/).
The YSGS web site includes the following summary of the M.Arch program:

Architects today operate in an increasingly complex and dynamic environment. In addition to possessing strong technical skills, the architectural profession requires strong, independent, critical thinkers, who nonetheless are comfortable acting in an increasingly collaborative industry. As issues around the natural environment increase in importance, architects must be willing and able to take on leadership roles within society. By focusing on a critical study of architectural practice, both in its contemporary forms and in its future potential, Ryerson's program will provide students with the opportunities for intellectual growth needed to develop these leadership faculties. The program is a two-year, six-semester, studio-based course of study designed for students with a strong technical background in architecture

Faculty of Engineering and Architectural Science Website

The Faculty of Engineering and Architectural Science website provides information on all departments and programs housed within the faculty (http://www.ryerson.ca/feas/about/).

Inspiring Innovation

The Faculty of Engineering and Architectural Science (FEAS) is a hotbed of leading-edge applied education and research. We are a dynamic faculty, with close to 4,000 undergraduate students enrolled in nine undergraduate programs, nearly 900 graduate students in eight master's and five doctoral programs, over 150 faculty members—seven of whom hold Canada Research Chairs—and 75 administrative and technical staff.

All of our engineering programs have been accredited with the highest possible rating by the Canadian Engineering Accreditation Board. Our architecture program has also been granted full accreditation by the Canadian Architectural Certification Board.

Our Faculty houses one of only a few undergraduate aerospace engineering programs in the country, and the first and only accredited stand-alone undergraduate biomedical engineering program in English Canada. As

the university moves forward, FEAS remains committed to excellence in education and research.

The FEAS website provides links directly to the department and program website, which provide detailed information.

Information on the Department Website
(ryerson.ca/architectural-science/)

The department website provides general information about the department as a whole, as well as detailed information concerning each of the programs offered within the department. Based on the material found in the Undergraduate Calendar described above, information on the undergraduate program can be found at ryerson.ca/calendar/2017-2018/programs/feas/architectural/

Information on the M.Arch. program can be found at https://www.ryerson.ca/graduate/architecture/
The department is launching a new, completely redesigned website in the fall 2018.

Printed Material

The department also provides printed material for distribution at a variety of recruitment events and locations. Printed material related to the M.Arch. program is simply a print version, verbatim, of the material on the website. Printed material related to the B.Arch.Sc. program is included in general recruitment literature prepared by the university, and consists of abbreviated versions of the material found on the website.

Professional Accreditation

The following text about CACB accreditation appears on the department, M.Arch. and B.Arch.Sc. websites (ryerson.ca/feas/about/qa/ & ryerson.ca/architectural-science/architecture/home/)

The Ryerson program in Architecture has been granted full accreditation by the Canadian Architectural Certification Board (CACB).

In Canada, all provincial architecture associations recommend a degree from an accredited professional degree program as a prerequisite for licensure. The Canadian Architectural Certification Board (CACB), which is the sole agency authorized to accredit Canadian Professional degree programs in architecture, recognizes two types of accredited degrees: The Bachelor of Architecture and the Master of Architecture. A program may be granted a six-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established education standards.

3.3 Equity, Diversity, and Inclusion

The Program must conform to provincial and institutional policies that augment and clarify the provisions of the Charter of Rights and Freedoms as they apply to social equity. Policies in place that are specific to the school or professional Program should be clearly stated, as well as the means by which the policies are communicated to current and prospective faculty, students, and staff.

The APR must include procedures in place to achieve equity, diversity, and inclusion in school operations and activities.

Ryerson's current five-year academic plan, *Our Time to Lead* (2014 – 2019), includes as one of its key values a clear "Commitment to Community and Inclusion", as follows:

Community: The university sustains its commitment to ensuring a strong sense of belonging and engagement for students, alumni, faculty and staff, and values mutual and reciprocal relationships with the broader community.

Inclusion: The university values the equitable, intentional and ongoing engagement of diversity within every facet of university life. It is the shared responsibility of all community members to foster a welcoming, supportive and respectful learning, teaching, research and work environment.

Equity: The university values the fair and just trea tment of all community members through the creation of opportunities and the removal of barriers to address historic and current disadvantages for under-represented and marginalized groups.

Diversity: The university values and respects diversity of knowledge, worldviews and experiences that come from membership in different groups, and the contribution that diversity makes to the learning, teaching, research and work environment.

Respect for Aboriginal Perspectives: The university will continue to cultivate and develop relationships with Aboriginal communities, both within and outside the university. The campus environment will embrace and support Aboriginal learners, faculty and staff, and ensure Aboriginal people take a leading role in the advancement of Aboriginal education at Ryerson.

Access: The university is committed to providing access to education and employment opportunities at Ryerson for students, faculty and staff of all backgrounds, in particular those from marginalized and under-represented groups.

In 2017 Ryerson University appointed Denise O'Neil Green as the first Vice President, Equity and Community Inclusion (VPECI). The Office of the VPECI consults with and assists departments and faculties to strategically infuse the values of equity, diversity and inclusion into their work. The VPECI's initiatives and activities include:

Ryerson's Aboriginal Student Services (RASS): RASS provides specialized services for First Nations, Métis, and Inuit students on campus while developing a mutually productive relationship between Ryerson and the Aboriginal community. The Peer Support program provides peer support to Aboriginal students on-campus. The Aboriginal Community Outreach and Recruitment program is based on engaging the Aboriginal community in identifying how we can collaborate with and support their career, employment, training, and education initiatives and programs. A Cultural and Traditional Teachings program is being developed to complement, strengthen, and support existing services and programs.

Accessibility: The Accessibility unit works to make Ryerson an accessible learning and working environment for students, employees and members of the Ryerson community through the identification, removal and prevention of barriers. Ryerson is committed to the principles of the Accessibility for Ontarians with Disabilities Act (AODA), and aims to ensure that dignity, integration and equality of opportunity are embedded in all aspects of the university culture. The university-wide initiative known as Access Ryerson has as its goal the removal of barriers to the full participation of all community members with disabilities.

Education and Awareness: The Education and Awareness unit offers a range of consulting services and builds programs for participants to generate, discuss and share ideas that can make the university a more inclusive and welcoming space for everyone. This includes providing a series of interactive educational workshops and training initiatives on equity, diversity, and inclusion (EDI), as well as human rights issues.

Human Rights Services: Human Rights Services advocates for a community where the dignity of all members is respected and upheld. This office administers the Discrimination and Harassment Policy and promotes a study, work, and living environment free of discrimination and harassment for all members of the Ryerson community including students, staff, faculty and visitors.

Strategic Planning, Assessment and Special Projects: This unit identifies and achieves equity, diversity, and inclusion goals through the collection, analysis, and reporting of Ryerson diversity data, the development of project proposals, and the research and implementation of best practices. It administers the Employee Diversity Self-ID Report.

Policies

Ryerson has adopted a series of Policies relevant to EDI, including:

Ryerson University's Discrimination and Harassment Prevention Policy and Procedures:

https://www.ryerson.ca/policies/policy-list/dhp-policy/

This policy is informed and guided by the Ontario Human Rights Code, which prevails over all provincial legislation (with few exceptions), university policies, and collective agreements. This policy, together with the Workplace Civility and Respect Policy and the Guide to Civility, is also a means by which the university maintains a comprehensive harassment prevention policy and program as required by the Occupational Health and Safety Act. The university's Discrimination and Harassment Prevention Policy is referenced in the 2017/2018 Full- and Part-Time Undergraduate Calendar and is published in full on the university website. The introduction to the policy states the following:

> Ryerson University is committed to fostering a collegial study and work milieu that

is free of discrimination and harassment and one in which all individuals are treated with respect and dignity. Every member of the Ryerson University Community has a right to equal treatment with respect to employment and with respect to the receipt of education services and related services and facilities without discrimination or harassment on the basis of the following grounds: race; ancestry; place of origin; colour; ethnic origin; citizenship; creed; sex; sexual orientation; age; record of offences*; marital status; family status; disability; gender identity or gender expression.

* The protection for record of offences applies only in the area of employment.

Throughout this Policy the above listed grounds will be referred to as the "prohibited grounds".

A right to freedom from discrimination and harassment is also infringed where someone is treated unequally because she/he is in a relationship, association or dealing with a person or persons identified by a prohibited ground of discrimination.

Discriminatory and harassing behaviours are offensive, degrading and illegal. Every member of the Ryerson University Community is responsible for creating an environment which is free of discrimination and harassment. Individuals acting on their own and/or on behalf of the university and the university itself can be held responsible under this Policy and in law for discriminatory and harassing acts. Those found to have engaged in such conduct on the basis of a prohibited ground will be subject to discipline. Those found to have been harassed or discriminated against on the basis of a prohibited ground will be entitled to a remedy.

The policy is guided by a series of underlying principles and lists responsibilities for the university. In addition to its publication in the Undergraduate Calendar, this policy is published in the department's web-based Student Handbook (http://www.arch.ryerson.ca/resources/current-students/handbook/), distributed to all incoming students, and is referred to annually at a faculty meeting.

Accommodation Policy for Persons with Disabilities

https://www.ryerson.ca/policies/policy-list/accommodation-disabilities-policy/

This policy for employees is intended to ensure that each person with a disability will be considered individually, on a case-by-case basis, in order to determine accommodation requirements.

Academic Accommodation of Students with Disabilities

http://www.ryerson.ca/senate/policies/pol159.pdf

The university provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code and the Accessibility for Ontarians with Disabilities Act ("AODA"). This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the university's courses and programs. This policy reflects the shared responsibility of students with disabilities, instructors, departments/schools, faculties, Academic Accommodation Support, and administrative staff to exercise flexibility and creativity in the provision of academic accommodations.

Ryerson University Library & Archives Accessibility for Persons with Disabilities: Customer Service Policy

https://library.ryerson.ca/info/policies/aoda/

The Ryerson University Library and Archives (RULA) is committed to providing equal access to services and collections to all students, faculty, and staff of the university. RULA provides services that respect the dignity and independence of persons with disabilities. This commitment is consistent with the library's Strategic Plan, Building on Success, 2008-2013.

Accessibility Statement of Commitment

https://www.ryerson.ca/policies/policy-list/statement-accessibility/

Ryerson University is committed to providing accessible goods and services that allow persons with disabilities to fully participate in community activities. Ryerson strives to ensure that persons with disabilities: have an equal opportunity to access Ryerson University goods and services; are provided service in a manner that respects their dignity and independence and, where possible, without the need for adaptation; and are offered alternative measures, including trained staff support, where necessary, so they may obtain and use goods and services. Ryerson University is committed to compliance with the Accessibility Standards for Customer Service and the Accessibility for Ontarians with Disabilities Act, 2005 (AODA).

Access Ryerson

https://www.ryerson.ca/accessibility/access-ryerson/

Access Ryerson is a university wide initiative with the goal of removing barriers to the full participation of all community members with disabilities. Their mandate is to transform Ryerson into a leader of excellence in accessibility and inclusion of persons with disabilities, and in so doing, fulfill and exceed the requirements of the Accessibility for Ontarians with Disabilities Act. They provide support and updates on efforts and initiatives by Ryerson to address the priorities identified in the previous year's Accessibility Report, and provides an update on Ryerson's continued preparations for the AODA.

Guide to Accessibility Standards for Customer Service

http://www.ryerson.ca/content/dam/accessibility/policies/customer_service_compliance_guide.pdf

The purpose of this guide is to provide assistance to those who are responsible for services provided by the university to customers, as defined by the AODA. The Guide addresses the following areas of compliance: Policies, Procedures and Practices; Communication; Notices; Events; Feedback.

Accessibility Reports

https://www.ryerson.ca/accessibility/plans-policies/2016-2019-access-ryerson-multi-year-accessibility-plan/

Ryerson transitioned from an annual AODA reporting structure to a multi-year plan commencing in 2013. The Access Ryerson Multi Year Accessibility Plan 2016-2019 was developed in conjunction with the 2014-2019 Academic Plan and the AODA principles in Access Ryerson's principles and values. The current AODA report and accessibility plan is available online. Since 2011, all faculty and staff joining Ryerson are required to complete training related to the Accessibility for Ontarians with Disabilities Act (AODA) Customer Service Standard.

Employment Equity Policy

https://www.ryerson.ca/policies/policy-list/employment-equity-policy/

Ryerson University is committed to principles of equity and diversity in the workplace. Employment equity is a principle at the core of Ryerson's overall mandate as a community leader and an institution of higher learning. Ryerson is committed to promoting employment equity within the university community, and to ensuring there is equal opportunity and equitable representation in employment for all current and potential faculty and staff.

Accommodation of Student Religious, Aboriginal and Spiritual Observance

https://www.ryerson.ca/senate/policies/pol150.pdf

Ryerson is a community which celebrates diversity and places a high value on inclusion and respect for differences. Ryerson recognizes that the religious, Aboriginal, or spiritual observances of students may conflict with their academic obligations and could potentially lead to a disadvantage if an accommodation is not arranged. Ryerson also accepts that sincerely held beliefs by members of the same religious group or Aboriginal peoples (from different nations) often engender different types of commitments for observance practices. In accordance with the principles of the Ontario Human Rights Code, which requires accommodations based on creed, this policy outlines how accommodations for the religious, Aboriginal, or spiritual observances of Ryerson students will be determined.

Workplace Civility and Respect

https://www.ryerson.ca/policies/policy-list/workplace-civility-respect-policy/

Ryerson University is committed to creating a culture of respect and civility that is free of harassment, where all members of the community share a commitment to academic freedom, open inquiry, and the pursuit of knowledge. Incivility and disrespect in the workplace can be a barrier to effective communication, coaching, and performance. The impact can be severe as it may result in employee turnover, low productivity, reduced morale, diminished loyalty, and physiological impacts such as stress and depression that can lead to increased absenteeism.

Incivility can escalate and may lead to more severe behaviours including harassment and violence. This policy establishes the university's commitment to the maintenance of a civil workplace. Through this policy, the Guide to Civility and the Discrimination & Harassment Prevention Policy https://www.ryerson.ca/content/dam/policies/documents/Guidetocivility.pdf, the university maintains a comprehensive harassment prevention policy and program as required by the Occupational Health and Safety Act. Since 2016, all full-time faculty in the department have participated in a university-wide seminar about the Workplace Civility and Respect policy most recently approved in 2016: https://www.ryerson.ca/policies/policy-list/workplace-civility-respect-policy/

Sexual Violence Policy

https://www.ryerson.ca/policies/policy-list/sexual-violence-policy/

This policy makes clear Ryerson University's commitment to combating sexual violence in all forms in its community. Sexual violence is unacceptable and is not tolerated at Ryerson. Individuals and groups who

commit or attempt to commit acts of sexual violence will be held accountable through a process that ensures procedural fairness. This commitment addresses sexual violence and rape culture through survivor support, awareness, education, training and prevention programs, the appropriate handling of reports or complaints of sexual violence incidents, and the promotion of a culture of consent.

Equity and Diversity with Regard to Faculty

The faculty in the Department of Architectural Science are widely diverse in terms of national origin, with over half of the full-time faculty being first-generation immigrants to Canada. The faculty is also diverse in terms of race, ethnicity, creed, age, and sexual orientation, although no detailed statistics are kept in these areas. In terms of gender, nine current full-time faculty members are female (approximately 30%). These attributes are not considered in any decisions made in the department, whether regarding teaching assignments, tenure and promotion decisions, or distribution of funding.

Ryerson University's policy on Employment Equity addresses the issue of under-represented groups at the university. The core of the policy, which is available in its entirety at https://www.ryerson.ca/policies/policy-list/employment-equity-policy/ is as follows:

> Ryerson University is committed to actively seeking and attracting qualified individuals of diverse backgrounds while affirmatively addressing the historic under-representation of Aboriginal Peoples, people with disabilities, visible minorities and women.
>
> The University is committed to actively promoting employment equity within the Ryerson community and to promoting a climate that is favourable to the successful integration of members of designated groups.
>
> The University shall ensure that there are no discriminatory barriers in the selection, development and training, promotion, and retention and termination of employees. The University will make reasonable accommodations to enable employees to compete on an equitable basis.

Equity and Diversity with Regard to Students

Social equity for students begins at Ryerson with the admissions process. Admission decisions are made strictly on merit. Criteria such as race, ethnicity, creed, national origin, gender, age, physical ability, and

sexual orientation are neither recorded nor used in any way in the process. A number of entities are in place to help students with a diversity of needs or backgrounds to find a welcome, caring, and accommodating environment at Ryerson. Among these are:

Academic Accommodation Support: the mission of Academic Accomodation Support is to provide student-centred services and supports to students with disabilities according to the Ontario Human Rights Code to facilitate academic success and access to the university.

Positive Space: a coalition of students, faculty and staff whose mission is to create and maintain a safe, welcoming, affirming, and inclusive work, study, and living environment for members of the Ryerson community of any gender or sexual identity.

RyeSAC Sponsored Student Groups: organizations run by and for students, many of which are organized around national, ethnic, or religious identity, and supported through the Ryerson Student Administration Council (RyeSAC).

Financial Equity

In order to produce a socially equitable program, it is important to go to some lengths to lower the financial barriers which may prevent some students from attending university. Ryerson has a number of scholarship and bursary programs in place which seek to assist students from traditionally under-represented groups, or simply those without sufficient resources to finance their studies.

- The BMO Financial Group Diversity Scholarships at Ryerson University provide enhanced access to post-secondary education for traditionally underrepresented groups, including women, visible minorities, international students, students with disabilities, and Aboriginal students.
- Ryerson Tuition Bursaries are non-repayable awards given on the basis of financial need and intended to assist students who, in spite of their own best efforts, are experiencing difficulties in meeting tuition and other reasonable educational expenses while attending Ryerson in the current academic year.

General financial aid and scholarships are discussed in Section 3.8 of this report.

Governance and Departmental Council

The primary mechanism by which faculty, students and staff have access to the formulation of policies and procedures in the department is through the Departmental Council. The Council is an advisory body which may initiate policy recommendations on any matter pertaining to the operation of the department. Membership consists of all full-time members of the department faculty currently teaching; students equal in number to one half the total faculty, representing each program in the department; and one alumnus or

3.4 Student Composition, Well-Being, and Enrichment

The Program must demonstrate that it provides support and encouragement for students to achieve their full potential during their school years and later in the profession, as well as an interpersonal milieu that embraces cultural differences. The Program must demonstrate that it benefits from and contributes to its institutional values. Given its particular mission, the APR may cover issues such as: how students participate in establishing their individual and collective learning agendas; how they are encouraged to cooperate, assist, and share decision-making with and give respect to students who may be different from them; students' access to the critical information needed to shape their futures; and how the diversity, distinctiveness, self-worth, and dignity of students is nurtured in the academic environment.

The APR must include:

- a description of the student cohort (background, gender, etc.); the Program's academic standards for students; a description of the students' educational backgrounds; and the selectivity, retention, and graduation rates of the Program since the last accreditation sequence;
- evidence that the school has policies and procedures in place for a safe, positive, and respectful learning and working environment;
- a description of the Program's approach to co-curricular, extracurricular, and enhanced learning opportunities available to students;
- evidence of the Program's facilitation

Prior to the introduction of the Master of Architecture (M.Arch.) program in 2007 and Master of Building Science (M.BSc.) program in 2008, first-year enrollment in the undergraduate B.Arch.Sc. program fluctuated between 135 and 155 students. To accommodate the two graduate programs, to which the department apportions building space, faculty, and other resources, the department intentionally decreased undergraduate enrollment in the years since. The department now accepts on average between 120 and 125 students into the first year of the B.Arch.Sc. program. An exception to this pattern occurred in 2016, when an unexpectedly large number of applicants accepted offers of admission. This cohort of 142 students entered their third year of study in the fall of 2018, so the department continues to reapportion resources accordingly. Since that year, admissions have returned to the more typical levels.

In recent years, the department has received between 9.5 and 12.5 applications for each student ultimately admitted to the B.Arch.Sc. program. The grade point average of all entering students has increased from 85.7% in 2011-12 to 87.1% in 2016-17. Over the same time period, the number of female students entering the B.Arch.Sc. program has also increased. In 2011-12 the ratio of incoming students was 55% male to 45% female; in 2016-17 this ratio was 42% male to 58% female.

	Fall 2016 Admissions	Fall 2017 Admissions
GTA	67%	61%
Ontario outside GTA	26%	28%
Rest of Canada	4%	7.5%
Outside Canada	3%	3.5%

The large majority—approximately 90%—of students entering the program reside in Ontario; 71.5% of students admitted in 2016 and 2017 came to Ryerson directly upon graduation from an Ontario Secondary School. Approximately 27% transferred from other, non-secondary institutions, and 1.5% transferred from within Ryerson. Despite the fact that most students hail from Ontario, and more specifically from the Greater Toronto Area (GTA), the student population is very diverse in terms of national origin and ethnicity, reflecting the high degree of diversity in the GTA and the province. The high ratio of applicants to admissions and the consistent increase in the grade point average of entering students noted above (87.1% in 2016-17) suggests that the establishment of graduate programs and the achievement of professional accreditation has improved the program's ability to attract high achieving students.

Once admitted, students in the B.Arch.Sc. program exhibit a consistently high rate of academic success and persistence after the critical first year of the program. In the 2014 -15 academic year, 94.9% of newly admitted students registered a clear academic standing after the first year, compared with 87.3% in the Faculty of Engineering and Architectural Science (FEAS) and 82.6% at Ryerson as a whole; in 2015-16, this percentage

of student opportunities to participate in field trips and other off-campus activities;
- evidence of opportunities to participate in student professional societies, honors societies, and other campus-wide student activities;
- a list of guest lecturers and visiting critics brought to the Program since the previous site visit;
- a list of public exhibitions brought to the Program since the previous site visit;
- a description of student support services, including health and wellness, academic and personal advising, career guidance, evaluation of progress, and internship placement (if applicable); and
- a description of teaching and research assistant opportunities for students.

rose to 95%, compared with 89.5% in FEAS and 84.5% at Ryerson (the data is not yet available for more recent academic years). Retention rates after the first year have hovered between 90 and 92%, and after three years between 75% and 85%. This data suggests that students in the program receive adequate academic support in their first year.

The CGPA distribution in the graduating year of the B.Arch.Sc. program is comparable to FEAS and Ryerson averages, and has been steadily climbing since 2015. In 2015, fourth-year B.Arch.Sc. students achieved an average 2.93 CGPA. In 2016, this average rose to 3.01, and in 2017 it rose again to 3.08 (3.00 represents a B average). The majority of students graduate with a B-range average; no student since 2015 has graduated with an A or A+ average (4.00 and above). This suggests that the program's content is rigorous but not exceedingly difficult, presenting students with an appropriate level of challenge that prepares them for the realities of the AEC industry. However, the low numbers of A-range graduates may impact rates of acceptance into graduate schools, and/or eligibility for graduate scholarships.

Surveys of student satisfaction conducted in 2012 and 2015 indicate that between 85% to 95% of B.Arch. Sc. students are satisfied with the program and would recommend it to others. Between 70% and 80% of our alumni are working in a job related to their studies within 6 months of graduation (based on 2012 and 2014 data), and within the first two years this rate rises to over 90%.

For students admitted into the B.Arch.Sci. program in Fall 2012, 62% graduated in the minimum four-year time frame for completion of the program. While some students take longer than the four-year minimum to complete their degrees, historical trends suggest that approximately 80% of the cohort will complete their degrees within six years.

Since the inception of the M.Arch. program in Fall 2007, a total of 294 students have been enrolled, with a targeted annual intake of 28; in 2012 we admitted our largest cohort, with 32 students coming into the program. The first cohort of students completed the two-year program in 2009. Over the last three years, the application to admission ratio for the M.Arch. program has been about six applicants for each student ultimately admitted. Over 40% of applicants have been international, but the Yeates School of Graduate Studies (YSGS) only allows a limited intake of international students in addition to the domestic target, so the majority of incoming students are drawn from the 60% representing domestic applicants. The male to female ratio in the M.Arch. program has varied considerably from year to year, with the extremes being 81% male to 19% female in 2016, and 40% male to 60% female in 2014. Over the last ten years, the average has been 60% male, 40% female. Applicants to the M.Arch. program. are required to submit a portfolio which is assessed by faculty, and their entering grade point average is typically in the A- (3.67) to B (3.00) average grade range.

In addition to pursuing an accredited degree within our own M.Arch. program, many graduates of the Ryerson B.Arch.Sc. program have gone on to complete professional Master of Architecture degrees at other

institutions. The current enrolment in the M.Arch. program is made up of three main groups: recent graduates of the Ryerson B.Arch.Sci. (60%); graduates from Ryerson with at least three years of work experience (14%); and graduates of other programs in Canada (18%) and abroad (8%). In each successive year the demand for the program has increased among all applicant groups. This makes the admission process more competitive, but the mix of academic backgrounds is an important feature of our M.Arch. program. The department strives to admit as many excellent applicants as possible to maintain that mix.

Policies and procedures that provide students with a safe, positive, and respectful learning and working environment are described in Section 3.3, Equity, Diversity and Inclusion.

Co-curricular, Extracurricular, and Enhanced Learning Opportunities

Students in the Department of Architectural Science participate in a wide variety of extracurricular and enhanced learning opportunities. These range from participating in design competitions of varying scale and scope, to the design and construction of installations associated with major public and charitable events such as Nuit Blanche, the Night Stop Market (a fundraising event for The Stop Community Food Centre), Canstruction and Winter Stations. The department also offers a variety of enhanced learning opportunities, some of which follow:

Architectural Science Co-operative Education Internship (ASCEI)

Initiated in 2014, the Architectural Science Co-operative Education Internship (ASCEI) reinforces the department's ability to empower students to enter a wide range of professional roles in the construction industry. Drawing from an extensive network of local and international employers, the co-operative education internship provides top students with the opportunity to undertake a 16-month work placement, or internship, in an architecture, engineering, or construction firm. Admission into the ASCEI is extended to students who have completed the third year of the undergraduate program with high academic standing. The ASCEI program enhances the academic environment, improves relations with the local and international architectural community and provides students with a unique opportunity to apply their skills in a professional environment while gaining new insights on shifts in a dynamic industry. In accordance with university, co-operative education, and internship regulations, students' experiences are documented and integrated into the academic environment via periodic reports, site visits, and public presentations. Participating students have been working with organizations ranging from sole proprietorships to multinational corporations. Over the past three years students in the ASCEI program have been instrumental in the design, development, and delivery of prominent and award-winning projects with dozens of employers in the GTA and around the world (including the Netherlands, China and Denmark). The extremely positive reception of the ASCEI students since its first cohort took up industry placements in 2014 recently allowed

the department to double the cohort to 32 students commencing in May 2018. This expansion of the intake addresses the demand for DAS students from new and current employers in the architecture, building science, and project management industries.

Zone Learning

At Ryerson, Zone Learning is a new model of experiential learning built to prepare students for the 21st century workplace by providing opportunities to work on real projects, causes, companies, or startups. Students are given opportunities and support to experience what it takes to build an initiative/venture from the ground up. These initiatives allow students to develop their own interests and build future entrepreneurial abilities. Students from our program participate mainly in the Digital Fabrication Zone (DFZ). DAS students collaborate with students from other disciplines including engineering, computer science, interior design, and fashion on projects ranging from responsive installations to storefront displays. Despite its successes, within the DAS the DFZ suffered from ambiguity with respect to the benefits of membership, and how it is distinct from the other extracurricular projects undertaken by students.

Collaborative Exercise (Undergraduate)

All students enrolled in the undergraduate program take part in a Collaborative Exercise that takes place at the beginning of each winter semester. The department dedicates the week prior to the start of scheduled classes and holds a school-wide charrette addressing a range of current issues affecting the built environment. Students collaborate in teams composed of members from each of the four years of the undergraduate program, facilitated by faculty. The exercises typically involve representatives from a variety of public agencies or institutions. Over the course of the week students develop design proposals addressing the issues at hand, and work is exhibited in the Paul H. Cocker Gallery.

Collaborative Competition (Graduate)

In the M.Arch. program, the Collaborative Competition provides additional opportunities for experiential learning. Students create their own learning experiences in collaboration with others. Examples of successful collaborative workshops include teams of students participating successfully in competitions, working with community groups to provide architectural expertise to a variety of community projects, and collaborating with local professionals to undertake research for, or the design of, a particular project.

Graduate Symposium (Graduate)

As part of AR8102 Seminar in Critical Practice, which takes place during the first semester of graduate study, students organize a symposium addressing a theme of their choosing. Students are responsible for all aspects

of organization, including determining the theme, inviting guests, arranging for space, fundraising and publicizing the event. This has been a very successful aspect of the seminar, and provides students with a unique opportunity to participate in all logistical and intellectual aspects of a significant cultural event. It also encourages them to establish contacts with the broader discipline and profession, both within and beyond the local architectural community, including figures of international stature. Over the course of the first few years of operation, the symposium grew from a small event held at Ryerson to an event that attracts hundreds of industry professionals each year, and that is usually held at an off-campus location such as the Design Exchange.

Mobility Opportunities

The department is committed to providing students with mobility activities and opportunities related to the curriculum, including field trips, excursions, studios abroad, and courses abroad, all supported through departmental mobility guidelines established in 2016. Since 2015, the department has also expanded its international exchange program with significant increases in numbers of incoming and outgoing students. These activities remain a point of emphasis for future development. The Associate Chair for Curriculum and Mobility coordinates these activities and provides guidance to faculty members that propose new travel opportunities.

Exchange Programs

The department currently has formal agreements with six universities for one- or two-term exchanges. These include the Bergen School of Architecture in Norway; Coventry University in the UK; the Technical University of Delft in the Netherlands; the Technical University of Munich in Germany; the École Nationale Supèrieure d'Architecture Paris-La Villette in France; and the University of Stuttgart in Germany (associated through Ontario Universities International). Numbers of students travelling have increased in recent years as follows:

	Inbound Students		Outbound Students
	1 Term	2 Terms	1 Term
2015-16	2	3	2
2016-17	2	4	7
2017-18		5	15
2018-19	4	6	16

Field trips/ Courses/ Studios Abroad

Studios and courses involving a significant travel component over the last three years include:

2015

Spring Summer Term

ASC 904 - Selected Topics in Architecture, Kultour Frankfurt, Prof. Yew-Thong Leong
ARC 720 - Studio, Frankfurt Studio, Prof. Yew-Thong Leong
ASC 720 - Architecture Studio, China, Various Stations, Dr. Zaiyi Liao
AR 8105 - Intensive Research Studio and Seminar, Portugal, Dr. Kendra Schank Smith

Fall Term

ASC 301 - Design Studio II, field-trips to Toronto Museums, Dr. Leila Farah et. al.
ASC 522 - Project Economics, Raptor's training Facility Toronto, Municipal Centre Vaughn, Prof. Jennifer McArthur
AR 8101 - Studio in Critical Practice, Chicago Architecture Biennial, Prof. Arthur Wigglesworth, CL Scott Sorli

2016

Winter Term

ASC 805 - Collaborative Exercise, field trip, Toronto, Dr. Ramani Ramakrishnan
BSC 820 - Building Science Studio II, field trip, Kortright Center, Dr. Ramani Ramakrishnan

Spring Summer Term

ASC 720 - Architecture Studio, China, Various Stations, Dr. Zaiyi Liao
ASC 704 - Kultour Italy, Prof. Yew-Thong Leong and Prof. Vincent Hui
AR 8105 - Intensive Research Studio and Seminar, Germany, Austria, Switzerland, Dr. Paul Floerke

Fall Term

ASC 301 - Design Studio I, field trip, Toronto, Dr. Leila Farrah et. al.

ASC 520 - Integration Studio I, field trip, Toronto, Prof. Edward Wojs et. al.

BSC 720 - Building Science Studio I, Excursion Ottawa, Prof. Hitesh Doshi

AR 8101 - Studio in Critical Practice; Venice, Italy, Architecture Biennale, Prof. Arthur Wrigglesworth and CL Scott Sorli

AR 8106 - Current Topics in Architectural Praxis, graduate seminar; Venice, Italy, Architecture Biennale, Professor Marco Polo

2017

Winter Term

ASC 403 - Site Development and Planning, field trip, Toronto, Dr. Leila Farah
BSC 820 - Building Science Studio II, field trip, Toronto, Dr. Ramani Ramakrishnan
BSC 820 - Building Science Studio II, field trip, Kortright Center, Dr. Ramani Ramakrishnan

Spring Summer Term

ASC 904 - Selected Topics in Architecture, China, Various Stations, Dr. Zaiyi Liao
AR 8105 - Intensive Research Studio and Seminar, Delft, Netherlands, Dr. June Komisar

Fall Term

ASC 904 - Selected Topics in Architecture, Los Angeles course, Prof. Vincent Hui
AR 8101 - Studio in Critical Practice, Chicago Architecture Biennial, Prof. Arthur Wigglesworth and CL Scott Sorli

2018

Winter Term

BSC 820 - Building Science Studio II, Kortright Centre, Ontario, Dr. Ramani Ramakrishnan

Spring Summer Term

ASC 720 - Architecture Studio, China, various stations, Dr. Zaiyi Liao
AR 8105 - Intensive Research Studio and Seminar, Copenhagen, Denmark: Athens, Greece, Prof. George Kapelos

Fall Term

AR 8101 - Studio in Critical Practice, Venice, Italy, Architecture Biennale, Dr. Paul Floerke, Prof. Marco Polo
AR 8109 - Contemporary Architectural Theory, Venice, Italy, Architecture Biennale, Prof. Colin Ripley

Student Groups

There are a number of dynamic and active student groups that have an official or unofficial affiliation with the Department of Architectural Science, each of which works collaboratively with the department's

administrative staff and faculty leadership. The Architecture Course Union (ACU) is the department's representative student group on the Ryerson University student council. Other groups include the only Canadian chapter of the American Institute of Architecture Students (AIAS) and the Architectural Science Society (arc.soc).

Architecture Course Union (ACU)

All students in the department are automatically enrolled as members of the Architecture Course Union (ACU) upon matriculation. ACU is led by a group of students elected each year who represent the membership in Departmental Council, executive meetings, and formal discussions of issues related to the B.Arch.Sc. program. The ACU also organizes social and school-related events throughout the year.

American Institute of Architecture Students (AIAS)

The Ryerson Chapter of the American Institute of Architecture Students (AIAS) is a non-profit organization which aims to inspire students and intensify their passion for architecture; to make a difference in the community through unified action; to advance Ryerson's Department of Architectural Science internationally; and to promote student involvement in the world of architecture and its related disciplines. The AIAS hosts local conferences, including the annual FORUM conference in 2010, and several regional conferences, including the NorthEast Quad Conference, which was held at Ryerson in October 2017. The Ryerson Chapter of the AIAS has won many distinctions, including the Chapter award, and has been selected to host the 2019 FORUM conference. The AIAS also organizes field trips, career workshops, charrettes, competitions, and an annual "firm crawl" to Toronto AEC firms.

arc.soc

arc.soc is a student-led society that collects a fee of $100 from each undergraduate student and distributes funds (a total of $43,425 in 2017-18) in support of student initiatives including design-build projects, field trips, and conferences. The society was formed in response to a collective desire to increase student participation in extracurricular activities and modeled upon other student societies at Ryerson University. An elected board of students receives and awards funding to proposals from among the student population. Since its recent inception, arc.soc has been instrumental in leveraging finances for student initiatives that reinforce the university's academic plan, specifically by enhancing experiential learning opportunities, encouraging scholarly, research and creative (SRC) activity, and maintaining the university's role as a city-builder.

Student Support Services

Student Financial Support

Scholarships and Bursaries

Students in the program have access to a variety of means of financial support in the form of scholarships, awards, bursaries, teaching assistantships, and research assistantships. This is discussed further in section 3.8. In 2017, $118,000 in scholarship funding was allocated to new applicants to the B.Arch.Sc. program, and M.Arch. students received $180,000 in Ryerson scholarships as well as Ontario Graduate Scholarships (OGS) and SSHRC funding.

In addition to the $43,425 of funding raised by arc.soc's student levy (see above), the Dean provides about $18,000 in additional student support to the department's students for various activities, including trips, projects, events, etc. Other sources in 2016-17 include $9,140 from the President and Provost's offices, $3,500 from the Student Initiative Fund, and $5,000 from the Ontario Association of Architects. The department also provides ad hoc funding for student activities, and supports the student run *325 Magazine*, an annual publication of student work.

Teaching and Research Assistant Opportunities

Teaching assistantships are primarily directed at graduate students. However, in instances where suitable graduate students are not available for a particular course, a senior undergraduate student may be offered a TA position. This is very rare, as within the department suitable graduate students are typically available for these positions.

Graduate Assistants at Ryerson are unionized members of a Canadian Union of Public Employees (CUPE) unit. Under the current contract, the wage rate for GAs enrolled in a Master's program is approximately $44 per hour. A GA appointment for one term of a typical core undergraduate lecture course is in the range of 90 - 140 hours, depending on the demands of the course (courses with a large component of written assignments, as opposed to quizzes and exams, are provided a higher degree of GA support). A GA appointment for one term of a typical undergraduate studio course is in the range of 65 hours. Because of the demands placed on students with an already heavy workload, in some instances courses requiring 140 hours of GA support appoint two GAs at 70 hours each. In these cases, as in the undergraduate studios, an appointment for one term results in a total payment of approximately $3000 per student.

In total, the department maintains an annual expenditure of approximately $120,000 on graduate assistantships, shared between the graduate programs in Architecture and Building Science. Based on the nature of course subject matter and the required expertise, approximately 75 - 80% of GA positions are suited to graduate students in the Architecture program.

Undergraduate students have access to Research Assistant positions funded by the university's Career Boost work/study program, or through project grants obtained by faculty. Opportunities can vary significantly from

year to year, depending on the degree and nature of research project funding among the faculty. Historically, undergraduate students have participated in a wide range of research activities within the department, from quantitative data collection and analysis to assistance in the curation and design of major architectural exhibitions.

Research carried out by M.Arch. students is focused on curricular work and does not typically support faculty research. In addition, the number of research assistantships suited to graduate architecture students is limited. Some of the funding available to faculty from the university targeted to research assistantships is restricted to undergraduate students. There are some faculty conducting architecture-related research who have external funding, so that a limited number of Master of Architecture students participate as research assistants on specific projects. In recent years research assistantships have been available on projects funded by the Canada Council for the Arts and MITACS. In the three-year period from 2013-2016, annual funding for these types of positions has averaged approximately $25,000.

Student Development and Counselling

Academic counselling is carried out in the first instance within the program, and is the responsibility of the Associate Chair, Student Affairs. More in-depth counselling of an academic, personal, or career nature is carried out by the Centre for Student Development and Counselling, under the auspices of Ryerson Student Services (see below for more information about RSS). The Centre provides a range of individual counselling and group programs in a professional and friendly environment. Counsellors are available to work with students on a one-to-one basis in relation to a variety of personal concerns and crisis situations. Additionally, the counsellors provide both group sessions and individual counselling for those experiencing uncertainty about their educational or career goals. All services of the Centre are free, confidential, and delivered by highly qualified staff.

Students access the Centre for Student Development and Counselling by appointment. Two counsellors from the Centre are dedicated to the Faculty of Engineering and Architectural Science, and are the primary counsellors for students in the program. The Centre also provides individual and group counselling and workshops designed to aid students in their personal, career, and academic development.

Other Student Services

Ryerson offers a robust suite of student services, which can be found at the Student Affairs website, https://www.ryerson.ca/studentaffairs/ These services address a wide range of categories and activities, including:

- Career Centre
- Housing & Residence

- Student Learning Support
- Student Life
- Health & Wellness
- Storytelling

These various services are cross-referenced to a number of sub-topics, providing multiple intuitive points of access to a variety of specific services:

- Academic Information: exam schedule, academic calendar, enrolment support, graduation
- Access & Accommodation: academic accommodation support, first year translation support programs, learning workshops, booking exams with the test centre
- Careers: campus jobs/Career Boost, job postings, career advising, internships and co-ops, job search guide/Career Compass
- Counselling & Advising: group therapy, individual therapy, sexual violence support, career advising, academic advising
- Events: book a space, find an event, apply for funding, planning procedures
- Food: eat on campus/RyersonEats, low income options, deals around campus
- Get Involved: leadership development, student groups & clubs, volunteer opportunities
- Health & Wellbeing Support: see a doctor, athletics & recreation, build resilience/ThriveRU, therapy dogs, mental wellbeing resource
- Housing and Residence: off-campus housing, living in residence, summer housing
- International Support: immigration documents & forms, financial matters, health insurance, working in Canada, study abroad, global citizenship and intercultural learning
- Learning Support: writing support, math support, English language support, graduate student support, workshops & events, study skills workshops and transition support
- Mentoring: career mentoring, peer to peer mentoring, mentoring for first generation students, SHARP student health and resilience program, group mentoring, access for students with disabilities, Thriving in Action/11 week support program
- Money: scholarships & awards, financial aid, budgeting & advice, student discounts
- Orientation: events & updates, volunteer with orientation

- Connect With Us: student stories, social media, Ryerson contact & directory

Lecture Series: Winter 2015 - Winter 2018

The Department of Architectural Science hosts a wide range of lecturers and visiting critics each year. Lectures typically happen as part of our public lecture series, which has enjoyed growing publicity and financial support from industry and other partners, mostly as a result of a concerted effort on the part of faculty members. In addition to students, the public lectures attract attendees from outside the department, serving an important outreach function that connects the program to the wider professional community and general public. Additional lectures take place as informal, brown-bag lunch sessions, or in the context of courses.

Winter 2015

Louis Becker and Dorte Mandrup, HLA and Dorte Mandrup, Copenhagen, Denmark
D'arcy Jones, D'arcy Jones Architecture, Vancouver, Canada
Tom Woolley, Queen's University, Belfast, UK
Michael Speaks, Syracuse University, New York, USA
Christoph Meier, SJB. Kempter.Fitze Ag, Frauenfeld, Switzerland
"Conversation: Architecture on Display" with Aaron Levy, Sascha Hastings and George Kapelos

Fall 2015

Nasrine Seraji, Atelier Seraji Architectes & Associés, Paris, France
Siamak Hariri, Hariri Pontarini Architects, Toronto, Canada
Anouk Legendre, X-TU Architects, Paris, France

Winter 2016

Nathalie de Vries, MVRDV, Rotterdam, The Netherlands
Chris Jofeh, ARUP, Cardiff, UK
Alfonso Medina, T38 Studio, Brooklyn, USA
Susannah C. Drake, DLand Studio, Brooklyn, USA

Fall 2016

Donald Schmitt, Diamond Schmitt Architects Inc., Toronto, Canada
Pascal Rollet, Lipsky + Rollet Architectes, Paris, France
Christopher Sharples, SHoP Architects, New York, USA

Winter 2017

Marc Ryan, Public Work, Toronto, Canada
Thomas Rau, RAU, Amsterdam, The Netherlands

Fall 2017

Heather Dubbeldam, Dubbeldam Architecture & Design, Toronto, Canada
Jacques Ferrier, Jacques Ferrier Architecture, Paris, France
Brad Cloepfil, Allied Works, Portland & New York, USA

Winter 2018

Helena Casanova, Casanova+Hernandez Architects, Rotterdam, The Netherlands
Christoph Dünser, Hermann Kaufmann Architects, Schwarzach, Austria
Joan Busquets, BAU B. Architecture |Urbanism, Barcelona, Spain

Public Exhibitions at Paul H. Cocker Gallery: Winter 2015 - Winter 2018

Since 2014 the Paul H. Cocker Gallery in the Architecture Building has provided a venue to host professional exhibitions. This has enabled the department to both curate new exhibitions and to host travelling exhibits from around the world. Below is a list of recent exhibits in the gallery:

Winter 2015

Collaborative Exercise
Built Works: Lina Bo Bardi (Brazil)
Treasury of Deserted Backdrops: A Graduate Design Thesis (Norway)
Public Space Rules: Exploring Connected Hyper-Density in the Church St. Development
Year End Show

Fall 2015

Shaping Canadian Modernity (curated by Prof. George Kapelos)
Performigrations: Transition in Progress (International)
Bahá'í Temple of South America (Hariri Pontarini Architects)
DAS Student Awards

Winter 2016

Collaborative Exercise
Graduate Thesis Work
Design Matters (curated by Prof. Cheryl Atkinson)

Year End Show

Fall 2016

Carrot City Canada (curated by Dr. June Komisar, Dr. Mark Gorgolewski, Dr. Leila Farah, Dr. Joe Nasr, Prof. Vera Straka)
Detour: National Tourist Routes in Norway (Norway)
DAS Student Awards

Winter 2017

Collaborative Exercise
Graduate Thesis Work
Synagogues in Germany: A Virtual Reconstruction (Germany)
Year End Show

Fall 2017

Architecture and National Identity: The Centennial Projects 50 Years On (curated by Prof. Marco Polo and Prof. Colin Ripley)
DAS Student Awards

Winter 2018

Collaborative Exercise
Graduate Thesis Work
Issues for the Future City: Metropolis of Cities (guest curated by Dr. Shelagh McCartney, Ryerson School of Urban and Regional Planning)
Year End Show

Guest Critics

Guest critics are typically invited to the school to participate in reviews of third year architecture studio and fourth year architecture thesis. Critics brought to the program in the last three years include:

Name	Affiliation
Drew Adams	LGA Architectural Partners
Rawya Al-Ameen	Giaimo Architecture, Cultural Heritage, Conservation
Jonathon Anderson	Ryerson University, School of Interior Design
Eva Apatsidou	RED Studio
Craig Applegath	Dialog
Tricia Arabian	Frank Franco Architects
Mark Berest	B+H Architect
Max Berg	ERA Architects

Ralph Bergman	Lion's Tooth Consultancy
Tom Bessai	DeNegri Bessai Studio
Adrian Bica	Office of Adrian Bica
Doug Birkenshaw	Brook McIlroy
Mathieu Blais	Thier + Curran Architects
Michael Bootsma	Partisans Projects
Gail Borthwick	Stantec
Tania Bortolotto	Bortolotto Architects
Luc Bouliane	LBA
Paula Bowley	PBA
Edward Broeders	University of Toronto
James Brown	Brown and Storey Architects
Peter Bull	IBI Group
Jim Burkit	Gow Hastings Architects
Nick Calies	gh3 Inc.
David Campbell	Arup (Architect)
Tiffany Cheung	
Roberto Chiotti	Larkin Architects
Raymond Chow	gh3 Inc.
Melanie Clarke	B+H
Michael Clesle	MC Architects
Peter Clewes	Architects Alliance
Ardeleanu Corina	DSAI
Paul DaCunha	Architecture Matters
Alanna D'Ailly	WPL
Nic De Saliberry	Ryerson FMD (Director of Campus Planning)
Damineh Dehnadfar	Perkins + Will
Simon Di Vincenzo	Ryerson University Facilities Management and Development
Lisa Dietrich	Branchplant
Maria DiNegri	University of Toronto
Paul Dolick	Kongats Architects
David Dow	DSAI
Paul Dowsett	Sustainable TO
Heather Dubbledam	Dubbledam Architects
Dadin Duldul	Hariri Pontarini Architects
Hooper Dustin	Montgomery Sisam Architects
Amin Ebrahim	Kohn Shnier Architects
Ksenia Eic	Taylor Architecture Group
Noheir Elgendy	York University
Babak Eslahjou	CORE Architects
Gabriel Fain	Gabriel Fain Architect
Adam Feldman	Architects Alliance
Paul Ferris	Ferris + Associates
Robert Fiorino	Dialog
Alexander Flash	Arup Associates
Jaliya Fonseka	Thomas Payne Architects
Jason Fung	Jason Fung Architect
Andrew Furman	Ryerson School of Interior Design
Vivian Gabrail	McCallum Sather Arch.
Charles Gane	CORE Architects
Elisabeth George	Studio Great Lake
Philip Goldsmith	GBCA
Michael Good	Axia Design Associates
Margaret Goodfellow	Metrolinx
Andzrej Gordat	ZAS
Valerie Gow	Gow Hastings Architects
Meg Graham	Superkul Architects
Michele Grant	SimonJames
David Grant	Rubash
Kara Green	G Architects

Paul Halpern	M Paul Halpern Architect
Pat Hanson	gh3 Inc.
Phil Hastings	Gow Hastings Architects
Paul Hastings	Paul Hastings Architect
Dustin Hooper	Montgomery Sisam Architects
Shawn Houghtling	RH Carter Architects
Rideout Howard	Howard Rideout Architect
Zhivka Hristova	Kearns Mancini Architects
Christian Hugget	Podium Developments
Kevin Hutchinson	Montgomery Sisam Architects
Ivan Ilic	Zeidler Partnership
Frank Infante	Engineering Link
Peleg Itai	City of Toronto
Macalik Jana	OCADU
Jeff Jang	DSAI
Vic Jaunkalns	MJMA Architects
Bernard Jin	Teeple Architects
Dorothy Johns	DSAI
Alex Josephson	Partisans Projects
Nille Julle-Sorenson	Arup (Global Architecture Lead)
Rolfe Kaartinen	NORR
Michael Kim	DSAI
Carl Knipfel	Lankin House Design
Grace Ko	KPMB Architects
Maksim Komashenko	KFA Architects
Alar Kongats	Kongats Architects
John Kooymans	RJC Engineers
Paul Kulig	Perkins+Will
Shivathmikha Kumar	KPMB Architects
Santiago Kunzle	Montgomery Sisam Architects
Thea Kurdi	DesignABLE Env. Inc
Clarkson Kyra	Kyra Clarkson Architects
Joanne Lam	RAW Design
Gerry Lang	Architects Alliance
Michael Leckman	DSAI
Kelvin Lee	York Region District School Board
Jamie Lee	WZMH
David Lehberg	Knightstone Development
Martin Leifhebber	Breathe Architects
Matthew Lella	DSAI
Lawrence Lemieux	CLC
David Lepofsky	Barrier - Free Canada
Aaron Letki	MJMA
Christine Leu	LeuWebb Projects
Susan Lewin	CS+P
Norm Li	Norm Li Architectural Graphics
Xuemei Li	University of Liverpool Suzhou China
David Lieberman	University of Toronto
Fiona Lim Tung	IWB
Ryan Love	ERA Architects
Anne Ma	Gow Hastings Architects
Ian MacDonald	Ian MacDonald Architect
Breck Macfarlane	DSAI
Michaela MacLeod	Polymétis
Adil Mansure	University of Toronto
Rocco Maragna	Maragna Architect
Lisa Marshall	Gillespie & Steel
Jay Martin	Ryerson University Facilities Management and Development
Suriano Matt	Quadrangle Architects
Mitchell May	Giaimo Architect
Michael Mazurkiewicz	Sustainable TO

Christopher McCarthy	George Brown
Shelagh McCartney	Ryerson University, School of Urban Planning
Gary McCluskie	DSAI
Christopher McCormack	McCormack Architect
Robert McKaye	KPMB Architects
Terri Meyer Boake	University of Waterloo
Angie Michail	LGA Architectrual Partners
François Mifsud	University of Toronto
Brad Miles	IBI Group
Michael Miller	Ryerson Professor Emeritus
Farzam Mohajer	Sparrow Studio
Christian Mohan	Global Architect Inc.
Alex Morassut	Wallman Architects
Julia Mozheyko	Point Architects
Joe Nasr	Ryerson University, Chang School
Jon Neuert	Baird Sampson Neuert Architects
Paul Nevins	
Ringo Ng	Cadillac Fairview
Craig Nicoletti	EngLink
Gayle Nicoll	OCAD University
Roy Oei	B+ H
Stephanie Palmer	Terroni
Charisma Panchapakesan	CAB Architects
Carlo Parente	IIT
Anna Pavia	ERA Architects
John Peterson	KPMB Architects
Carol Philips	Moriyama & Teshima Architects
Chris Pommer	PLANT
Anthony Provenzano	Anthony Provenzano Architects
Andrew Pruss	ERA Architects
Andrew Pruss	ERA
Kevin Pu	B+H Architects
Craig Race	Race Architects
Chris Radigan	TAI
Kieran Randall	JNA
Kiriakis Rita	KPMB
Sean Robbins	RAW Design
Boyd Robert	KPMB
Roland Rom Colthoff	RAW
David Rubash	Sweeny & Co
Mark Ryan	Public Work
Don Schmitt	DSAI
Alexis Schneider	B+H Arch.
Robbins Sean	Moriyama and Teshima Architects
Court Sin	Forrec Ltd
Dennis Sintic	GRND Studio
Jamie Smallwood	Windowcraft
Steve Socha	Sustainable TO
Rai Sonny	DSAI
Balaji Srinivasan	Coinbase
Paul Stevens	ZAS
Michael Suriano	Giannone Petricone Associates Inc.
Matthew Suriano	Quadrangle Architects
Jeff Szeto	gh3 Inc.
Hrishikesh Tailor	RAW Design
Hugh Taylor	Hugh H Taylor Architect
Nova Tayona	Nova Tayona Architects
Tzoline Ternamian	Degrassi Bessai Studio
Tzoline Ternamian	WZMH
Hannah Thevapalan	WSP Canada
Razmig Titizian	Bogdan Newman Caranci Inc.

Agnes Tong	WZMH
Scott Torrance	Forrec
Chloe Town	Univerity of Toronto
Ian Trites	TTC
Rebecca Tsang	WZMH
Tommy Tso	HOK
Theo Van Driel	Van Driel Arch.
Ivan Vasyliv	Partisans Projects
Annabel Vaughan	ERA Architects
Eileen Waechter	GTAA
Alan Webb	LeuWebb Design
Scott Weir	ERA Architects
Kevin Weiss	Weiss Architecture & Urbanism
Betsy Williamson	WilliamsonWilliamson Architects
Colin Wolfe	Ryerson FMD (Campus Planning)
Colin Wolfe	Capital Projects & Real Estate Department, Ryerson
Michelle Xuareb	Quadrangle Architects
Hyebin Yoon	Set Designer
Elmira Yousefi	RAW
Mark Zwicker	Architecture Unfolded

External Speakers

External speakers are invited by instructors to give special lectures typically as part of a course curriculum. External speakers over the last three years include:

Name	Affiliation	Lecture Subject
Anne Bordeleau	University of Waterloo	The Evidence Room
Darryl Brush	AIBN	Project Management - construction management
Sara Dean	California College of the Arts	Detroit Resists: Digital Occupation of the U.S. Pavilion
Elisabeth George	Studio Great Lake	CAB Lake Front Kiosk Competition
Anka van Hal	TU Delft	Sustainable Communities
Wissam Hijazi	Ellis Don	Project Management - virtual design & construction
August Konje	Altus Group	Project Management - Cost Estimation
Jordan Lefler	Ellis Don	Sustainability
Ryan Love	ERA Architecture	Historic Preservation Examples
Alex Lukachko	RDH Consulting Engineers	building envelope design case studies (BSC822)
Don McKay	University of Waterloo	The Evidence Room

Mirko Milutino	Johnson Controls	Project Management - P3 projects
Steve Nonis	Turner-Fleisher Archiects	BIM in Project Management
Chris Magwood	Endeavor Centre	Natural building technologies
David Oikawa	Planning Manager, Downtown, City of Toronto	Site development and planning in Downtown Toronto
Paul Pasqualini	Engineering Link	Window and curtain walls field and lab testing (BSC822)
Frederick Peters	York University	Project Management - P3 projects
Ben Polley	evolveBuilders	Project Management - construction management
Duncan Rowe	RJC Consulting Engineers	Windows and curtain walls (BSC822)
Aaron Savage	Arup	Project Management - design management & CA
Dennis Sintic	GRND Studio	Project Management - design management & CA
Drew Thorpe	CS & P	Project Management - design management & CA
Malcolm Wallace	WSP	Project Management - P3 projects

3.5 Faculty and Staff Resources

The Program must demonstrate that it provides adequate human resources for a professional degree program in architecture, including a sufficient complement of appropriately qualified faculty, administrative, and support staff, and an administrative head that devotes no less than fifty percent of his or her time to program administration. Student enrollment and the scheduling of design studios must assure adequate time for an effective tutorial exchange between faculty members and students. The student/faculty ratio in the studio should be between 12:1 and 15:1, with 15:1 as the maximum. The total teaching load should allow faculty members adequate time to pursue supervision, research, scholarship, and/or practice. The Program must have a clear policy outlining both individual and collective opportunities for faculty and staff growth within and outside the Program.

The APR must include:

- a description and tabulation of the academic and professional qualifications of faculty, as well as a description of the distribution of effort between teaching and the other responsibilities of each faculty member;
- a description of the distribution of effort between administration and other responsibilities for each position;
- a description and tabulation of the administrative and technical roles and qualifications of Program support staff, as well as a description of the distribution of effort where roles and responsibilities are split among

As of summer 2018, there are 29 full-time faculty members in the Department of Architectural Science (Table 3.5.1). Nine are women (30%) and 20 are men (70%). Twenty-six faculty are tenured, two hold a tenure-track position, and one is appointed as a limited term faculty (LTF) to cover for a faculty member who has an administrative appointment as Associate Dean. The available teaching complement is 28. Twelve faculty (37%) hold the rank of Professor; 14 (50%) are Associate Professors; and three (11%) hold the rank of Assistant Professor (at Ryerson, once a faculty member achieves tenure they are automatically promoted to Associate Professor). Fourteen faculty (48%) in the department hold a PhD. The LTF faculty and one tenure-track faculty are new to the department as of summer 2018 (included in the above numbers). During the hiring process undertaken in 2018, the Provost supported the hire of an additional tenure-track position, and the department is currently conducting a search for this position.

The department takes the view that professional credentials, in addition to academic credentials, provide added strength to the core faculty. The department historically expected members of the teaching faculty to become licensed architects or engineers in Ontario. As the department shifted its hiring strategy over the last 15 years, hiring more faculty with PhDs, this requirement was relaxed. For those with PhDs, licensure is now encouraged but not required, and many have professional qualifications in a variety of jurisdictions outside of Ontario (including Québec, the United Kingdom, Germany, and the United States). Currently, 21 faculty hold a professional degree and professional qualification in architecture; the remainder have an engineering/building science academic background and professional qualification. Several have significant prior and ongoing experience in practice.

Full-time faculty at Ryerson belong to the Ryerson Faculty Association (RFA), the certified union which carries out collective bargaining with the university. Faculty workload is recognized in the RFA collective agreement as comprising three distinct areas: Teaching; Scholarly, Research, and Creative (SRC) activities; and Service to the University, the Profession and the Community. Under the terms of the collective agreement, faculty members are usually expected to teach in no more than two semesters per year. Typically, faculty teaching assignments are concentrated in the fall and winter terms, with more time devoted to SRC activities during the spring and summer.

Following a comprehensive review of teaching loads as compared with similar disciplines at other universities, the Department of Architectural Science adopted a typical teaching load for full-time faculty of two teaching assignments per semester. These typically consist of one nine-hour studio, and one three-hour lecture course or seminar, for a total of 12 hours per week (which is the maximum number of contact hours allowed under the terms of the RFA collective agreement). In some cases, faculty may teach two three-hour lecture courses in one semester, and no studio.

multiple tasks or positions;

- the Program's policy regarding human resources development opportunities;
- a description of the policies, procedures, and criteria for faculty appointment, promotion, and tenure;
- a description of faculty and staff development opportunities;
- evidence of how faculty activities encourage currency in the knowledge of changing demands of practice and licensure; and
- a description of the Program's approach to research, research activities carried out within the Program, and how the research may or may not inform the professional curriculum.

Table 3.5.1 Faculty list and courses taught

Faculty Member	Position	Research Interests	Courses Taught
Cheryl Atkinson	Associate Professor	Design & health, Design & phenomenology, Design & public space	Design Studios Glass in Architecture Collaborative Exercise
Dr. Umberto Berardi	Associate Professor	Building science New materials Building performance	Building Science Studio Light and Sound in Architecture Building Science Theory
Dr. John Cirka	Associate Professor Associate Chair Grad Studies Architecture	Digital design Geometry & form Fabrication	Design Studios Seminar in Critical Practice
Hitesh Doshi	Professor	Green roofing Performance and rehabilitation of buildings Durability of building envelope components	Building Science Studio Building Science Theory II Structures Research Methods
Masha Etkind	Professor	History and theory of architecture Conservation & preservation Architecture education	Design Studios Ideas Technologies & Precedents Heritage Conservation Theory & Practice
Dr. Leila Farah	Associate Professor	Inclusive and healthy cities Urban ecology and design- Community participation and design	Design Studios Site Development & Planning
Dr. Paul Floerke	Associate Professor Associate Chair Curriculum and Mobility	Architectural design & theory Methods and processes Building construction	Design Studios The Construction Project

Dr. Mark Gorgolewski	Professor Chair of Department	Closed-loop systems Building performance assessment Design for urban agriculture	Design Studios Sustainable Practices Ecological and Resource Efficient Design
Dr. Miljana Horvat	Associate Professor Associate Dean for Graduate Programs, FEAS	Solar energy and architecture Hygrothermal performance of building envelopes Advanced energy efficient facades	Design Studios Envelope Systems
Vincent Hui	Associate Professor Associate Chair of Experiential Programs	Design communications and fabrication Architectural pedagogy Relationships between architecture and media	Design Studios Digital Tools
George Kapelos	Professor	Design for UVR protection & skin cancer prevention Post-war housing in Canada Contemporary theory, architecture, landscape and urbanism	Design Studios The Built Context Collaborative Exercise
Dr. June Komisar	Professor Associate Chair Student Affairs	Eighteenth-century Brazilian architecture Creativity and the design process Urban morphology	Design Studios Ideas Technologies & Precedents Designing the Productive City
Yew-Thong Leong	Associate Professor	Digital architecture and design Architectural preservation and conservation Practice management	Design Studios Seminar in Contemporary & Future Practice Business Practices in the AEC Industry
Jurij Leshchyshyn	Professor	Architectural design Architecture and public policy Curriculum development	Design Studios The Built World

Dr. Zaiyi Liao	Professor	Building automation Fire safety Intelligent sensors and instrumentation	Design Studios Bodily Comfort Systems Sustainable Control Systems
Jennifer McArthur	Assistant Professor	Re-envisioning BIM in facility management Integrating big data into BIM Strategic investment in building portfolio retrofits	Design Studios Project Economics Procurement & Construction Management
Carlo Parente	Assistant Professor (3 year term)	Community engagement Performance architecture	Design Studios The Construction Project
Dr. Terri Peters	Assistant Professor	Design for Health Daylighting Design Sustainable Design	Design Studios Sustainable Practices
Dr. Paul Poh	Associate Professor	Construction project management Geotechnical engineering Continuing engineering education	Project Management Studio Economics for Project Management Construction Practices & Management
Marco Polo	Professor	Contemporary Canadian architecture Regionalism in Canadian architecture Cultural dimensions of sustainability	Design Studios Ideas Technologies & Precedents Canadian Architecture Since 1945
Dr. Ramani Ramakrishnan	Professor	Architectural acoustics Acoustical modeling & noise control Building science	Building Science Studio Building Science Theory Envelope Systems
Dr. Russell Richman	Associate Professor Associate Chair Graduate Studies Building Science	Sustainable buildings Low-energy and passive housing Building simulation	Design Studios Building Envelope Systems Passive House

Colin Ripley	Professor	Design|Research Architecture and national identity Queer architectures	Design Studios Current Topics in Architectural Praxis
Dr. Kendra Schank Smith	Professor	Design process Representation & architectural sketches Design pedagogy and studio	Design Studios Ideas Technologies & Precedents Writing in Architecture
Dr. Albert Smith	Associate Professor	Architectural Design Architectural Pedagogy and Process Representation and Communications	Design Studios Ideas Technologies & Precedents Architectural Representation
Vera Straka	Professor	Structural design Materials & durability Sustainability	Design Studios Structures Building Science Studio Sustainable Rating Systems
Edward Wojs	Associate Professor	Architectural design competitions Studio-based education Art and theory of architectural practice	Design Studios The Building Project Advanced Construction Case Studies
Arthur Wrigglesworth	Associate Professor	Architectural design Arts and culture, digital technologies Architectural practice	Design Studios Tectonics and Materiality
Baruch Zone	Associate Professor	Architectural design Design, Methods and Materials Health and Long-Term Care	Design Studios Documentation & Construction Contract The Small Building

Contract Lecturers

In addition to tenured (or tenure track) faculty, the department relies on part-time instructors (referred to at Ryerson as contract lecturers) to deliver aspects of the program, particularly studio, and their professional experience provides a strong additional component to the program. The proportion of instructional hours taught by contract lecturers varies from year to year and depends on many factors, including faculty availability, administrative assignments, sabbatical leaves, etc., but has been increasing in recent years to over 40% of total instructional hours. The department is fortunate to have a strong pool of experienced contract lecturers, some of whom have contributed to the program over many years. Table 3.5.2 shows a list of contract lecturers who have taught in the program over the last three years.

Table 3.5.2 Contract Lecturers 2016-2018

Faculty Member	Courses Taught
Doug Bower	Information Systems
Cheryl Bradbee	Landscape, Site Development and Planning
Craig Brown	Sustainable Practices
Mark Cichy	Design Studio
Rob Coelho	Design Studio, Principles of Detailing
Maria DeNegri	Design Studio
Paul Dowsett	Design Studio
Elizabeth George	Design Studio
Joey Giaimo	Design Studio, Heritage Conservation Theory & Practice
Michelle Grant	Design Studio
Frank Hamilton	Design Studio
Aaron Hendershott	Design Studio
Joy Henderson	Information Systems
John Ingrao	Design Studio
Stan Jurkovic	Design Studio
Bohmani Khemet	Sustainable Control Systems, Advanced Envelopes/Components

Olena Kobets-Singkh	Design Studio
Joanne Lam	Design Studio
Pierre Le Lay	Design Studio
Christine Leu	Design Studio
Brigitte Luzar	Design Studio
Alistair MacKenzie	Project Management Studio, Construction Practices & Management
Veronica Madonna	Design Studio
Ivan Martinovic	Design Studio, Building Envelope, Principles of Detailing, Seminar in Contemporary & Future Practice
Garth Norbraten	Design Studio, The Construction Project, Principles of Detailing
Julie Ourceau	Design Studio
Dimitri Papatheodorou	Design Studio
Jason Ramelson	Advanced Digital Design
Vis Sankrithi	Design Studio
Scott Sorli	Design Studio
Matt Tokarik	Sustainable Practices
Theo Van Driel	The Building Project

At Ryerson, every course instructor is evaluated by students by means of the Faculty Course Survey (FCS), a university-wide evaluation process conducted in the final weeks of each semester. Evaluations can be completed online or in class in hard copy form, and the results are tabulated and communicated to each instructor and compared statistically across each faculty and the university at large. The results are referred to in evaluations of instructor performance in connection with applications for tenure and promotion. The surveys consist of a series of standard questions with responses ranging from "Strongly Disagree" to "Strongly Agree." In addition, online evaluations allow students to add specific comments that can be helpful to faculty seeking to improve the content of their courses and the effectiveness of their teaching methods.

Administration

The department and the program are administered by full-time, tenured faculty who have accepted administrative duties and receive a reduced teaching load. The major current administrative roles are as follows:

- Chair, Department of Architectural Science receives a 75% course load reduction (currently Dr. Mark Gorgolewski, appointed for 3 years until summer 2020).
- Associate Chair, Student Affairs receives a 50% course load reduction (currently Dr. June Komisar, appointed until summer 2021).
- Associate Chair, Curriculum Management and Mobility receives a 50% course load reduction (currently Dr. Paul Floerke, appointed until summer 2021).
- Associate Chair and Experiential Learning Director is entitled to a 25% course load reduction (currently Professor Vincent Hui, appointed until summer 2019)
- Associate Chair, Graduate Studies, Architecture receives a 50% course load reduction (currently Dr. John Cirka, appointed until summer 2019).h
- Associate Chair, Graduate Studies, Building Science receives a 50% course load reduction (currently Dr. Russell Richman, appointed for 3 years until summer 2019).

Also, each studio in the first three years of the program is coordinated by a "Studio Master" appointed for a term to act as the pedagogical leader and coordinator for the (typically) eight sections per studio. In addition, Dr. Miljana Horvat has been appointed as Associate Dean, Graduate Studies, Faculty of Engineering and Architectural Science (five year term until summer 2021) and receives a 75% course load reduction. Other appointments include Marco Polo as curator for the Paul H. Cocker gallery and Yew-Thong Leong as liaison with the architecture-related Continuing Education (CE) programs in Ryerson's G. Raymond Chang School of Continuing Education, neither of which involve a reduction in course load.

Appointment, promotion and tenure

Policies, procedures, and criteria for appointment, tenure, and promotion as well as paid leaves (sabbaticals) are governed by the RFA collective agreement. A synopsis of the processes follows:

- Appointments to the full-time faculty are made by the Provost on the recommendation, through the Dean, of the Department Hiring Committee (DHC).
- The DHC (in a department of the size of DAS) is composed of seven members: The department Chair (or designate), four elected members, one member appointed by the Chair, and a seventh member selected by the first six.
- In 2016 the probationary period for pre-tenure faculty members was increased from five to six years.

When a faculty member achieves tenure they are automatically promoted to Associate Professor.

- The process of reviewing probationary faculty and recommending tenure is undertaken by a Department Evaluations Committee (DEC), which in the Department of Architectural Science consists of seven tenured faculty members: five members elected by and from the department faculty, the Chair, and one appointed by the Chair.
- All faculty are required to report annually on their teaching, SRC, service, and outside professional activities. The DEC reviews probationary faculty annually, both through in-class evaluations and through a review of the faculty member's annual report. The DEC issues a formal, written evaluation of the annual report of each probationary faculty member.
- The DEC also reviews probationary faculty members for transfer to the tenured faculty at the appropriate point in time. The criteria are outlined in the RFA contract for this review, as follows:

> Pre-tenure faculty members will be assessed for transfer to the tenured faculty in terms of their demonstrated capacity for, achievements in and commitment to the Teaching, SRC and Service components of the duties and responsibilities of faculty members described respectively in Articles 10.12 A, 10.13 and 10.14. They may also be assessed in terms of:
>
> a) their obligations as faculty members under Article 7.3,
> b) their satisfaction of such conditions of probation as were specified in their letter of appointment, and
> c) their progress in overcoming weaknesses identified in their year end assessments, if any.

- A Faculty Tenure Committee (FTC) is established by the Dean within each faculty to consider recommendations with respect to tenure received from the DECs. The FTC reviews submissions from the DECs to ensure fairness and due process, and makes tenure recommendations to the Dean and Vice-Provost, Faculty Affairs.
- A Faculty Promotion Committee (FPC) is established within each faculty to make recommendations to the Dean with respect to applications for promotion to Professor and for salary transfer.

Since 2012, six faculty members in the Department of Architectural Science have been transferred to the tenured faculty, and seven have been promoted to Professor.

Leaves of Absence

Ryerson University acknowledges the importance of sabbatical leave to the intellectual vibrancy of the faculty and therefore of the university, and for academic refreshment or expansion of experience. This is considered an investment toward increasing both the quality of programs of study and SRC activities at the university.

Faculty may take leaves of absence with pay (sabbatical) as well as leaves without pay. Article 6 of the RFA collective agreement outlines eligibility for a sabbatical leave, which is based on the accumulation of the requisite number of credits for completed teaching semesters. This typically means that a half-year sabbatical can be taken every 3 to 4.5 years (at 85% to 100% salary), and a full-year sabbatical every 6 to 8 years. In addition, the collective agreement contains provisions for faculty members to undertake faculty exchange leaves (Article 6.10) with institutions with whom Ryerson University has an exchange agreement.

It is typical for three or four members of the department's tenured faculty to be on leave in any academic year. Examples of activities of faculty on leave include intensive research, funding proposals, the preparation of manuscripts for publication, and educational enrichment (PhD studies). Individual information on faculty activities can be found in the curricula vitae of faculty.

Scholarly, Research, and Creative Activities

The Department of Architectural Science has a unique mix of expertise with an interdisciplinary complement of faculty members and an expanding base for Scholarly, Research, and Creative (SRC) activities over recent years. New faculty appointments (some with PhDs) bring with them an enthusiasm and capacity for SRC and have found considerable success in securing research funding and delivering SRC outcomes. In recent years, faculty members have successfully secured research grants from funding sources such as the Canada Council for the Arts, SSHRC, NSERC, Canada Foundation for Innovation, Ontario Power Authority, Ontario Centres of Excellence, MITACS, Ryerson Centre for City Building, Ryerson Centre for Urban Research and Land Development and Ryerson Centre for Urban Energy as well as various commercial partners. Table 3.5.3 shows total reported SRC funding in the department from 2010-16, indicating that in total over $2,561,000 in research funding has come into the department over this six-year period. This includes $1,336,579 in tri-council (NSERC, SSHRC, CIHR) funding and $1,168,878 in other external funding.

Table 3.5.3 Recent SRC Funding in the Department of Architectural Science ($)

Arch Sci	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	6 yr total
Tri Council ($)	360,840	50,000	96,100	450,009	49,630	330,000	1,336,579
Other external ($)	73,095	145,420	211,340	606,114	72,910	60,000	1,168,878
Internal ($)		5,804	1,039	7,000	18,881	23,400	56,124
Total Reported	**433,935**	**201,224**	**308,479**	**1,063,123**	**141,421**	**413,400**	**2,561,581**

In a recent self-study, the department's primary SRC areas were identified as:

- Architecture and Culture
- Architectural Practice
- Building Science
- Managing the Construction Project
- New Media and the Virtual World
- Sustainability

The volume and variety of faculty members' SRC activity continues to grow. A survey of SRC outputs including peer reviewed papers, books, design projects, exhibitions, etc., showed that the number has grown from about 2.4 outputs per faculty in 2011-12 to over 4 in 2016-17. These include several major exhibitions (e.g. Toronto City Hall Competition, the Centennial Projects, and Carrot City Canada exhibitions), a variety of design-build projects (e.g. Zero House), published books, peer reviewed papers, organizing and hosting conferences, and collaborations with industry. Several faculty have received major awards related to architectural practice (Governor General's Medal in Architecture, Ontario Association of Architects Awards of Excellence, Canada Council Prix de Rome in Architecture). Others have received peer recognition for professional accomplishments (five have been appointed to the Royal Architectural Institute of Canada's College of Fellows and one named a Member of the Professional Engineers of Ontario Order of Honour).

Ryerson University is committed to supporting its faculty members in the development and execution of SRC activities. SRC facilities in the department include the Paul H. Cocker Gallery, the research office, the workshop, and the building science lab, all of which are housed within the Architecture Building. However, space for SRC—for both faculty and research assistants—remains in short supply. SRC administrative support and advice is provided by the Research and Innovation Office (RiO) at the Faculty level and the Office of Research Services in the Office of the Vice-President for Research and Innovation (OVPRI) at the institutional level. In addition, the Dean's Office provides SRC funding and travel support through a variety of programs. This is sometimes partially matched by departmental funds. The RFA collective agreement addresses support for SRC activities, particularly through the provision of a professional development reimbursement fund and

through the provision of leaves of absence for research and academic renewal.

Professional Development Reimbursement Fund

In Article 18 of the RFA Collective Agreement, the university recognizes that "the duty of faculty members..... to maintain academic and/or professional competence and currency will, from time to time, necessitate the incurring of expenses." Annually every faculty member is entitled to a reimbursement (currently set at $2,000 per annum) which can be allocated to travel, study leave, conference attendance, registration for professional societies' meetings, memberships in professional organizations, books / subscriptions for scholarly journals, expenses related to teaching and for academic / research assistants. Faculty members can keep up to $4,000 in their professional development fund at any time. While the information on the disbursement of funds is confidential and remains a matter between the individual faculty member and the department Chair who authorizes each faculty members' expenditures under this fund, all faculty members use the proceeds of this fund for the full range of identified purposes.

Office of the Vice-President, Research and Innovation

The Office of the Vice-President, Research and Innovation (OVPRI) is Ryerson's central research administration office. OVPRI is responsible for advancing the SRC agenda at Ryerson and works with faculty, government, and industry to help foster the creation of new knowledge and the establishment of innovative partnerships. OVPRI is the main point of contact for the federal granting councils (NSERC, SSHRC and CIHR), government ministries, industry, associations, and foundations which typically provide financial support for the university's SRC activities. OVPRI departments include:

- **Research Grants:** provides information on funding opportunities and strategic advice on research applications.
- **Applied Research and Commercialization:** facilitates industry and community focused research, and the commercialization of university-created intellectual property.
- **Business Development and Strategic Planning:** develops research strategies to support new partnerships and market opportunities aligned with Ryerson's strategic goals and priorities.
- **Research Planning, Finance, and Administration:** provides financial leadership, data analysis, and records management for finance and evaluation systems; offers advice on complex multi-stakeholder projects and grants; and develops strategies to promote research productivity.
- **Research Communications and Knowledge Mobilization:** helps enhance Ryerson's reputation for research and innovation through integrated outreach, events, and communications.

Internal Funding Available to Faculty from OVPRI

In addition to enabling funding from outside agencies and granting bodies, OVPRI disburses some internal funding. The following are internal funding programs available to faculty members:

- The **Ryerson University Internal Equipment Program** provides funds to researchers to purchase small equipment necessary for their research programs. Awards in previous competitions have generally been in the range of $20,000.
- The **Ryerson Creative Fund** provides up to $7,000 for one-year projects in the creative arts to faculty members who engage or wish to engage in creative activity, where it can be demonstrated that such activity is relevant to their discipline. This program also encourages faculty to explore potential alternative sources of funding.
- The **Ryerson Health Research Fund** provides up to $7,000 for one-year projects in health research.
- The S**SHRC Institutional Grant (SIG)** provides up to $7,000 for one-year projects in the Social Sciences, Humanities, and Arts. This is for small research seed projects and travel assistance to faculty presenting papers at scholarly international congresses or workshops or at conferences of international learned societies.
- The **Summer Career Boost** and **Fall/Winter Work Study Research Assistant Programs** provide funding to full-time Ryerson faculty members to hire Ryerson undergraduate research assistants. The programs are offered in the summer and during the academic year, respectively.
- **Ryerson New Faculty SRC Development Fund** provides funding to new faculty within the first two years of their tenure or probationary appointment.

FEAS Dean's Research Funds (DRF)

The Research and Innovation Office (RiO) in the Faculty of Engineering and Architectural Science (FEAS) offers competitive grants to faculty members to support SRC. These include:

- The **DRF-Undergraduate Research Experience** (DRF-URE) award of up to $6,700 helps to provide twelve continuous weeks of Spring/Summer research experience to third-year undergraduate students under the supervision of FEAS faculty members.
- The **DRF-Booster** is awarded to select faculty researchers who submitted a highly rated yet unsuccessful research grant application to a recent external competition. Applicants must demonstrate how the fund will help their research proposals achieve success. Funds must be used exclusively to support Ryerson graduate students involved in the proposed research.
- The **DRF-Connector** is awarded to select faculty researchers to help them match industry contributions to an external grant competition. Funds must be used exclusively to support Ryerson graduate students involved in the proposed research.

- The **DRF-Travel** is available to faculty every year to supplement their travel to attend conferences in Canada or abroad. The maximum award is $750 for travel within Canada and $1,000 for travel outside of Canada. This award is supplemented at the departmental level with up to $500. Faculty members may not receive more than two DRF-Travel supplements per academic year.
- The **DRF-Tools** is to support the purchase or rental of research equipment that may allow researchers to seize new research opportunities, augment training of Highly Qualified Personnel (HQP), and embark on collaborative research within the Ryerson community. Eligible expenses are similar to those of the Tri-Council RTI Grant Programs.
- **Dean's Fund to Assist SRC for New Faculty** - The Dean of FEAS makes funds available to newly-hired RFA faculty in amounts of up to $20,000 per faculty member. These funds are intended to support faculty members to initiate research projects, purchase equipment, travel, and hire/support ongoing research. Applications are made by faculty and are reviewed based on a research plan presented.
- The **Dean's Pedagogical Innovation Fund** supports teaching and learning excellence in the Faculty of Engineering and Architectural Science by increasing faculty members' capacity to develop, expand, and ultimately implement promising pedagogical innovations, approaches, and experiments. Up to $25,000 is available per successful applicant.

Service

Faculty also take on service roles within the department, university, profession, and community. While some service roles are filled by election, or appointment by the Chair or the Dean, many service commitments (especially to the community and the profession) are carried out on a voluntary basis.

Staff

Departmental staff are essential to the successful delivery of the program. There are twelve dedicated staff in the department and, with the exception of the Administrative Coordinator, they are members of the OPSEU union, Local 596. Current staff positions in the department are as follows:

Administrative Coordinator	Kathleen Sojor Champlin
Departmental Administrator	Diane Chong
Undergraduate Program Assistant	Elise Caron
Departmental Assistant	Rochelle Urovitz
Graduate Program Administrator	Mimi Lam

Communications, Archive Specialist & Exhibition Designer	Alexandra Berceanu
Lead Hand IT Specialist	Leo Roytman
IT & Audio Visual Technician	Michal Bartosik
Senior Workshop Specialist	Frank Bowen
Workshop Technician	Jordan So (leaving in September 2018, to be replaced)
Workshop Technician	Jason Ramelson
Building Science Lab Technician	Greg Labbe

In recent years the staff complement of the department has expanded and now provides a strong support structure for our programs. The principal administrative support is provided by the Administrative Coordinator, who manages all administrative aspects of the department and works directly with the department Chair. The department is also served by a Departmental Administrator, who deals primarily with financial issues; an Undergraduate Program Assistant, who works directly with the Associate Chair for Student Affairs to assist both faculty and students with a variety of curricular issues; a Graduate Program Administrator, who works directly with the two graduate program Associate Chairs on the administration of the graduate programs; and a Department Assistant who provides a variety of support services to the departmental office. A Communications, Archive & Exhibition Designer supports all the programs in the department with a range of communications services, including the departmental website, a newsletter, and the coordination of exhibitions (assisting the gallery curator), lectures, and public events, etc. Occasional support is available to the office staff in the form of work/study students employed on an as-needed basis.

The department employs two full time IT support technicians who are available to address the IT needs of the program, including ensuring that required software is available to students and that departmental computing facilities are working properly. In addition, the department employs part-time help for the IT technician as necessary in the form of work/study students. A Senior Workshop Technician and two workshop staff are employed to support practical activities in the department's workshop that serves all students in the undergraduate and graduate programs. Similar to the additional support provided to the IT team , the department employs part-time help for the workshop technicians as necessary in the form of work/study students. Until recently, the workshop technicians also provided support for activities in the building science lab, but the appointment in 2017 of a Building Science Lab Technician has allowed the workshop staff to focus their efforts on the fabrication workshop. Despite this new appointment, due to the central role of the fabrication workshop in departmental activities, the workshop team is under tremendous demand and continues to operate under a high workload.

Personal development opportunities

Ryerson University believes in the importance of providing opportunities for the development of students, faculty, and staff. The university has a wide range of opportunities governed by a set of university policies and local practices and traditions. Some of these are embedded in the various collective agreements, including the RFA collective agreement, of which Article 7.2 states:

> The Board acknowledges the primary responsibility of providing an administrative structure and climate in which effective teaching and Scholarly, Research and Creative activities may take place. The Board further acknowledges the desirability of a suitable physical environment for faculty members.
>
> Toward this end, every possible opportunity will be provided for personal academic growth and development. Changes affecting faculty members will be made only after consideration of, and discussion with, those involved, and after adequate notice has been given to them. Every attempt will be made to respect the dignity and integrity of the members of the Faculty and to provide an administrative climate in which members of the Faculty may function as responsible persons.

Similar provisions hold in the other collective agreements at the university. HR development opportunities can be found in many divisions of the university, such as the Learning and Teaching Office, the Office of Research Services, the Human Resources Learning and Development Office (http://www.ryerson.ca/hr/learning/), and the Office of Equity Diversity and Inclusion.

3.6 Space and Technology Resources

The Program must provide physical resources that are appropriate for a professional degree program in architecture, including design studio space for the exclusive use of each full-time student, lecture and seminar spaces that accommodate a variety of learning modalities, office space for the exclusive use of each full-time faculty member, and related instructional support space. The Program must demonstrate that all students, faculty, and staff have convenient, equitable access to appropriate visual, digital, and fabrication resources that support professional education in architecture.

The APR must include:

- a general description with labeled plans indicating seminar rooms, lecture halls, studios, offices, project review and exhibition areas, libraries, computer facilities, workshops (including technology), and research areas;
- a description of any changes to the facility (including furniture, equipment, etc.), whether under construction, funded, or proposed;
- a description of workshop and fabrication resources including equipment, infrastructure, and other resources available to students, faculty, and staff; and
- a description of the information technology available to students, faculty, and staff, including hardware, software, networks, services, staff, and other computer resources.

Context

Like most large public universities in dense urban areas, Ryerson University suffers from a shortage of space. Ryerson is perhaps the most urban of Ontario's universities, with a campus that is integrated into the urban fabric of downtown Toronto. Without a large, self-contained tract of land, the expansion of the campus competes with development in the urban core. Unfortunately, Ryerson's major period of expansion—in terms of both student population and new programs (including graduate programs)—occurred between 1990 and the early 2000s, prior to the provincial government's launch of the SuperBuild program. As a result, the university has effectively been playing catch-up ever since.

Over the last 15 years, the university has taken aggressive measures to rectify this situation, beginning with a Strategic Plan focused upon urban intensification, pedestrianization, and a commitment to design excellence. New buildings have been constructed for Engineering and Computing (Moriyama and Teshima), Graphics Communication Management (Moffat Kinoshita), Continuing Education (Lett Smith), the Ted Rogers School of Business (Zeidler Partnership), the Ryerson Image Centre (DSAI) as well as a new Student Campus Centre (CS&P). In 2007 the university completed a Master Plan (KPMB, Daoust Lestage, Greenberg Consultants, IBI Group). In 2012, Ryerson partnered with the private sector to convert the former Maple Leaf Gardens into the Mattamy Athletic Centre (Turner Fleischer, BBB, ERA). The former Sam the Record Man site at the corner of Yonge and Gould Streets is the home of the new Student Learning Centre (Snøhetta with Zeidler Partnership), opened in 2015 and providing an updated public presence for the university. The 2018-19 academic year will also see the completion of the Centre for Urban Innovation (Moriyama and Teshima) and the Daphne Cockwell Health Sciences Complex (Perkins + Will), which will provide not only much-needed classroom space and offices, but will also include spaces for research and student residences, respectively.

In addition to new construction, the university has inhabited or co-opted previously underutilized spaces nearby. Administrative offices (such as the School of Graduate Studies and the Office of Research Services) were relocated to rented offices adjacent to campus, including at 1 Dundas Street West and 415 Yonge Street, freeing up other spaces for academic uses. The university has also entered into an agreement with Cineplex Theatres to use the cinemas at 10 Dundas Street East as lecture halls during daytime hours.

In 2017 the university announced it would operate in partnership with Sheridan College's Davis campus in the city of Brampton. This initiative has a proposed start date of 2020 and is designed to accommodate 1,000 students. This partnership is a response to a provincial initiative for "Ontario universities to demonstrate strong partnerships with colleges, as well as local communities, business, and other institutions." The collaboration will focus on Science, Technology, Engineering, Art, and Mathematics (STEAM) complemented by "advanced technology and experiential learning."

The physical resources available to the architecture program should be appraised in this context. When Ryerson became a university in 1993, Architectural Science was in a far better position with regard to physical resources than most other programs on campus, with a purpose-built facility designed by a distinguished architect only a dozen years earlier. The university prioritized addressing the resource limitations of other programs that were less well accommodated. Recently, however, the university has begun to realize the need to reinvest in the Architecture Building and discuss a major renovation of facilities for the program. The department submitted an unsuccessful application in 2017 to the university for Federal and Provincial funding for a major renovation of our facilities. Though facilities continue to suffer deficiencies, several improvements have been completed in the past several years.

The Architecture Building

The Department of Architectural Science has occupied its present building on the Ryerson University Campus, designed by the Thom Partnership, since 1981. The building was designed to house architectural and related studies, and although the requirements of such programs have changed significantly in the years since, it remains an exciting and functional environment in which to study architecture. Recent and ongoing renovations and upgrades to the building serve to renew its functional capacity, but the building is struggling to accommodate the current needs of the department today. Please refer to plans of the ARC building for additional information.

The building is four storeys in height and organized around two open atria, which provide interconnection and visibility to the school community. The building is served by a single elevator, which was replaced in the summer of 2009. Accessible entrances are on the first floor, while the main entrance from Church Street is on the second floor, accessed by a grand stair.

Although a number of upgrades and renovations have been completed over the last several years to make the building function as a 21st century architecture program, the basic infrastructure of the building—particularly the building envelope and environmental control systems—remains problematic.

Studio Space

At Ryerson, the provision of sufficient space for each student in the design studio is unique to the Department of Architectural Science. The building currently includes 2,400 m^2 of studio space, including two former classrooms that have been converted to studio use. The average total student population in studio programs is approximately 460, resulting in an average of 5.2 m^2 per student. Graduate students have more space than undergraduates, with approximately 6 m^2 per graduate student.

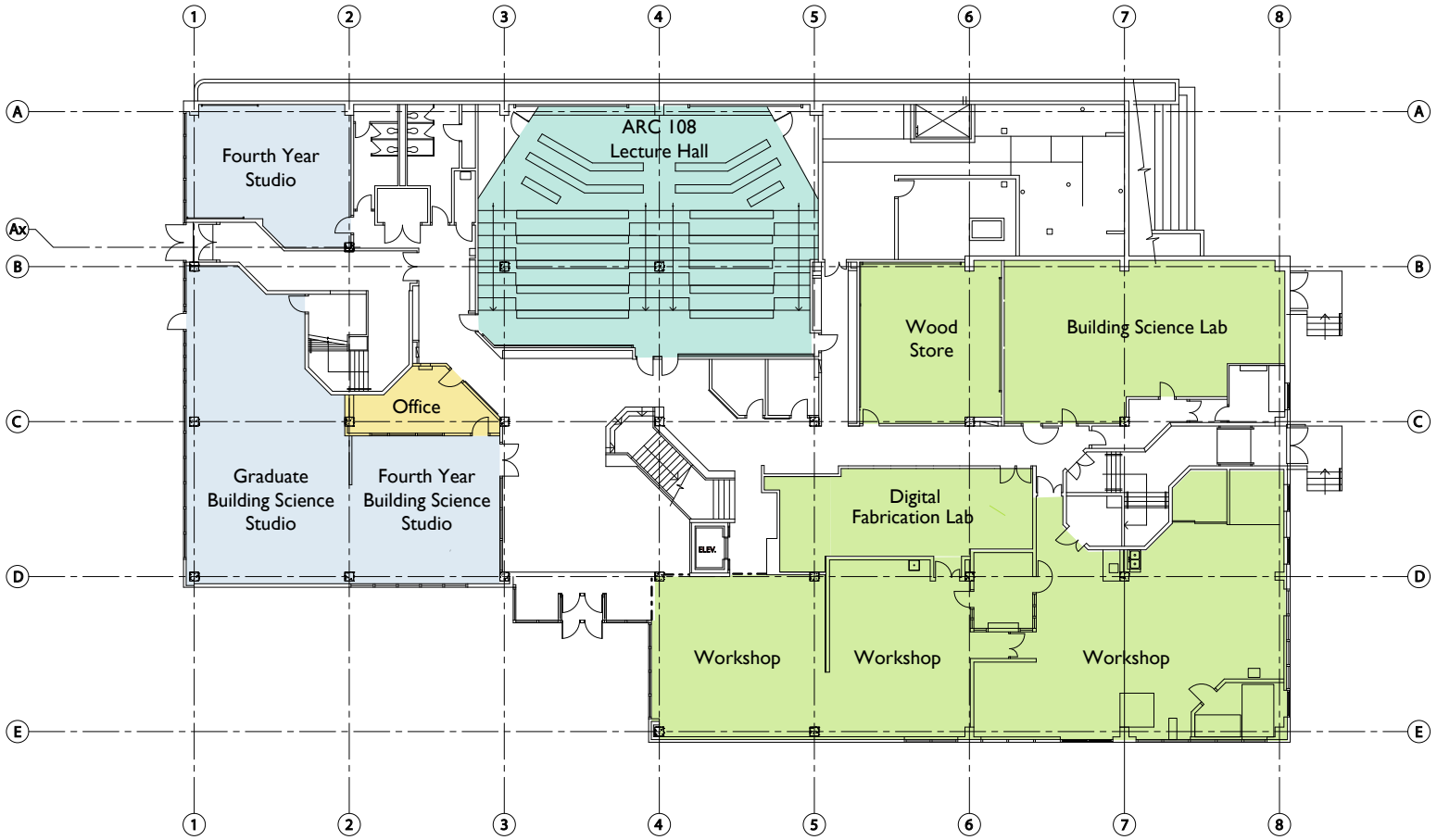


Figure 3.6.1. Level 1 - Ground Floor

Studio
Resources
Faculty+Administration
Lecture+Exhibition

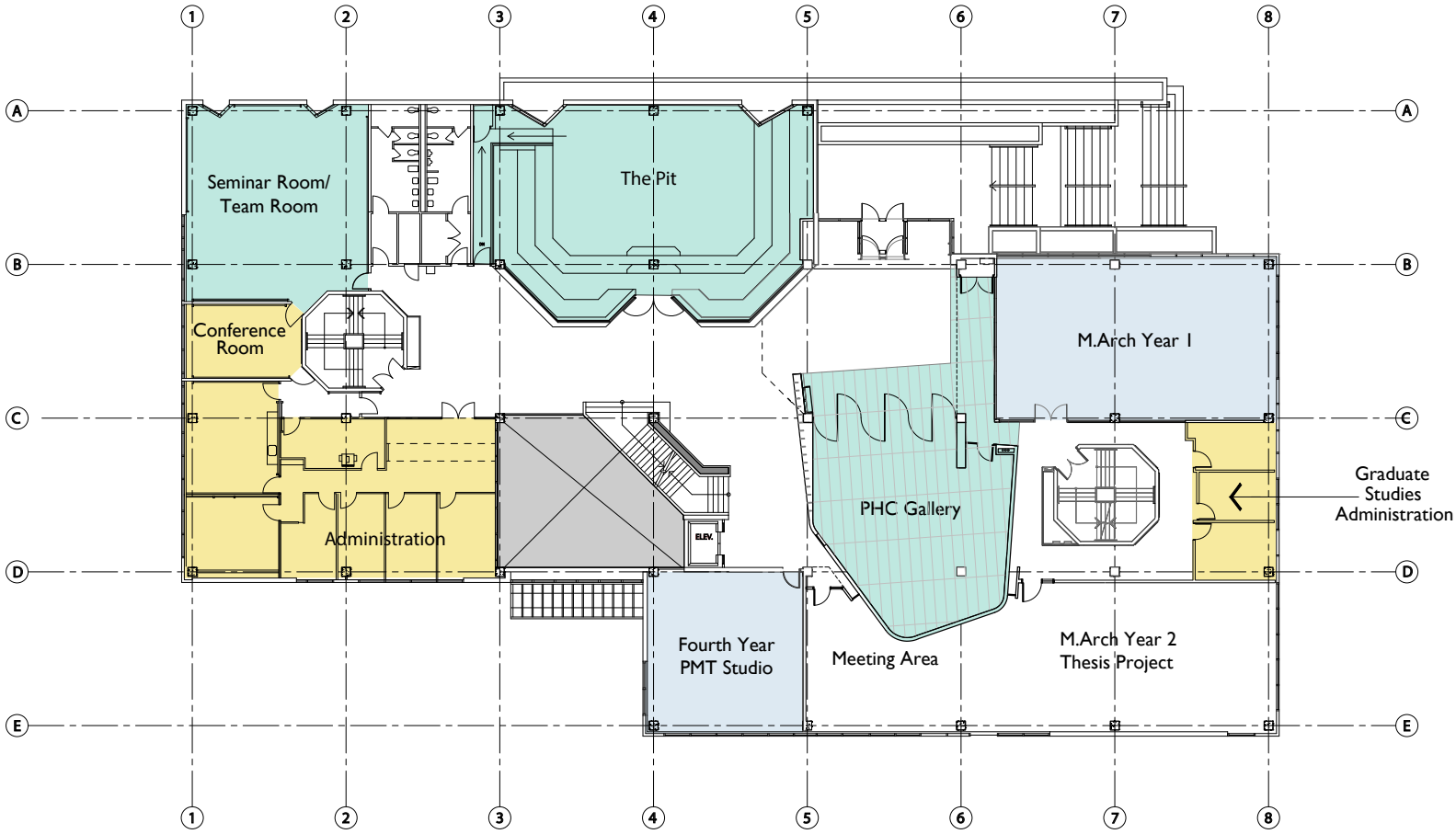


Figure 3.6.2. Level 2 - Main Floor

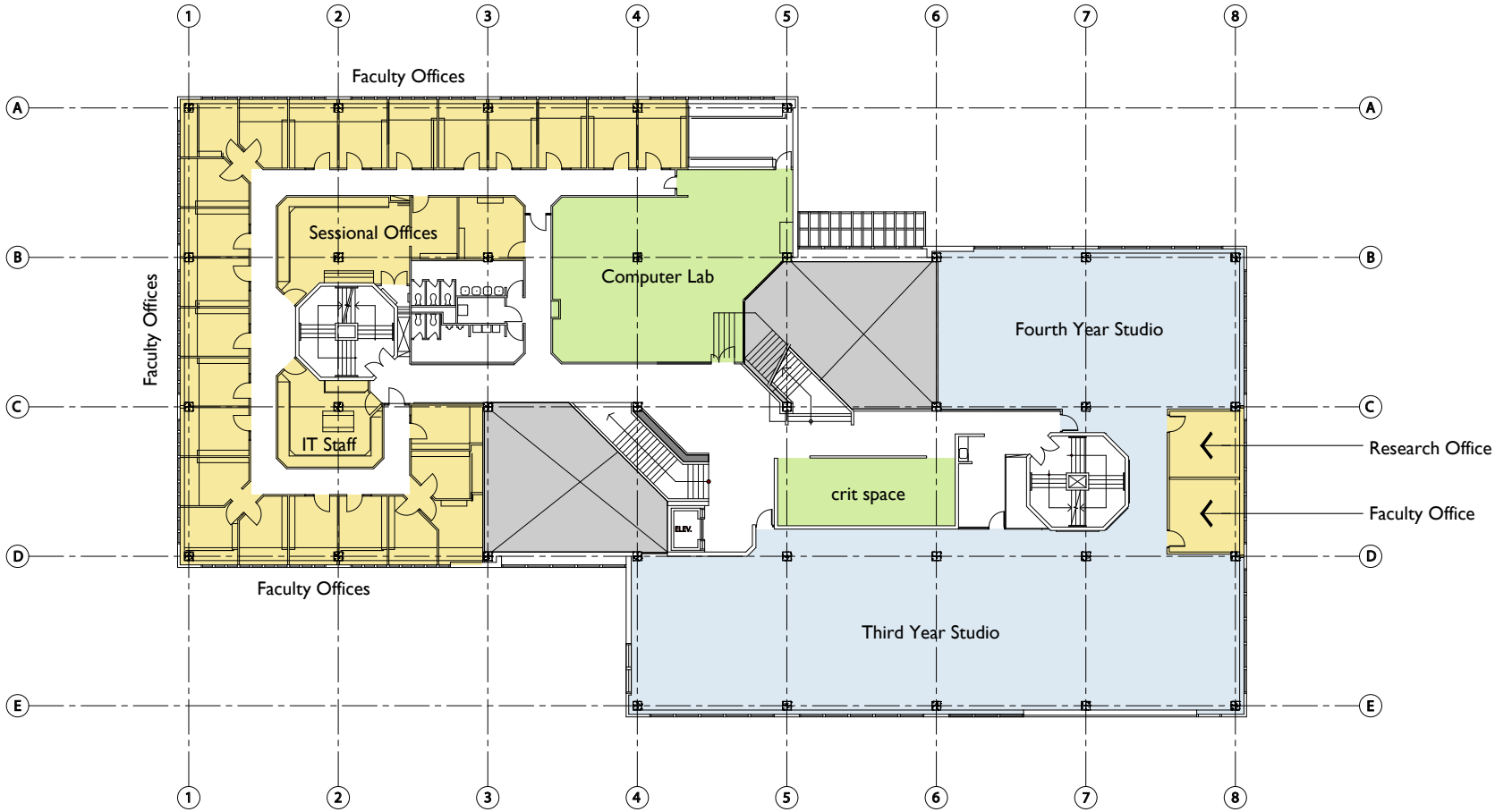


Figure 3.6.3. Level 3 - Faculty Floor

Studio
Resources
Faculty+Administration
Lecture+Exhibition

Figure 3.6.4. Level 4 - Top Floor

Studio
Resources
Faculty+Administration
Lecture+Exhibition

First and second year studios are located on the top floor of the building, the third year studio is located on the third floor, and graduate studios are located on the second floor. Fourth year studios are distributed on all four floors of the building – Architecture studios on the top two floors, Project Management on the second floor, and Building Science on the ground floor adjacent to the graduate Building Science studio (promoting greater opportunity for vertical collaboration in that stream of study). All studios are secured by card access.

After a reconfigured and refurnished studio was piloted in 2015, studios spaces on the fourth floor of the building were renovated in the summer of 2016 to sustain the studio culture vital to the educational and social experiences of the department's students. The David E. Handley renovation provided new furniture including desks, seating, storage, lighting, and presentation support. As a complement to the studio renovation, one of the fourth floor (ARC400H) presentation spaces was renovated as well.

Adjacent to the studios, a number of ancillary spaces function as breakout or review spaces. These include ARC400H, ARC402C, ARC300E, ARC206, and ARC205. These are all equipped with digital projectors and pin-up space. The Paul H. Cocker gallery is available for end of term reviews in the fall (December), and for final thesis reviews in August (the Year End Show at the end of the winter semester precludes its use for studio reviews). The graduate studio is equipped with its own projection equipment and is designed to accommodate presentations within the studio space.

Lecture Halls and Seminar Rooms

Most classrooms within the building have been repurposed as studio space, research labs, or graduate student offices. This has not caused an operational problem since the program has access to classroom space elsewhere on campus. However, this change has reduced the number of spaces available for informal student use and restricted the ability to hold impromptu meetings to the studio and review spaces.

The department has two lecture spaces in the building large enough to hold the program's largest classes (approximately 125 students). ARC108, located on the first floor of the building, is used for large scheduled classes and is the only space in the building under the control of university scheduling, and therefore widely used to accommodate classes offered by other departments. The Pit (ARC 202), located directly above ARC108 on the second floor, is not used for scheduled classes, but serves as the dedicated space for special events in the department, including the guest lecture series, thesis presentations, reviews of student work, films, and departmental meetings. It is also used for occasional plenary sessions for the undergraduate studios. This space was refreshed with new linoleum flooring and carpet in 2017. With carpeted tiered seating in an amphitheater-like configuration, this venue can accommodate up to 150 people. A rear aisle ramp leads from the upper atrium level to the front of the presentation area for universal accessibility. ARC108, The Pit, and all breakout/review spaces are equipped with digital presentation systems that reflect current performance and media demands.

Workshop

The department's workshop serves as the backbone for all prototyping and fabrication needs in the curriculum. It was reconfigured and extended in 2015. Staffed by one Senior Lab Technician, two shop technicians, and additional part-time work study students (as required), the workshop provides students with the infrastructure and resources to procure materials, work safely under supervision, and assemble their projects.

The workshop, like most spaces in the building, is undersized in proportion to the department's student population, but makes up for this in its efficient organization. The workshop is divided into four distinct areas: construction, digital fabrication, assembly, and administration. Over the past five years the workshop has been renovated to meet student demand, including enhancement of infrastructure (dust collection and power), reconfiguration for better security and workflow (office relocation and security gates), and student use (the designated assembly area).

The construction area, primarily used for analog fabrication, contains an assortment of power tools, including a table saw, a lathe, table planers, power sanders, routers, drills and working surfaces. The administrative area allows workshop management and staff to conduct administrative tasks while safely overseeing shop operations. The assembly area serves as a benchroom for students to assemble their models without interfering with the operations of the construction and digital fabrication areas. The assembly area provides clean space for students to safely assemble and store work in progress, especially important for larger projects being built as a team effort.

The digital fabrication area includes laser cutting and 3D printing facilities: two BossLaser 65 Watt laser cutters, two Universal 60 Watt laser cutters, one Form2 3D printer, and two Ultimaker 3D printers. The department continued to expand its 3D printing capacity in the summer and fall of 2018. Adjacent to the digital fabrication area is the CNC and robotic arm facility. The CNC 3-axis milling table (5'x10') and an industrial laser cutter have been installed. Work on a new ventilation system to ease the significant fume dispersal from the laser cutters was completed in the fall of 2012. There is a materials storage area (across the hall in a former windowless classroom) from which students may purchase wood and engineered wood products, metal, and acrylic for model and furniture construction. Space issues in the shop have been partially alleviated through the construction of a new building science lab adjacent to this storage area, which takes material and assembly testing functions out of the workshop.

Building Science Lab

In the last few years the department has established a more effective building science lab space, housed on the first floor across from the workshop, and newly staffed by a building science lab technician. This

interactive space houses equipment for testing building materials and assemblies, and also has extensive equipment for field testing of new or existing small to large institutional buildings. Materials testing capabilities include a small climate chamber, high precision thermal conductivity measurement equipment, acoustical testing, accelerated weathering machine, air permeance tester, brick dilatometry testing, and water vapour permeance testing.

The lab also has equipment for on-site building performance measurement and monitoring, including 11 blower doors for whole building air leakage measurement and diagnostics, a duct leakage tester, balometers for ventilation air flows, five thermographic IR cameras, non-destructive moisture testing, window testing for both air and water penetration, and indoor environmental quality measurement tools. Under the direction of Dr. Umberto Berardi, in late 2018 the department anticipates the installation of the BeTop lab, a rooftop facility for the measurement and testing of building performance characteristics of construction.

IT facilities

Computer facilities are primarily housed in the third floor computer (CAD) lab. This space, overlooking the upper atrium, houses 40 high performance workstations loaded with standard software suites (refer to Section 3.7 Information Resources and IT for additional details). There are an additional 28 computer stations located throughout each of the undergraduate and graduate studio spaces. The vast majority of students now use their own laptop computers for everyday computing tasks. The entire building is served by a wireless networking system, and the studios are equipped with outlets for high-speed wired connection.

Although virtually all students come into the program equipped with their own laptop computers, these are generally inadequate for the computational demands of sophisticated rendering software, placing pressure on the department's computer facilities for rendering purposes. The establishment of a render farm is being discussed; currently, cloud rendering options (e.g. Revit use of Autodesk 360) adopted by upper year students have served certain demands. Unfortunately, as computing outputs increase in ubiquity and robustness (e.g. virtual reality, animations, complex simulations, etc.) the department consistently faces overloading of its facilities under high demand surrounding deadlines.

Exhibition Areas

The Paul H. Cocker Gallery opened in the fall of 2013 as a new venue within the department and has been instrumental in the display of student work and architecturally significant exhibitions. Although relatively modest in size, the gallery has facilities for mounting regular exhibitions ranging from student work to international visiting exhibitions. However, the absence of reliable environmental controls somewhat restricts the nature of the materials that can be exhibited. Prof. Marco Polo has served as curator for the gallery since

2014. Other spaces, such as the hallway outside faculty offices, are used for ongoing exhibition of faculty work. Circulation areas adjacent to the atria also support overflow exhibition of student work during reviews.

The building also has an array of spaces that are used for the formal or informal display of student, faculty, and external work. The upper and lower atria are routinely used for the display of student work, with the upper atrium occasionally housing external exhibitions, extending the space of the Paul H. Cocker Gallery. The atrium space lacks security and supervision; artifacts of significant value are not displayed in unsecured areas.

Administrative Offices

The administrative area of the department is located on the second floor behind a floor-to-ceiling glazed entry screen and is visible from the upper atrium. This area has been renovated twice since 2009, and underwent a third renovation in the summer of 2018 to better accommodate operational efficiency and confidentiality. This area houses all administrative staff (with the exception of the Graduate Program Administrator), improving efficiency and communication.

This area also houses the office of the department Chair. The photocopy, mail, and supply room is located directly off the general office area and is accessible to faculty after hours via a hallway door. Contiguous with the office area, the David Mason faculty lounge is furnished with sofas and chairs for relaxation and casual discourse, an eating table that seats eight, a preparation and serving counter, two bar fridges, a coffee machine and a microwave oven. A second administrative area has been constructed for graduate programs at the north end of the same floor. This contains office spaces for the M.Arch. Associate Chair for Graduate Studies Architecture and the Graduate Program Administrator (a third office is available to the M.B.Sc. Associate Chair, who currently elects to occupy an office on the third floor). Offices are also provided on the lower level for the various student organizations (ACU and AIAS) active in the department.

Faculty Offices

Each full-time faculty member is provided with an office. There are 25 offices on the third floor of the building, all approximately 12 m^2 in size except for corner offices, which are slightly smaller. Each office has one or more windows (two face exclusively into an interior atrium) and is equipped with phone and network connections. While individual faculty have customized their offices to suit their specific needs, typical furnishings include a desk and chair, shelving, a counter along the window wall, secure filing cabinets, and guest chair. The offices can easily accommodate individual appointments and counselling with students. An adjacent space, ARC 305, has become the office for IT staff. The faculty corridor also contains an office area that serves as a communal space for contract lecturers. This area is divided by acoustic screens into semi-private workstations each of which includes a counter, shelving, seating, and a phone connection. A seminar room immediately adjacent to this office area is available for meetings with students. A small room allocated to part-time staff for

marking and storage is located within the faculty area. Office space for contract lecturers remains an issue in the building as does storage space, both of which are in short supply.

Research Areas

At the time of construction of the Architecture Building, Ryerson was not yet a university, and research was not an institutional priority. Until recently, the building did not contain any spaces designated specifically for faculty research. The need for research spaces has since become a significant additional pressure on the building. The Ryerson Embodied Architecture Lab (REAL), opened in 2008 as a result of a successful Canada Foundation for Innovation (CFI) application by a group of tenure-track faculty, shares space with the IT office in ARC 305, and provides basic accommodations for research assistants as well as computing and printing facilities.

The building science lab, opened in 2009 and recently improved by new equipment acquisitions and the appointment of a dedicated technician, provides space and equipment for the more technically oriented research in the department. One small room on the third floor of the building has been designated as a faculty research office, mainly used by research students and visiting scholars. Occasionally a faculty member has been successful in securing space on campus outside of the Architecture Building (such as the nearby Eric Palin Hall) for their research projects. In the future, the Centre for Urban Innovation (CUI), currently under construction at 44 Gerrard Street (with a GFA of approximately 6,000 m^2), may provide lab and research space for faculty members upon opening in late 2018. Faculty members and contract lecturers also have access to the recently created Collaboratory facility in the Library Building. Essentially a faculty-focused maker space and technology resource, the Collaboratory is a hub for interdisciplinary, collaborative research endeavors.

The Department of Architectural Science continues to advocate to university administration for additional space and improvements to its existing space. The upper administration, including the Dean of FEAS, are aware of the challenges the department faces. Over the past five years, the department has submitted multiple responses to calls for proposals by the university for improvements to the Architecture Building. Unfortunately timing and prioritization have not permitted these initiatives to develop beyond the proposal stage. The only current changes involve reconfiguration of staff offices.

Despite the lack of actual building improvements, there are two promising initiatives underway. The first is the collection of building environmental quality data as part of Professor Jennifer McArthur's research work on the Architecture Building. This work aims to objectively identify issues that undermine its indoor environmental quality. She is working with Ryerson University's Office of Facilities Management and Development to ensure that proposed changes can be made. The second involves potential fundraising opportunities with alumni and donors. The successful fundraising efforts for the Paul H. Cocker Gallery and the David E. Handley renovations to the fourth floor studios have encouraged the FEAS advancement administrators, who see

continued alumni and donor support as a fruitful source of funding that can help support the physical resource needs of the department.

3.7 Information Resources and IT

The Program must provide ample, diverse, and up-to-date resources for faculty, staff, and students to support research and skills acquisition. The Program must demonstrate that all students, faculty, and staff have convenient, equitable access to literature and information resources that support professional education in architecture and access to librarians, visual resource, and information technology professionals who provide services, teach, and develop skills related to each of these resources.

The APR must include:

- a description of the library, including library collections, visual resources, digital resources, services, staff, facilities, equipment, and budget/ administration/operations;
- a library statistics report; and
- a current action plan outlining recurring levels of staff support; renewal of hardware, software, equipment, and infrastructure; anticipated modifications to the current installation; and a demonstration of sufficient funding to execute the action plan.

For Information Technology Resources, the program must also provide the information technology infrastructure and corresponding staff support in order to effectively contribute to the delivery of the curriculum, as well as supporting activities of staff and faculty.

The APR must include:

- A description of the hardware, software, networks and other computer resources available to students, faculty and staff.
- A current action plan outlining recurring levels of staff support,

Library Resources

The Ryerson University Library and Archives (RULA) is centrally located on campus and holds a collection accessible to all Department of Architectural Science students and faculty that far exceeds the minimum Canadian Architectural Certification Board (CACB) accreditation standards (with over 5000 items in the number range "NA" and over 10,000 monographs). The collection includes periodicals, monographs, books, videos, and archival compendia primarily in the library's seventh floor stacks (NAI-NA9428).

RULA collaborates with faculty in facilitating course readings, copyright support, accessibility guidance and workshops for students enrolled in various courses in the Department of Architectural Science. The library also provides students with access to online journals (from the Avery Index to Architectural Periodicals to JSTOR), e-books (including Springer Books to BASICs Architecture eBooks), archizines (Australia's *Architical* to the Netherland's *Volume*), and even instruction (such as workshops on GIS and thesis writing). All Ryerson University students are able to access Lynda.com tutorials via the RULA portal. These tutorials include instructional videos and sample files that complement students' digital skill development (from the use of graphic tools in the Adobe Suite to complex modeling with BIM oversight in Revit). Access to these electronic resources has increased in ubiquity and quality since 2012, leading to greater adoption by students and faculty. This model has proven to be indispensable for 24-hour access to course texts and reduced the physical resources and costs required for maintaining hard copy documents.

Since the opening of the Student Learning Centre in 2015, the library has been able to increase accessibility to information and services by creating more computer kiosks, offering equipment loans, providing instructional support, and facilitating interlibrary loans. The library currently provides students with equipment loans (including laptops and iPads), study rooms (88), and open computers (202) to access the various RULA databases and digital repositories.

RULA's portfolio of services goes beyond the loaning of materials. RULA also provides access to several other services for department staff and faculty, including InterLibrary Loans (Rapid Access to Collections by Electronic Requesting, RACER, and Proquest Dissertation and Theses), Geospatial Map and Data Centre (GIS Repository and paper map inventory), Digital Repository (including Open Education Resources), Archives and Special Collections (including the Canadian Architect Magazine Image Collection fonds and the Black Star Collection), and the Digital Media Experience Lab (a university-wide makerspace for students). A recent facility provided by RULA is the Collaboratory, an interdisciplinary "makerspace" for faculty projects which has already gained traction and success with DAS faculty (including an exhibit at the Ontario Science Centre in 2017 and an NSERC PromoScience grant in 2018).

RULA currently employs 28 librarians and 59 associated support staff. The Department of Architectural Science has been assigned one subject-focused librarian, Sonny Banerjee, to support students and faculty

renewal of hardware and infrastructure and student software access, as well as anticipated modifications to current installation.

- Demonstrate sufficient funding to execute the action plan.

with their pursuits and receives support from a GIS librarian, Dan Jakubek, who assists with departmental geographic information system needs. The library provides hardware access including 465 computers and laptops for loan, eight photocopiers, and seven scanners as well as a Geospatial Map and Data Centre with specialized software to support access to GIS resources. These resources and services are maintained by library support staff in tandem with Ryerson University's Computing and Communications Services (CCS) overarching IT oversight. The current installation is not anticipated to change as the Library continues to operate with the adjacent Student Learning Centre facility with the exception of the expansion of the Collaboratory Space.

Over the past decade an average of 3% of the university budget is spent on the library, which has amounted to approximately $77,000 for library expenditures specifically for Architectural Science. These include books, electronic resources, and subscriptions for the department's three areas of specialization (Architecture, Building Science, and Project Management). While "4% of a university's budget dedicated to library operations is considered to be a minimum healthy level of support for academic libraries," these budgetary challenges to the library as a whole do not directly threaten the Architectural Science collection, which has been provided annual funding for monographs. Funding is also provided by gifts from donors. The subject librarian has input and authority for budget expenditures and serves as liaison with other RULA subject librarians. New content is acquired via library purchase, faculty requests, and selected donations that go through the assigned subject librarian. The department Chair and faculty have periodic meetings with the subject librarian throughout the school year to discuss plans, budgets, and goals for new acquisitions.

The Appendix includes the RULA assessment for Architectural Science prepared by the Architectural Science Librarian, Sonny Banerjee.

Information Technology Resources

All of Ryerson University's Information Technology is governed by the Computing and Communications Services (CCS). However, the Department of Architectural Science has been fortunate to have a robust array of IT resources, including its own CAD lab (ARC 303) and computing resources throughout the Architecture Building, such that requires its own departmental IT staff. Staff support provided for Information Technology includes one full-time Lead Hand IT Specialist, and one IT & Audio Visual Technician. The Lead Hand IT Specialist is responsible for the operation and management of all department IT and audio/visual services, and serves as a special advisor to the departmental IT Committee. The IT & Audio Visual Technician provides IT support for students, faculty, and staff; prepares and controls audio-visual equipment for exhibitions, lectures and other events; and provides day-to-day maintenance of the infrastructure. All Ryerson students are expected to have a Ryerson email account and username, which gives them access to the Brightspace by D2L platform which is used for course management.

The Department of Architectural Science CAD lab is equipped with a total of 40 CAD workstations which are configured for high end computer graphics, simulation, and analysis. A total of 28 graphics class workstations are available in other locations throughout the building, including the undergraduate and graduate studios and the workshop and fabrication lab. Student workstations are refreshed on a four- to five-year cycle. New workstations are generally introduced into the ARC 303 CAD lab and ARC 200 graduate studios. Existing workstations are then migrated to secondary locations throughout the building. Each faculty member is provided with an allowance of $900 per annum for the purchase of computer hardware and software; this may be accumulated to finance a substantial purchase. Choices about hardware and software are left to individual faculty members, but they typically seek the advice of the IT staff. Staff workstations are upgraded as required, generally following a four- to five-year refresh cycle.

The CAD lab workstations maintain a wide variety of software applications for productivity, design, simulation, analysis, fabrication, and presentation in architectural design, building science, and project management. Software is refreshed on an annual basis. Autodesk products (Revit, AutoCAD), the Microsoft Office Suite, Mathworks MATLAB, Oracle Primavera, and Sophos Antivirus are available to students and faculty for free through existing university and department subscriptions. A full list of software applications installed in the CAD lab is outlined below.

BIM/CAD Software

- Autodesk Architecture
- Autodesk Revit
- Autodesk Dynamo

Project Management Software

- Microsoft Project
- Oracle Primavera
- Planswift
- NMS Professional

Building Science Software

- EnergyPlus
- Fraunhofer IBP WUFI
- Fraunhofer IBP WUFI Plus
- LNBL Therm
- LNBL Window
- RETScreen
- eQuest
- HOT2000

3D Printing

- Cura2
- PreForm
- Dimension Catalyst

Math Software

- MathWorks MatLab

Browsers

- Google Chrome
- Mozilla Firefox
- Internet Explorer

3D Modelling & Rendering Software

- Maxon Cinema 4D
- Robert McNeel & Associates Rhino
- ChaosGroup VRay for Rhino
- Plugins for Rhino including Grasshopper
- Autodesk 3D Studio Max
- Blender
- Trimble SketchUp
- ChaosGroup VRay for SketchUp

Accessibility software

- Kurzweil 3000

Electronic Prototyping

- Arduino

The department also has an arrangement with CCS to provide access to ESRI ArcGIS for students and faculty through a university Virtual Application platform (VAPPS).

The majority of students in the department have their own computers and are able to securely use them in the studios which are equipped with both wireless and plug-in internet access. As the ubiquity of portable computing increases, the department has been investigating options to dispense networked software licenses to students on their personal machines in a cost-effective way. Given that Autodesk products (such as Revit and AutoCAD) have free educational licenses, students are able to work seamlessly between their own machines and those in the department.

At certain times of the year, demand for workstations in the department exceeds availability. In such cases, students are directed to university-managed, drop-in computer labs in nearby buildings. Kerr Hall West (KHW) 71 is a large, drop-in computer lab that is accessible to undergraduate and graduate students. The lab has 120 business class workstations including 30 high-end CAD workstations for design and engineering work.

The department's IT team also makes available short-term hardware loans for students and faculty. Current inventory includes hardware for computing (e.g. Arduino microprocessors, laptops and tablets), documentation (e.g. cameras, lighting kit, and audio recording devices), presentation (e.g. remotes, projectors, and microphones), and a range of A/V support equipment (e.g. dongles and cables).

Students and faculty also have a range of digital and hardcopy media at their disposal. Within the Architecture Building, there are 13 areas equipped with digital projectors (including four HD interactive projectors) in the classrooms, review spaces, and the studios. In addition to facilities with fixed projection, there are several large screen monitors available for presentations (including three on mobile carts). For any printing and plotting demands, the department has networked multifunctional colour printing/scanning devices located throughout the Architecture Building, including two publicly accessible large format plotters and a separate one for faculty use. Printers support legal, letter, and tabloid paper for colour or black and white, and single- or double-sided output. All printers are accessible from any department workstation through the wireless network by using a valid network account. Users have access to photocopying and scanning services at each of these multifunctional printers with either a network account or a Ryerson OneCard. Photocopies are charged against the user's account balance, and scanning services are provided for free. Scans may be sent to an email address, USB key, or accessible folder on the network.

Digital workflows in the studios and classrooms are made possible by the department's robust networking and storage facilities. Internet connectivity is provided by Ryerson CCS. Wireless network access is available for students, faculty and staff throughout the Architecture Building. Wired network access is available in the design studios through the perimeter raceways. The primary departmental computing infrastructure, including routers, switches, and physical servers are installed in equipment cabinets in the ARC 303B server room. This equipment is protected by two UPS power backup units. The department plans to gradually move DAS servers into CCS server rooms over the next two years.

10TB of network file storage is currently available for students, while 12TB of storage is available for faculty and staff. All department users are allocated network file storage. Students are provided with a maximum quota of 20GB of network file storage. Faculty and staff users are provided with a maximum quota of 80GB. A number of public network shared drives are provided to facilitate course work, archiving, research, file sharing, and outreach through the department website. File storage is backed up to a secondary file server, housed in an off-site data centre. The robustness of the network facilitates a variety of activities ranging from enterprise Oracle Primavera Database access to distributed network rendering for various platforms in the CAD lab, the latter of which is managed by a dedicated server but executed by desktop workstations. This IT infrastructure also supports the departmental web server (hosting internal and external online content), and VPN access (for remote access to the department's network).

The current staffing demand for IT was satisfied in 2017 with the hiring of the IT & Audio Visual Technician, Michal Bartosik, which has allowed the Lead Hand IT Specialist, Leo Roytman, to oversee larger department-wide IT needs. The IT & Audio Visual Technician position is funded for two years, but the department is keen to ensure that this becomes a permanent position funded by base budget.

The projected annual capital cost to maintain IT hardware and audio/visual services is approximately $150,000. To date, the mean capital expenditure through the IT cost centre has been $100,000 per annum. Because IT services overlap with other core department services, some IT-related expenditures (ie. fabrication lab, graduate workstations and software, research funding, audio/visual equipment) are accounted for elsewhere in the operations budget. Where funding above the mean has been required to maintain services, one-time budget allocations have been negotiated by the Chair.

The Information Technology Committee (comprised of the Lead Hand IT Specialist, with representation from workshop staff, faculty, and students) has been active in developing plans for new or revised services and in measuring outcomes. Though the IT Committee conducts biannual surveys of staff and students concerning the perceived value of IT resources, the IT Committee was tasked to suggest responses to the comments made in the recent 2017-18 Periodic Program Reviews. In 2017, the IT Committee began developing and piloting programs to address student concerns with software skills development as well as a procedure for making recommendations for new hardware and software for the department.

In addition to the potential workshop offerings, another anticipated modification to the current installation pertains to the increased demand for digital fabrication with respect to both the volume of production as well as the procedural complexity of projects. The workshop has already enacted a plan to acquire additional 3D printers and laser cutters, as well as coordinating with select faculty on integrating the use of the robotic arm in the curriculum. Increased fabrication activity will in turn increase the use of IT resources, but this does not appear to present significant challenges moving forward. As an example, in 2016 the Department of Architectural Science was the first architecture program in Canada to integrate virtual reality into the studio curriculum. By ensuring coordination among faculty members and securing licensing agreements with vendors, the anticipated modifications had little impact on IT resources. Similarly, the department has increasingly stipulated digital presentation of student work, which has increased the need for digital projection and monitors. This anticipated shift was properly accounted for by the Lead Hand IT Specialist and has not compromised current operations.

3.8 Financial Resources

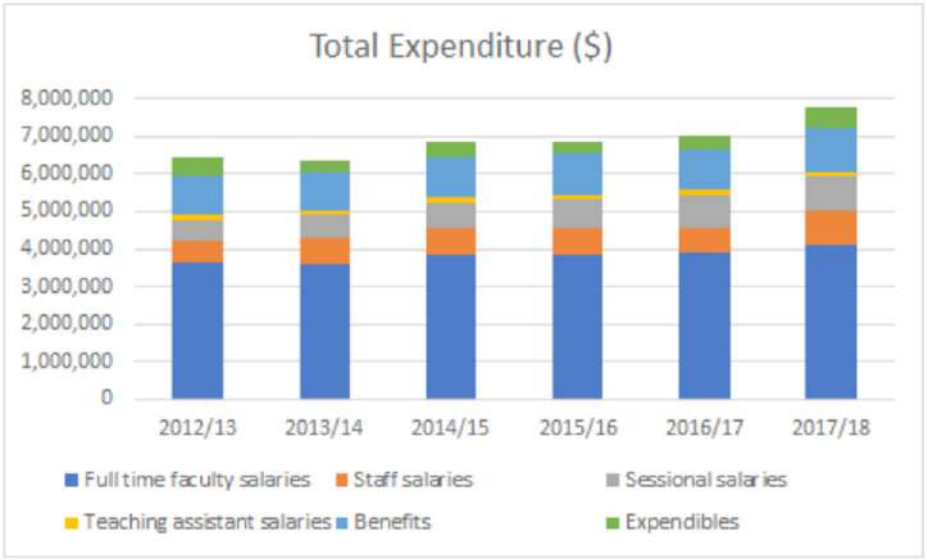
Programs must have access to sufficient institutional support and financial resources.

The APR must include:

- an itemized Program budget that includes operating and salary expenses and a description of research funding, endowments, scholarships, and development activities.

The overall budget for the Department of Architectural Science has increased consistently over the last 10 years. Total departmental budget growth over the last six years is shown below. In particular, staff salaries have increased by about 50% as additional staff have been hired (three additional hires in 2017). In addition, the amount expended on contract lecturers has increased as more have been hired to cover for loss of tenured faculty that it has taken several years to replace. This expenditure is expected to decrease as new faculty hires have recently joined the department. The expendable items vary partly depending on capital expenditures on minor building and workshop improvements.

Expense ($)	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
Full time faculty salaries	3,618,925	3,615,861	3,865,626	3,845,981	3,898,235	4,093,933
Staff salaries	600,366	675,696	690,668	724,491	685,036	906,971
Sessional salaries	567,628	607,355	684,425	759,815	856,245	917,014
Teaching assistant salaries	149,834	130,869	138,699	109,674	123,515	119,087
Benefits	1,000,747	989,314	1,086,733	1,113,947	1,100,380	1,188,671
Expendables	493,465	324,273	381,729	320,129	343,479	542,651
Total Actual Expense	**6,430,964**	**6,343,368**	**6,847,881**	**6,874,037**	**7,006,888**	**7,768,327**
Number of students	553	545	558	589	596	590
Amount per student	**11,629**	**11,639**	**12,272**	**11,671**	**11,757**	**13,167**



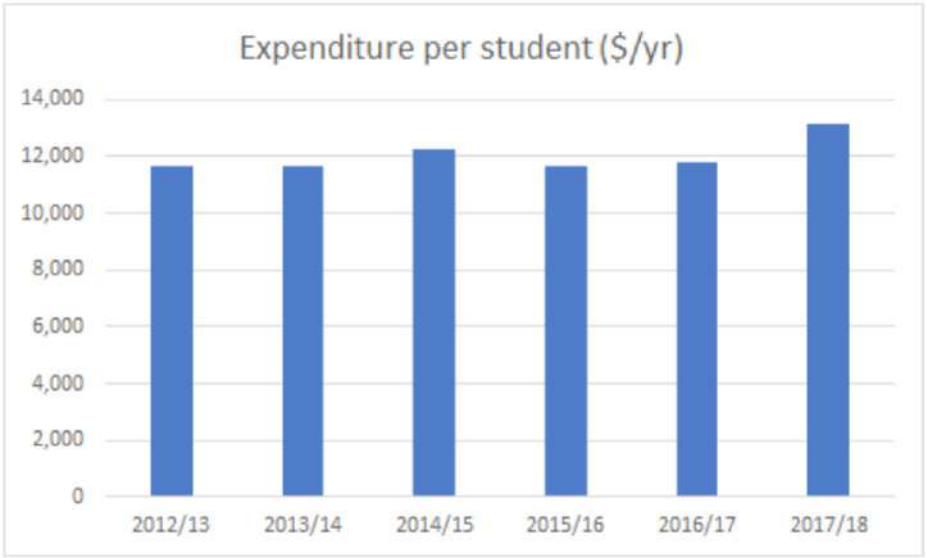


Figure 3.8.1
Trends in the departmental budget over the last six years.

For the academic year immediately past, the department's budget breaks down as follows:

DAS Budget	Fiscal Year 2017-18
Full time faculty salaries	4,093,933
Staff salaries	906,971
Sessional salaries	917,014
Teaching assistant salaries	119,087
Benefits	1,188,671
Building costs	62,587
Workshop costs	30,000
IT costs	65,000
Travel	112,000
Events	35,000
Research support	7,500
Student extra curricular	25,000
Office costs	138,000
Program costs	49,000
Promotion	15,200
Miscellaneous	3,364
Total Budget	**$7,768,327.00**
Total Expendable	**$661,000**

The above figures do not include administrative salaries or budget lines in the Yeates School of Graduate Studies or the Dean's office that provide additional support for our graduate programs. It also does not include student awards (see below) or special projects funding. In the current year, we anticipate roughly $20,000 of external funding towards our lecture series and $50,000 of funding for other miscellaneous projects.

Scholarships and Awards

Ryerson University's Student Awards and Scholarships office plays a central role in the establishment, set-up, promotion, and application process for all current student awards, and liaises with program departments regarding their awards applications, assessment, selection processes and to plan and execute a variety of awards. Undergraduate students now submit one application for automatic consideration for all university-wide scholarships and bursaries.

The categories of currently available funding for undergraduate studies includes:

Entrance Scholarships

Ryerson recognises the academic achievements of the first-year class upon admission to the university with over $4 million designated for entrance scholarship support. Students from a Canadian secondary school with final averages of 80% and higher, who meet the terms and conditions for scholarship, are guaranteed a renewable entrance scholarship according to the following values.

Final Admission Average	Total Value	Amount in Year One	Annual Renewable Amount
95%+	$16,000	$4,000	$4,000
90-94.9%	$8,000	$2,000	$2,000
86-89.9%	$4,000	$1,000	$1,000
80-85.9%	$2,000	$500	$500

In addition, a variety of entrance scholarships and privately funded scholarships are available. The most prestigious include:

- President's Entrance Scholarships $40,000 (total value), $10,000 (annual amount), 12 awards;
- International Secondary School Merit Scholarship for applicants entering Canada on a Study Permit, $5,000, seven scholarships;
- Terence Grier Entrance Scholarship, full tuition for first-year only (not renewable), one award.

Other scholarships are listed at https://www.ryerson.ca/admissions/scholarships-awards/

Program Specific Awards

The Department of Architectural Science has a tradition of student awards and scholarships, well supported by the private sector, foundations and individuals. These awards are presented for overall academic achievement and excellence, contributions and leadership to the department and profession, and outreach to the community. The awards focus on the undergraduate student population within the diverse areas of

study encompassed by the B.Arch.Sc. program. The Departmental Awards Committee determines recipients and works with the university to dispense award funds. In recent years this has come to approximately $60,000 per year; currently there is a total of $727,000 in endowed awards for students in the department. Award winners are celebrated at an annual event in the fall. The awards are listed at https://www.ryerson.ca/registrar/students/scholarships/programspecific/

Faculty Wide Awards

The Faculty of Engineering and Architectural Science has several faculty wide awards open to eligible students in DAS, including:

- Aileen Clark Lambie Awards - open to second, third or fourth-year undergraduate female students.
- Ledcor Construction Ltd. Award - recognizes the combination of extra-curricular contributions in a field of study related to Architecture/Building/Construction and academic achievements.
- Norman Esch Engineering Innovation and Entrepreneurship Awards—provide financial assistance to current engineering and architectural science students, with the purpose of enabling new, innovative ideas for products, inventions and technologies that are relevant to the Canadian economy now and in the future.

University Wide Awards and Additional Categories

University wide awards are open to all current Ryerson University students enrolled in any program of study. These are listed at https://www.ryerson.ca/registrar/students/scholarships/uni_additional/

These include targeted awards in Special Categories open to all current Ryerson University students who are Aboriginal students, international students, student athletes, students with disabilities, or students applying for the Ontario Bridging Participation Assistance Program. In addition, a variety of groups, organizations, companies and foundations offer external awards to students attending postsecondary institutions.

Graduate School Scholarships

There are a number of funding packages – internal and external – targeted specifically to graduate students, summarized below:

The M.Arch. program distributes approximately $180,000 annually in student support. These include Ryerson Graduate Fellowship (RGF), Graduate Development Award, and one Queen Elizabeth II Scholarship. In addition, students in the Master of Architecture program are eligible for a variety of scholarships and grants from a range of external sources including federal, provincial and institutional agencies. In recent years students in the program benefited from one Ontario Graduate Scholarship per year. The process of allocation

changed in 2018, but it is expected that students in the program will still receive at least one OGS per year. In addition, students have been recipients of the highly competitive SSHRC scholarships. In the three-year period from 2013-2016, program students received a combined total of approximately $115,000 in SSHRC and OGS funding. Other scholarships include the Ryerson International Student Scholarships (RISS) of $7,000 with consideration being automatic; no application required. In addition Ryerson International provides competitive support for international travel for graduate students.

Graduate Assistantships

The department hires Graduate Assistants to help instructors deliver many of the core undergraduate courses. Graduate students are also hired as exam invigilators. Both these provide additional financial support to graduate students. These positions are competitive, and course instructors generally have the freedom to choose their GA from a list of applicants. The university gives preference to first year Master's students for these positions, but incoming students are not typically guaranteed a GA positions.

Graduate Assistants at Ryerson are unionized members of a Canadian Union of Public Employees (CUPE) unit. Under the current contract, the wage rate for GAs enrolled in a Master's program is approximately $44 per hour. A GA appointment for one term of a typical lecture course is in the range of 100 – 140 hours, depending on the demands of the course (courses with a large component of written assignments, as opposed to quizzes and exams, are provided a higher degree of GA support). A GA appointment for one term of a typical undergraduate studio course is in the range of 65 hours. Because of the demands placed on students with an already heavy workload, in some instances courses requiring 140 hours of GA support appoint two GAs at 70 hours each. In these cases, as in the undergraduate studios, an appointment for one term results in a total payment of approximately $3000 per student.

In total, the department maintains an annual expenditure of approximately $120,000 on graduate assistantships, shared between the graduate programs in Architecture and Building Science. Based on the nature of course subject matter and the required expertise, approximately 75 – 80% of GA positions are suited to graduate students in the Architecture program.

Research Assistantships

Undergraduate students have access to Research Assistant positions funded by the University's Career Boost work/study program, or through project grants obtained by faculty. Opportunities can vary significantly from year to year, depending on the degree and nature of research project funding among the faculty. There are some faculty conducting architecture-related research who have external funding, so that a limited number of Master of Architecture students participate as research assistants on specific projects. In recent years research assistantships have been available on projects funded by the Canada Council for the Arts and MITACS. In the three-year period from 2013-2016, annual funding for these types of positions has averaged approximately $25,000 academic year.

3.9 Administrative Structure

The Program must be part of an institution accredited for higher education by the authority having jurisdiction in its province. The Program must have a degree of autonomy that is comparable to that afforded to the other relevant professional programs in the institution and sufficient to ensure conformance with the requirements of the CACB Conditions and Terms for Accreditation.

The APR must include the following information:

- A description of the program's administrative structure, a comparison of this structure with those of other professional programs in the institution, and a list of any other programs offered in a multi-discipline unit.

Ryerson University

Ryerson University was incorporated as a post-secondary degree-granting institution in Ontario by virtue of the Ryerson University Act, 1977 (as amended and dated 27 June 2002). It is governed by the Ryerson University Act and the General By-laws of Ryerson University.

University and Departmental Governance

Like many universities, Ryerson University operates under a bicameral governance structure, with two governing bodies: the Board of Governors and the Senate. The mandate of each of these bodies is defined in the Ryerson University Act. The primary powers of the Board of Governors are for the government, conduct, management, and control of the University and its property, revenues, expenditures, business, and affairs. This includes university-wide non-academic policy formulation, as well as oversight and decision-making related to financial and management matters.

Ryerson's Senate is responsible for maintaining, communicating, and implementing the university's policies related to academic matters. These include the content, quality and management of all programs and courses of study, the standards for admission to the university, the establishment of Departmental Councils, the establishment of Program Advisory Committees, and the qualifications for obtaining degrees, diplomas, and certificates. Members of the Senate include senior university administration, as well as faculty, students, and alumni representatives. The Academic Standards Committee is a standing committee of Senate which is responsible for the review of all new program proposals, as well as the periodic review of existing programs (completed for the B.Arch.Sc. and M.Arch. programs in 2018), all of which are brought to Senate for final approval. Programs are offered through the six faculties at the university (plus the Yeates School of Graduate Studies and the Chang School of Continuing Education).

Faculty of Engineering and Architectural Science

The Department of Architectural Science, which administers the professional program in architecture, is housed in the Faculty of Engineering and Architectural Science (FEAS). Until 2015, the Yeates School of Graduate Studies (YSGS) oversaw the administration of all graduate programs university-wide, and each program belonged to a department but reported directly to the Dean of YSGS. However, since 2015, graduate programs at Ryerson have undergone significant structural changes. Much of the responsibility for administration of the programs has been decentralised to the Faculty Deans, in the case of DAS to the Dean of FEAS and the Associate Dean for Graduate Studies at FEAS.

The Yeates School of Graduate Studies

Since the process of decentralization, the Dean of YSGS oversees the development of graduate policies and approval of new programs, provides overview of regular Periodic Program Reviews (completed for the M.Arch. in 2018), approves new members to the School of Graduate Studies, and monitors and ensures that graduate academic quality standards are met across the university. The School of Graduate Studies Council is the approval body for internal review and maintenance of the academic quality of graduate programs.

Department of Architectural Science

The Department of Architectural Science offers a four-year Bachelor of Architectural Science (B.Arch.Sc.) followed by a two-year Master of Architecture (M.Arch.). Together they comprise a single professional program accredited by the CACB. The department also offers graduate degrees in Building Science (M.B.Sc. and M.A.Sc., with a PhD in development), and there is an intention to establish a graduate program in the area of Project Management. The program's administrative structure is shown in Figure 3.9.1. The department is administered by a Chair who reports to the Dean of FEAS, assisted by five Associate Chairs taking responsibility for various aspects of program delivery and administration. The department is home to 29 full-time faculty members, 12 support staff, about 450 undergraduate students and about 90 graduate students (with roughly half of those in the M.Arch. program).

Departmental Council

Under Ryerson University policies, each department is required to have a Departmental Council. The Department of Architectural Science has a long-established Departmental Council which is governed by by-laws in accordance with Ryerson Senate Policy 45. Voting members include all full-time faculty members, student representatives, and an alumni representative. Departmental Councils are required to meet at least once per academic term and to report their activities according to the established by-laws. Minor modifications to the undergraduate curriculum require the approval of Departmental Council, and major modifications are referred to the Senate for final approval. (Examples of minor modifications include changes in course description, title or prerequisites; repositioning of a course in a curriculum; adding or deleting a required course. Examples of major modifications include: the introduction or deletion of a research paper, thesis or capstone project; the introduction or deletion of work experience, co-op, internship, or practicum, or portfolio; significant change in the total number of courses required for graduation in a program; change to the name of a school or department; significant changes to the program learning outcomes.)

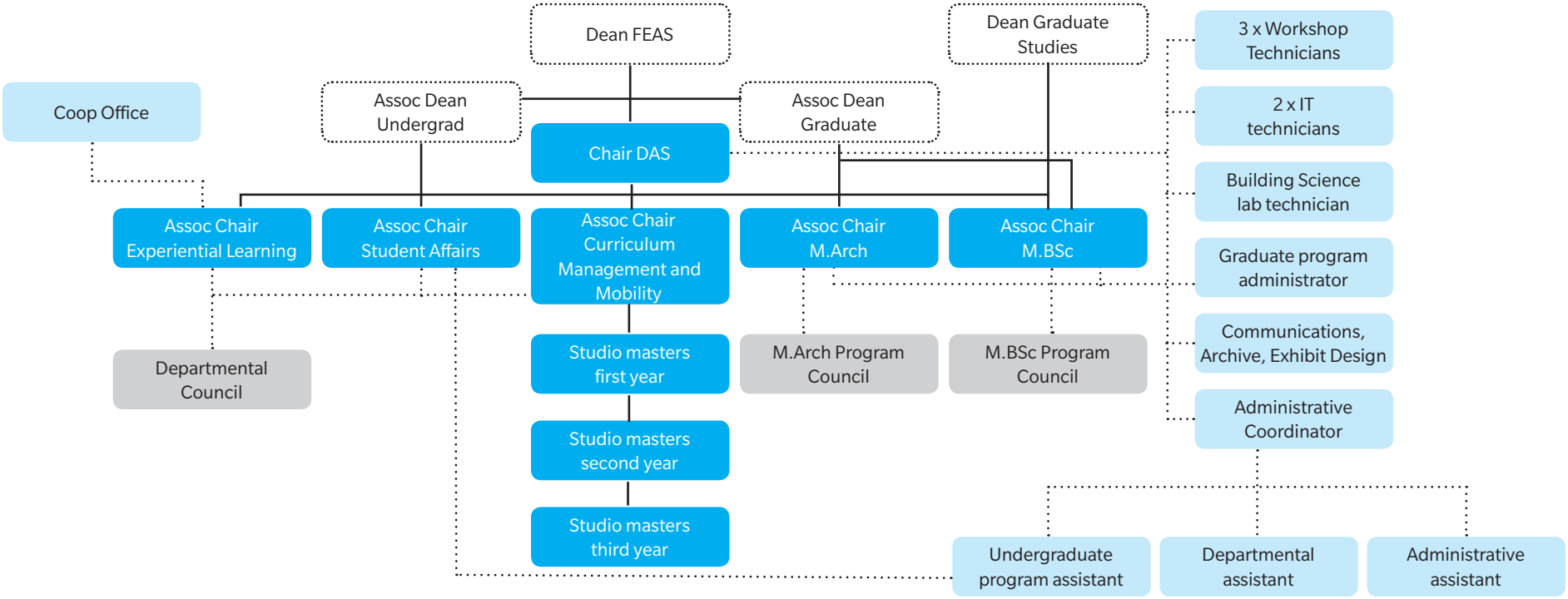


Figure 3.9.1 Structure of the Department of Architectural Science (2018)

M.Arch. Graduate Program Council

Graduate programs at Ryerson are governed by Graduate Program Councils (GPC). The M.Arch. council is responsible for academic policy and procedure recommendations pertaining to the program and must approve all curricular changes. As noted above for Departmental Council, minor modifications to the graduate curriculum only require the approval of GPC, and major modifications are referred to the Senate for final approval. The GPC meets at least once per term, and is governed by by-laws in accordance with Ryerson Senate Policy 45. Membership includes the Associate Chair, department Chair, a minimum of seven faculty members teaching in the program, and two elected student representatives.

Ontario University Quality Assurance Mechanisms

In Canada, education is a constitutional responsibility of the provinces and the universities that derive their authority therefrom. Canada does not have a system of institutional accreditation. Instead, the appropriate provincial charter plus membership in the Association of Universities and Colleges of Canada (AUCC) have historically stood in lieu of institutional accreditation. Ryerson University, through its charter (an act of the Ontario legislature) and membership in AUCC and the Council of Ontario Universities (COU), enjoys in all respects the Canadian equivalent of institutional accreditation. In addition, like all Ontario universities, Ryerson participates in system-wide quality assurance processes.

Each Canadian university is autonomous in academic matters, including the determination of its own quality assurance policies and procedures. In addition, as a result of their longstanding commitment to a common framework of standards across provincial jurisdictions, Canadian universities have a shared understanding of the value of each other's academic credentials.

Robust institutional quality assurance policies and processes are the foundation of the Canadian higher education quality assurance regime. In Ontario, new "non-core" (i.e. professional and quasi-professional undergraduate) programs and all graduate programs must be submitted individually to the Ministry of Training, Colleges and Universities to be approved for operating grant funding.

The Ontario Universities Council on Quality Assurance (in short, the Quality Council), was established in July 2010 and is responsible for oversight of the Quality Assurance Framework processes for Ontario universities. The Quality Council operates at arm's length from both Ontario's publicly assisted universities and Ontario's government. The Council is the provincial body responsible for assuring the quality of all programs leading to degrees and graduate diplomas, including new undergraduate and graduate programs and for overseeing the regular review/audit of each university's quality assurance processes. Each institution has developed its own Institutional Quality Assurance Process (IQAP) which is subject to review and approval by the Quality Council. The requirements for the IQAP are set out in the Quality Assurance Framework (see Section 3.1).

3.10 Professional Degrees and Curriculum

A CACB-accredited professional Program in architecture prepares students to enter the practice of architecture as architectural interns. Accreditation is based on the overall quality of the program objectives and the specific performance criteria that students meet through coursework.
The CACB only awards accreditation to professional degree Programs in architecture. A CACB-accredited professional Program in architecture is defined as the totality of a student's post-secondary education culminating in a designated professional university degree, which may be a bachelor of architecture (BArch) or a master of architecture (MArch) degree.
The Programs include:

- a minimum of five years of post-secondary study culminating in a master of architecture degree, which follows a pre-professional bachelor's degree, except in Quebec, where the minimum is four years of professional studies following two years of CEGEP;
- a minimum of six years of post-secondary study culminating in a master of architecture degree, which follows a bachelor's degree in any discipline and includes a minimum of three years of professional studies in architecture; or
- a minimum of five years of post-secondary study culminating in a bachelor of architecture degree.

In keeping with the principle of outcome-based Accreditation, the CACB does not restrict the structure of

Ryerson University offers a single professional program in architecture, leading to the degree Master of Architecture (M.Arch.). This two-year, six-semester professional program is preceded by a pre-professional, undergraduate program leading to the degree Bachelor of Architectural Science (B.Arch.Sc.). The B.Arch.Sc. program was revised in its entirety in 2007 in order to support and complement the M.Arch. program which was introduced in 2007.

Bachelor of Architectural Science: Pre-professional Program

The current version of the pre-professional (Bachelor of Architectural Science) program, inaugurated in 2007, is a four-year, eight-term pre-professional degree. The program is divided into four phases:

- **Phase I – Context:** students are introduced to the Communications Studio, in which methods of architectural representation and graphic design, both manual and computerized, are developed.
- **Phase II – Preparation**: Tools and Elements: students move through a series of Design Studios that introduce elements of architectural design one at a time over a series of three terms straddling the first and second years of the program: Site and Program, Intention and Expression, and Technical and Regulatory Issues. As each set of concerns is added to the previous layer, students are required to complete projects of increasing complexity and scale.
- **Phase III – Integration:** students are asked to consolidate these layers of knowledge in the Integration Studios (taking place over two consecutive terms in the third year of the program). In these studios, the design of a project of a medium level of complexity is developed from the programming and site selection stage through to detail design and the preparation of rudimentary contract documents, over the course of two terms. The studios derive their name from the fact that students are asked to work holistically, drawing from all three of Ryerson's traditional areas of specialization: Architecture, Building Science, and Project Management. In order to allow these studios to operate in an integrated fashion, they are closely linked to courses taken concurrently with the studios in each term.
- **Phase IV – Concentration, Specialization and Transition:** building on Ryerson's tradition that sees Architecture, Building Science, and Project Management as three aspects of the same discipline, in this last phase—taking place in the fourth and final year of the undergraduate program—students choose one of these three areas for specialized study.

Regardless of the area of specialization selected, students must successfully complete 62 one-term course credits to graduate with the B.Arch.Sc. degree. Of these, 18 credits are in core studio; 22 in required core courses, including required general studies courses; six in liberal studies electives; six in fourth-year electives; six in elective studios in the areas of specialization; and four credits are given for collaborative exercises, which will be addressed in greater detail below. The program is comprised of 174 semester-hours of coursework plus the collaborative exercises. Graduates completing the B.Arch.Sc. degree in any area of specialization are eligible to apply to the Master of Architecture program.

B.Arch.Sc. Curriculum

	Year 1: Fall	Year1: Winter	Year 2: Fall	Year 2: Winter	Year 3: Fall
Studio	ASC101: Communications Studio	ASC201: Design Studio I - Site and Program	ASC301: Design Studio II- Intention and Expression	ASC401: Design Studio III - Technical and Regulatory Issues	ASC520: Integration Studio I
Architecture	ASC103: The Built Context - Concepts & Themes for Arch	ASC206: Ideas, Technologies and Precedents I ASC200: Sustainable Practices	ASC306: Ideas, Technologies and Precedents II	ASC406: Ideas, Technologies and Precedents III ASC403: Site Development and Planning	ASC621: Tectonics and Materiality
Building Science	PCS107: The Natural Context	ASC202: The Building Project ASC203: Structures I	ASC302: Building Envelopes ASC303: Structures II	ASC402: Bodily Comfort Systems CVL407: Structures III	
Project Management	ASC102: The Built Environment - Management of Resources		ASC304: The Construction Project		ASC522: Project Economics
General Studies	ACS104: Ideas that Shape the World Liberal Studies	ASC205 Collaborative Exercise	Liberal Studies	ASC405 Collaborative Exercise	PLX599:The Human World Liberal Studies

Figure 10.3 B.Arch.Sc. Program Structure

		Architecture option		Building Science option		Project Management option	
	Year3: Winter	**Year 4: Fall**	**Year 4: Winter**	**Year 4: Fall**	**Year 4: Winter**	**Year 4: Fall**	**Year 4: Winter**
Studio	ASC620: Integration Studio II	ARC720 Option Studio	ARC820 Option Studio	BSC 720 Building Science Studio	BSC 820 Building Science Studio	PMT 720: Project Management Studio I	PMT 820: Project Management Studio II ASC805: Collaborative Exercise I
Architecture	ASC623: Principles of Detailing	3 professional electives	3 professional electives	1 professional elective	1 professional elective	1 professional elective	1 professional elective
Building Science	ASC521: Light and Sound in Architecture	3 professional electives	3 professional electives	BSC 721: Theory/ Performance I: Existing Buildings BSC 721: Theory/ Performance I: Existing Buildings	BSC 821: Theory/ Performance II BSC 822: Advanced Envelopes/ Components	1 professional elective	1 professional elective
Project Management	ASC622: Documentation and the Construction Contract	3 professional electives	3 professional electives			PMT 721: Economics for Project Management PMT 722: Information Systems	PMT 821: Construction Practices and Management PMT 822: Procurement and Const Management
General Studies	Liberal Studies ASC605: Collaborative Exercise III	Liberal Studies	Liberal Studies ASC805: Collaborative Exercise IV	Liberal Studies	Liberal Studies ASC805: Collaborative Exercise IV	Liberal Studies	Liberal Studies ASC805: Collaborative Exercise IV

a professional Program and/or the distribution of its coursework. The APR must include:

- specification of the degree(s) offered;
- an outline of the curriculum of the Program describing how each performance criterion included in Section 3.11 is met and how the Program achieves its pedagogical goals;
- a description of any Program components that are outside of the administrative purview of the unit or institution that is accredited;
- a summary description of processes and requirements related to degree Program admissions that make up the Program, including those governing student applications for advanced placement; and
- student admission assessments concerning advanced placement within the Program.

Master of Architecture

The Master of Architecture curriculum from 2007 to 2018 was comprised of 17 one-term credits of coursework plus a thesis project. Ten of these credits were in core and elective studios, two in core seminars, three in elective courses or seminars, and an additional two in collaborative competitions. Starting in the 2018-19 academic year, four credits of studio (the spring semester Studio in Research Practice) have been replaced by two new credits of required seminars, in order to address a shortfall in architectural theory as recognized by the 2017-18 Periodic Program Review.

Term One (Fall): Critical Practice in the 21st Century

This term is intended to reorient students coming from an undergraduate program in architectural science or from the AEC industry toward the notion of critical practice. Students are asked to "break frame," to re-examine assumptions, to move from the dominant tenets of undergraduate education (based on the question "how") to those of graduate education (based on the questions "why" and "what").

Linked to this studio is a Seminar in Critical Practice, in which students are asked to investigate in some depth areas of radical change in architectural practice in the 21st century. Starting in 2018, a new seminar course, AR8109 Contemporary Architectural Theory, has been added to this semester to address a concern that emerged from our recent Periodic Program Review.

Term Two (Winter): Collaborative Practice for the Twenty-first Century

In this term, students return to mainstream architectural practice with the design of a reasonably complex building. Students are required to apply the research-based, projective modes of practice covered in the first term to this task.

In the Studio in Collaborative Practice, students develop a building project of a significant scale to a high degree of resolution, both in technical and other terms. The role of the architect as collaborator in a wide network of stakeholders, including clients, consultants, user groups, and the broader public is stressed. Concurrent with this studio is a Seminar in Contemporary and Future Practice. Starting in 2019, a new seminar course, AR8110: Thesis and Design Research Preparation, is added to this semester to address a concern that emerged from our recent Periodic Program Review regarding the students' preparedness for research in relation to a graduate level thesis.

Term Three (Spring): Intensive Research Studio and Seminar

This term, which takes place in the spring session of Ryerson's spring/summer semester, is of six weeks' duration and is comprised of an Intensive Research Studio experience, coupled with a Seminar in Research.

Students work full-time in studio under the close direction of a faculty member. Final submissions are usually due in late summer. This studio has been discontinued as of 2019, partly in response to concerns regarding the overall length of the M.Arch. program and the desire to accelerate students' progress into their thesis projects. A variety of new mobility (study abroad) opportunities more than make up for the lost travel opportunities previously afforded by the Research Studio and Seminar. Going forward, the spring/summer semester will mark the commencement of work on thesis projects.

Terms Four to Six (as of 2019, terms three to five): Master's Thesis Project

Following the completion of the set sequence of courses, students spend three semesters completing a thesis project. This work, which is self-directed and carried out under the guidance of a supervisor, requires each student to identify and frame an architectural issue that will be pursued by means of a significant body of research and a design project. During this time students also take elective courses.

M.Arch Program Structure until 2017/18

	Studio	Seminar	Electives	Other
Year 1: Fall	AR8101: Studio in Critical Pracitce	AR8102: Seminar in Critical Practice	Graduate Elective	One Collaborative Competition must be completed before beginning the M.Arch. thesis.
Year1: Winter	AR8103: Studio in Collaborative Practice	AR8104: Seminar in Contemporary and Future Practice	Graduate elective	
Year1: Spring	AR8105: Intensive Research Studio and Seminar			
Year2: Fall	M.Arch Thesis	AR8106: Current Topics in Architectural Praxis		Second Collaborative Competition must be completed before completing the M.Arch. thesis.
Year2: Winter	M.Arch Thesis			
Year2: Spring/ Summer	M.Arch Thesis			

Figure 10.1
M.Arch Program Structure from 2017-2018

M.Arch Program Structure from 2018/19

	Studio	Seminar	Seminar/Electives	Other
Year 1: Fall	AR8101: Studio in Critical Pracitce	AR8102: Seminar in Critical Practice	AR8109: Contemporary Architectural Theory	One Collaborative Competition must be completed before beginning the M.Arch. thesis.
Year1: Winter	AR8103: Studio in Collaborative Practice	AR8110: Thesis and Design Research	Graduate elective	
Year1: Spring	M.Arch Thesis			
Year2: Fall	M.Arch Thesis	AR8106: Current Topics in Architectural Praxis	Graduate elective	Second Collaborative Competition must be completed before completing the M.Arch. thesis.
Year2: Winter	M.Arch Thesis			
Year2: Spring/ Summer	M.Arch Thesis	AR8104: Seminar in Contemporary and Future Practice		

Figure 10.2
M.Arch Program Structure from 2018-2019

Notes: ** In the 2018-19 academic year, the first elective and AR8104 are transposed. This is due to the scheduling of loading each year and the subsequent approval of curriculum changes in the Yeates School of Graduate Studies.
It is expected that students will complete their Thesis in the Winter semester. Those who require more time will work through the Spring/Summer semester.

Outline of Program Curriculum

Note: the PPCs and SPCs are discussed individually in section 3.11 of this APR. In this section, the curriculum is presented in terms of its major structural components and pedagogic aims. Likewise, extra- or quasi-curricular items related to the PPCs are discussed in section 3.11.

Design Education

Design education at Ryerson is delivered primarily through the design studios. In the first two years, students go through a well-defined series of thematic studios that build on each competency from semester to semester: Representation and Composition (ASC101); Site and Program (ASC201); Intention and Expression (ASC301); and Technical and Regulatory Issues (ASC401). The third year is dedicated to the Integration Studios (ASC520 and 620), which constitute Ryerson's Comprehensive Design Studio and integrate the three areas of specialization in the Ryerson curriculum (Architecture, Building Science, and Project Management).

By the end of this series of six studios, students have developed an overall competency in the design of buildings.

In the final year of the undergraduate program, students complete two studios in their chosen area of specialization. Students in the Architecture specialization choose from a wide range of option studios—typically four or five sections are offered in each semester—that are intended to develop a more critical attitude towards design, to develop specialized areas of knowledge (in areas such as heritage preservation or urban design), or to understand design as a speculative activity (ARC720 and 820).

Building on the overall competency in the design of buildings developed in the undergraduate studio, the two required studios in the Master of Architecture program (AR8101 and 8103) seek to investigate architecture more deeply as a cultural, social or technical activity. The introductory fall term studio reorients design as a critical and projective practice, and the winter studio recapitulates a comprehensive technical design study within this newly developed critical framework.

Technical Knowledge

Partly as a result of its strong history of technical education in architecture, the Ryerson program places significant emphasis not only on the development of technical skills related to building but also on the integration of technical issues with other architectural concepts. In the first three years of the undergraduate program, students are required to complete a number of courses addressing technical subject matter related to the design of buildings—structure, building envelope, building systems, technical detailing, construction documents, etc.—representing a total of ten credits. By the winter term of second year, these technical elements are integrated into the design studio to form an important component of design decision-making. After this point in the program, technical knowledge forms a background to all design work, especially in the winter term Integration Studio ASC620, and the second M.Arch. studio AR8103.

Architectural Culture

In the first two years of the undergraduate program, an understanding of architectural culture (history and theory of architecture) is developed through a series of required courses, notably the introductory theory course, ASC103, and the suite of Ideas, Technologies and Precedents courses (ASC206, 306 and 406). This core knowledge is supported by two courses in the third year (PLX599 The Human World/Urban Structures and Processes and ASC621 Tectonics and Materiality), and expanded on in a variety of elective courses offered to students in fourth year. Finally, architectural culture becomes the core area of development in the Master of Architecture program, primarily via the studio and seminar in Critical Practice (AR8101 and 8102), the Studio in Collaborative Practice (AR8103), the Seminar in Current Topics in Architectural Praxis (AR8106), and the M.Arch. thesis.

As a result of the M.Arch. Periodic Program Review completed in 2018, we have recognized a gap in our teaching of contemporary architectural theory, leaving many students unprepared for the rigorous requirements of the thesis. As a result, beginning in fall 2018 we have introduced a new required course in the first semester of the M.Arch., AR8109 Contemporary Architectural Theory. In the following semester, a second new required course, AR8110 Thesis and Design Research Preparation, is being offered.

Professional Education

We take professional education to encompass a broad range of knowledge about the AEC industry, rather than narrowly focusing on the professional architect. This is natural for Ryerson, coming out of our decades-long education in project management. Questions surrounding the management of the construction process are investigated through a series of courses, starting in the first semester with ASC102 The Built World, which presents the design and construction of the built environment in the context of the ethical management of finite resources, and the second year course ASC304 The Construction Project, which addresses the provision of architectural services and the roles of the various participants in the construction process.

In the M.Arch. program, the focus moves from an investigation of the world of construction as a whole to the specific roles of the professional architect. AR8102 Seminar in Critical Practice discusses the structure of the profession and ethical roles of architects, while AR8104 Seminar in Contemporary and Future Practice examines the ways in which an architectural practice is organized.

Collaboration

In addition, the program understands architecture as primarily a collaborative activity involving multiple stakeholders. This aspect is present in many places in the curriculum through group work and in working with external organizations, but finds its core in the Collaborative Exercise (ASC205/405/605/805), an annual charrette in which students in all years of the undergraduate program participate, often with logistical support from graduate students.

General Education

General studies in the arts and sciences are an important part of the education of an architect. In accordance with Ryerson's policy on the Tripartite Curriculum, which mandates each undergraduate program to be comprised of core courses, professionally-related courses, and electives, general studies are accommodated in the pre-professional curriculum in a number of ways.

The program provides opportunities for general education (outside of the discipline of architecture) through both required and elective courses. Required courses include ACS104 Ideas that Shape the World (offered by the Department of Arts and Contemporary Studies) and PCS107 The Natural Context (offered by the

Department of Physics). In addition, undergraduate students are required to complete six credits of Liberal Studies electives, of which the first must be a writing-intensive English course.

Specializations and Electives

Year four of Ryerson's B.Arch.Sc. undergraduate program provides an opportunity to specialize in one of our three disciplinary areas: Architecture, Building Science, or Project Management. Students who select the Architecture specialization choose from a range of studios and courses, providing an opportunity to dive deeper into their particular areas of interest. Students in the M.Arch. program take two elective courses and choose one of two offerings of AR8106 Seminar in Current Topics in Architectural Praxis.

Ryerson is gradually moving to an "open elective" system that will allow undergraduate students more choice in taking electives outside their home unit. The department is examining the implications and opportunities this provides for the Architectural Science curriculum.

Program components that are outside of the administrative purview of the department

The undergraduate degree program contains four required courses that are controlled administratively by other disciplinary units at the university. ACS104 Ideas that Shape the World is administered by Arts and Contemporary Studies; PCS107 The Natural Context is administered by Physics; CVL407 Structures III is administered by Civil Engineering; and PLX599 The Human World is administered by the School of Urban and Regional Planning. In addition, the liberal studies electives are administered by a number of different units and overseen by the Liberal Studies Policy of Senate.

Admissions Requirements and Process

Bachelor of Architectural Science

Ryerson University's General Admission Requirements include an Ontario Secondary School Diploma (OSSD), with six Grade 12 U/M courses including Grade 12 U English (one of ENG4U, ETS4U, EWC4U) or Anglais (one of EAE4U, EALAU, EAC4U), plus program specific prerequisite courses (full policies are set out in the Full- and Part-Time Undergraduate Calendar).

The Department of Architectural Science has set out the following procedures for admission to the pre-professional program in Architectural Science:

Program Specific Prerequisite Courses

Applicants to the pre-professional program are required to have successfully completed O.S.S.D.

with six Grade 12 U/M courses, including Grade 12 U courses in: English (ENG4U/EAE4U preferred), Physics (SPH4U) and Mathematics - one of either Advanced Functions (MHF4U) or Calculus and Vectors (MCV4). The minimum grade(s) required in the subject prerequisites (normally in the 65-70 percent range) are determined subject to competition.

Portfolio

Applicants to the pre-professional program are required to submit a portfolio of creative works. These portfolios are reviewed by a panel of full-time faculty and contract lecturers from the department.

Home Exercise

Applicants to the pre-professional program are provided with a short design-and-make exercise two weeks before their scheduled on-campus information and portfolio evaluation session. The exercises are due for submission at the on-campus session, and are evaluated by a panel of full-time faculty and contract lecturers from the department.

Drawing Exercise

At an on-campus information and portfolio evaluation session, applicants to the pre-professional program are required to complete a graphic exercise, which involves producing a perspectival pencil sketch in response to a written scenario. These drawings are evaluated by a panel of full-time faculty and contract lecturers from the department.

Changes to Admissions Process

Partly as a result of our recent Periodic Program Review, the Department is in the process of renewing its admissions procedures.

Master of Architecture

Academic Prerequisites

- Successful completion of the Ryerson pre-professional degree in Architectural Science (B.Arch.Sc.), or equivalent, with a minimum overall average of B;
- A minimum average of B (or equivalent) in the final four semesters of undergraduate study;
- Referee support;
- Three letters of recommendation (academic or professional);
- Portfolio of architectural/creative work; and
- Successful demonstration, through a portfolio submission and written essay, of the necessary background and ambition to pursue Master's level work in architecture.

Applicants whose transcript shows minor course deficiencies are required to take additional courses to make up those deficiencies as a condition of their admission. For example, students with undergraduate degrees from outside of North America are required to complete additional coursework in Canadian architecture and Canadian construction methods.

Advanced Placement

Undergraduate Advanced Placement

Ryerson University has clear policies on advanced standing and transfer credits, set out in the Full- and Part-Time Undergraduate Calendar. Because of its unique program structure, granting advanced standing into the B.Arch.Sc. program as it is defined by the university is impractical. Students transferring from other CACB- or NAAB- accredited programs or their equivalent from other countries are assessed on a case-by-case basis and will typically receive transfer credits for courses which have a direct correspondence between the required Ryerson course and a course taken at another institution.

M.Arch. applicants from non-Ryerson programs

The curriculum of professional and pre-professional programs of study at Ryerson are conceived as a whole. Consequently, graduates of the B.Arch.Sc. program enter their M.Arch. studies fully prepared. Upon admission to the professional program, all other students ("transfer students") have their academic history evaluated by the Associate Chair to ensure consistency with the requirements of the CACB and with Ryerson's internal policies and standards. In terms of the CACB, this review ensures that the student meets the expected levels of proficiency with regard to the Student Performance Criteria. Any identified weaknesses may require that the student develop these areas through additional coursework or self-study, with a second evaluation prior to beginning the thesis project.

Minors and Areas of Specialization

As discussed in the section above, each student in the pre-professional program chooses an area of specialization: Architecture, Building Science or Project Management. In addition, Ryerson's Minors Policy, in principle, allows students to declare a minor in another discipline. However, it remains highly unusual for students to complete a minor while studying Architectural Science due to the demands of the program.

Transition from the legacy Ryerson undergraduate degree (B.Arch.Sc.)

In past APRs we discussed the transition for students from the pre-2007 B.Arch.Sc. degree. However, those applicants are now few enough that they are considered simply as transfer students from other programs, as discussed above.

3.11 Performance Criteria

The Program must demonstrate satisfactory performance in relation to program performance criteria (PPC), and student performance criteria (SPC) as detailed below. The CACB does not specify the structure and content of educational programs nor the forms of evidence used to satisfy the criteria. Programs are therefore encouraged to develop unique learning and teaching strategies, methods, and materials to satisfy these criteria.

For PPCs, evidence of performance may take many diverse forms not limited to course work and its outcomes. The Program must describe and demonstrate that it creates an environment in which these criteria are satisfied.

For SPCs, evidence of performance must include student work and the pedagogical objectives and assignments of any given course. With respect to fulfilling the criteria, the Program must demonstrate that all of its graduates have achieved, at minimum, a satisfactory level of accomplishment.

The roster of six PPCs and twenty-four SPCs is intended to foster an integrated approach to learning. Their order is not intended to imply a weight assigned to each.

A. Program Performance Criteria (Six PPCs)

1. Professional development
2. Design education
3. Global perspectives and environmental stewardship
4. Collaboration, leadership, and community engagement
5. Technical knowledge

Program Performance Criteria

PPC 1. Professional Development

The Program must demonstrate its approach to engaging with the profession and exposing students to a breadth of professional opportunities and career paths, including the transition to internship and licensure.

The program has worked hard to develop a strong and growing engagement with the profession on a number of levels and through a large number of specific initiatives. The mission of the undergraduate program is "to provide education for a wide range of professional roles in the design, construction and management of the built environment." To that end, the program offers three areas of specialization: Architecture, Building Science, and Project Management. Professionals are invited to the department to discuss the their career choices prior to the students choosing one of these specializations toward the end of their third year. Within this larger multidisciplinary context, the Master of Architecture program adopts a role specific to the profession of architecture.

Although our department's relationship with the profession has long been among our key strengths, this has been further enhanced since the most recent accreditation visit with the establishment of the Architectural Science Co-operative Education Internship (ASCEI) program. Participating students go into industry for 16-month internships after completing the third year of the program; this has strengthened our industry connections. Initially limited to a number of students equivalent to one section of studio (15 or 16), the student cohort was doubled in 2018 to the equivalent of two studio sections (32 students per year). The university's Office of Co-operative Education has facilitated a growing lists of organizations that wish to hire our students under the ASCEI program. Students are provided with interview training and a portfolio review session (open to all students) in which industry professionals advise students on interview and portfolio techniques.

The department has a long history of taking full advantage of its location in the heart of Canada's largest metropolis to engage with the local profession, including inviting guest lecturers and critics at all levels of the program (see section 3.4). All M.Arch. thesis panels include at least one local practitioner, while undergraduate final reviews for most studios typically have one or more practitioners serving as guest critics on each panel. In addition, over 60% of faculty and instructors teaching in the studios are licensed architects, either in Ontario or in other jurisdictions. Each year the first year M.Arch. class organizes a public symposium that investigates issues of significance to the profession. This has become an important event in the school calendar, usually takes place at a downtown, off-campus venue (including the Design Exchange and the Gladstone Hotel) and is well attended by members of the profession.

6. Breadth of education

B. Student Performance Criteria (Twenty-Four SPCs)
A. Design (eight SPCs)
B. Culture, communications, and critical thinking (five SPCs)
C. Technical knowledge (five SPCs)
D. Comprehensive design (one SPC)
E. Professional practice (five SPCs)

The APR must include:

- an overview of the curricular goals and content of the Program;
- a thematic summary of how the six program performance criteria (PPC) and twenty-four student performance criteria (SPC) are acknowledged in the structure and deployment of the curriculum described below; and
- a graphic matrix that cross-references each course with the student performance criterion (SPC) it addresses.

Program Performance Criteria
The Program must provide its students with a well-thought-out curriculum with educational opportunities that include general studies, professional studies, and elective studies.

Each of the PPCs must be addressed in a clear narrative statement and with reference to any relevant supporting documentation.

The Ontario Association of Architects (OAA) regularly delivers to students in the program a presentation on the requirements for licensure and the process of internship. Students engage with the OAA, the Royal Architectural Institute of Canada (RAIC) and the Toronto Society of Architects (TSA) by attending conferences and through volunteer activities. The undergraduate program's students have for many years maintained the only Canadian chapter of the American Institute of Architecture Students (AIAS), and have organized and hosted a number of AIAS conferences along with other events, including an annual "firm crawl." Furthermore, students participate in site visits, interact with professional visitors to classes and studios, and complete some studio projects in conjunction with local practitioners, often working with community associations on projects addressing local issues.

The department's program of public events—primarily the lecture and exhibition series—offers examples to students of successful models of practice while engaging directly with many local and international practitioners, bringing them into the Architecture Building. The Year End Show is an opportunity to bring in professionals to view and engage with student work.

Within the undergraduate curriculum the program offers several courses that focus on professional practice and project management. These include ASC102 The Built World, ASC304 The Construction Project, ASC522 Project Economics, ASC752 Business Practices in the AEC Industry, and most of the fourth year Project Management specialization courses which are available as electives for students in the other specializations. In the M.Arch. curriculum, the AR8104 Seminar in Contemporary and Future Practice plays a central role in preparing students for transition into internship.

Many faculty members are well connected to the profession and participate regularly in professional organizations, including serving on a variety of association committees (with the OAA, RAIC, CaGBC, etc.) as well as other industry activities. Several serve as mentors for graduates enrolled in the Intern Architect Program.

PPC 2. Design Education
The Program must demonstrate how it situates and values education and training in design at the core of the curriculum, including the ways in which the design curriculum weaves together the social, technical, and professional streams of the curriculum.

The program understands design to fundamentally involve the design of buildings and related structures and systems. Hence, the program begins with a series of focused studios intended to develop the basic competencies required for the design of buildings.

- In the first semester, students complete ASC101 Communications Studio, which introduces basic techniques of visual communication, including drawing and modelling.
- In the second semester, students complete ASC201, a studio focused on Program and Site, which introduces the fundamental concept of accommodating a specific set of needs and activities on a particular site, in context.
- The third semester studio, ASC301, focuses on Intention and Expression, layering these questions onto the basic operations developed in the previous semester.
- The fourth semester studio, ASC401, addresses Technical and Regulatory Issues, continuing to add layers overtop the issues addressed in semesters one through three.
- The fifth and six semester studios, ASC520 and 620, are Integration Studios focused on integrating skills developed in previous studios in a comprehensive manner through the design and documentation of a building of medium scale and complexity.

The program aims to connect courses with studio so that assignments carried out in classes such as ASC200 Sustainable Practices or ASC622 Documentation and the Construction Contract are developed in conjunction with their concurrent studio work. Opportunities for greater connection between course and studio work are regularly explored.

These basic competencies are further developed and deepened according to the particular interests of the students through option and specialization studios in the fourth year of the undergraduate program, and in the Master of Architecture program. Following the development of these core competencies, students are given wide latitude to develop their own design interests. In the fourth year, studios address a wide range of themes, including technical, social, expressive and professional issues. Some studios will examine particular issues of representation, of sustainability, or of discourse. The M.Arch. studios tend to take on social issues or look to merge the social and the technical. In their Master's thesis projects, students must demonstrate that they possess mastery of the design tools and techniques used by architects.

Finally, the department-wide Collaborative Exercise (ASC 205/405/605/805), in which all undergraduate students participate, provides an opportunity for collaborative design approaches and sharing knowledge and expertise in an intensive group setting.

PPC 3. Global Perspectives and Environmental Stewardship

`The Program must demonstrate how it embraces the diverse contexts that define contemporary architecture, including local, global, and environmental interests.`

The broad and diverse range of contexts that define contemporary architecture are embraced through a

number of mechanisms, both within and outside of the curriculum.

The ability to identify and ultimately act within these multiple and diverse contexts is central to the Master of Architecture program, specifically in the first semester. Both the Studio and Seminar in Critical Practice (AR8101 and AR8102) seek to redirect the efforts of a group of students coming into the program with well-developed competencies in the fundamentals of building design to consider the issues and contexts facing architecture today (and in the proximate future). In order to embed the student experience as firmly as possible in a broad array of contemporary issues, students travel, in alternating years, either to the Venice Biennale of Architecture or the Chicago Architecture Biennial. The new course AR8109 Contemporary Architectural Theory explicitly and critically examines the themes identified in these biennial exhibitions. Students then bring this concern with contemporary issues forward into their own work in the context of their M.Arch. thesis projects.

Questions of the context for contemporary architecture, including local, global, and environmental interests and concerns are engaged at all levels of the undergraduate B.Arch.Sc. program.

Local
The program maintains a strong engagement with the local condition of Toronto. At the most basic level, most project sites are located within the city, or a short distance away. Current issues in the development of the city and local communities are often used as the conceptual basis for studio and other work. Often this emerges from the interests or connections of our faculty, who are able to bring real-world questions and problems from the local community into the program. In particular, fourth year option studios provide an opportunity to engage in local community issues.

Just as Toronto is firmly embedded in the program, the program also reaches out into the city. Students regularly participate in local design festivals such as Come Up To My Room and Nuit Blanche. Many student extracurricular projects explicitly engage with the city and its concerns, such as competition submissions for Race to Zero exploring low energy design solutions for Toronto. Other examples include the Winter Stations, Grow Op, The Stop Night Market, and the ShapeLab King Street projects. The program supports Ryerson University's strong self-identification as a city-builder, organizing or participating in charrettes, symposia, and other speculative events related to the development of the campus and the city. Local issues are also explored through public lectures, discussion panels and exhibitions.

Global
The program offers a robust range of international experiences for students, many of whom travel abroad each year. These vary from brief periods abroad, such as the week-long Venice and Chicago initiatives

mentioned above, to full semesters abroad through a variety of mechanisms, including formal exchanges with other universities. We have initiated a number of new one-term exchange programs since the last CACB visit (please refer to Mobility Opportunities described in Section 3.4); currently approximately 20 fourth year students elect to spend a semester at one of our partner universities abroad. During the summer term we have offered studios and/or courses away or abroad (in locations such as China, Portugal, the Netherlands, Greece, Austria/Germany, California, Turkey and Manitoba), and some of our ASCEI students take up co-op positions in other parts of Canada and other countries. Most recently, we have established a joint project on New Wood Architecture with the Bergen School of Architecture in Norway. An understanding of the global contexts for architecture is also developed through lectures within courses, and significantly through the program's robust lecture and exhibition series.

Environmental Interests

The program and its faculty have a strong interest and considerable expertise in environmental issues and in sustainable design. This is ingrained into many courses but particularly expressed through courses such as ASC200 Sustainable Practices, ASC402 Bodily Comfort Systems, and ASC403 Site Development & Planning, and is imbedded in expectations for studios, particularly in the third year Integration Studios (ASC520 and 620). It is perhaps most clearly expressed in the presence of Building Science as an area of specialization within the program, which focuses on building performance, existing buildings, and energy efficiency. Beyond the curriculum, environmental issues feature prominently in events, lectures, faculty research projects and in the department's efforts to build a culture of concern for the environment. In recent years many Ryerson students have participated in extracurricular projects such as ZeroHouse, Race to Zero, ACSA competitions and other juried activities that address environmental concerns, with a high degree of success.

The department has organized or participated in the organization of a variety of conferences and workshops that address contemporary issues in architecture. These include events focusing on design and health, sustainable design, energy efficiency, urban agriculture, green infrastructure, and so on. The Ryerson AIAS chapter has been actively involved in many AIAS events in North America and have hosted AIAS events at Ryerson.

PPC 4. Collaboration, Leadership, and Community Engagement

The Program must demonstrate how it supports and fosters effective individual and team dynamics, a spirit of collaboration and inclusion, community engagement, and diverse approaches to leadership.

The program sees collaboration as fundamental to the practice of architecture; no building is ever produced by a single hand, and students are expected to appreciate the importance of collaboration within the profession, with other professions, and with community and interest groups. We recognize that collaboration

is a skill which must be taught. To start this process, students are exposed to theories of teamwork and team building in the first semester course ASC102 The Built World: Management of Finite Resources.

In addition, Ryerson students are required to complete six collaborative exercises over the course of the six-year professional program in architecture. Four are vertically integrated one-week charrettes in the undergraduate program. In these Collaborative Exercises (ASC 205/405/605/805), students teams are comprised of members from each year to work on a locally related issue, usually in collaboration with a community group. In the graduate program, the Collaborative Competitions are self-defined in small groups, sometimes with students from other programs. While these exercises vary from student to student and year to year, one of their primary functions is to provide experience with collaboration both within and beyond the walls of the Architecture Building. They also offer a significant opportunity to engage with local community issues. Past collaborative events have focused on student housing, local infrastructure projects, design for shade, and Ryerson campus issues.

Students work in teams for part of most studio semesters and in many courses. The Integration Studio, in which students approach building production holistically, extends and formalizes this teamwork, with students working in pairs throughout the second term to develop projects developed in the first term. Collaboration plays a key role throughout the graduate program, especially in the Studio in Collaborative Practice. This studio extends the collaboration outside of the school, exposing students to collaboration with the wider community.

PPC 5. Technical Knowledge

The Program must describe how it engages fundamental and emerging technical aspects of building construction.

Partly as a result of its strong history of technical education in architecture, the Ryerson program places significant emphasis not only on the development of technical skills related to building but also on the integration of technical issues with other architectural concepts. The department has the benefit of about 25% of its faculty members being from non-architectural (typically engineering) backgrounds who teach in technical and process-related courses. Others from an architectural background also focus on technical issues in their research. Students benefit from the availability of this expertise and are exposed to the technical research taking place within the department.

Throughout the first three years of the undergraduate program, students are required to complete a number of courses in technical subject areas related to the design of buildings, comprising a total of 10 credits. By the winter of second year, this technical material starts to be integrated into the design studio to form an

important component of design decision-making. The third year Integration Studios (ASC520 and 620) are linked to several courses including ASC522 Project Economics, ASC621 Tectonics and Materiality, ASC622 Documentation and the Construction Contract, and ASC623 Principles of Detailing, facilitating the exploration of technical and process aspects of studio projects to a considerable degree of detail.

Beyond this point in the program, technical knowledge forms a background to all design work, especially in the winter term M.Arch. studio (AR8103). The fourth year Building Science specialization courses—which many students enrolled in the Architecture option take as electives—provide further opportunities for exploring technical and environmental aspects of design. Similarly, the Project Management specialization courses allow students to explore process issues. The workshop and building science lab provide opportunities for practical exploration of technical ideas, and the expanding digital fabrication facilities allow for further development of these skills. Feedback from industry forming part of our recent program review suggests that our graduates are highly valued for their digital and technical skills.

PPC 6. Breadth of Education

The Program must demonstrate how it provides an opportunity for students to participate in general studies and elective studies in the pursuit of a broad understanding of human knowledge and a deeper study of topics within the discipline of architecture.

General Education

General studies in the arts and sciences are an important part of the education of an architect. In accordance with Ryerson's policy on the Tripartite Curriculum, which mandates each undergraduate program to be comprised of core courses, professionally-related courses, and electives, general studies are accommodated in the pre-professional curriculum in a number of ways.

The program provides opportunities for general education (outside of the discipline of architecture) through both required and elective courses. Required courses include ACS104 Ideas that Shape the World (offered by the Department of Arts and Contemporary Studies) and PCS107 The Natural Context (offered by the Department of Physics). In addition, undergraduate students are required to complete six credits of Liberal Studies electives, of which the first must be a writing-intensive English course.

Specialization and Electives

Year four of Ryerson's B.Arch.Sc. undergraduate program provides an opportunity to specialize in one of our three disciplinary areas: Architecture, Building Science, or Project Management. Students who select the Architecture specialization choose from a range of studios and courses, providing an opportunity to

dive deeper into their particular areas of interest. They may also take electives from courses offered by other departments. Students in the M.Arch. program take two elective courses and choose one of two offerings of AR8106 Seminar in Current Topics in Architectural Praxis in second year. At Ryerson, graduate students may choose electives offered by other departments subject to approval by the host department.

Open Electives
In December 2017, the university Senate approved a new undergraduate curriculum policy which introduces a transition from program-determined professionally-related elective tables to open electives for all undergraduate programs at Ryerson. Open electives, as defined in Policy 2, provide students with the opportunity, based on their career paths or their personal interests, to choose courses outside their core area or to gain greater depth and breadth within their core area. This policy will be gradually implemented over the next few years. The department is in the process of considering the implications of this for the B.Arch.Sc. program, but in principle it will allow greater diversity of electives for undergraduate students.

Student Performance Criteria (See Chart at End of Section)

Ryerson's professional program in architecture has been designed to ensure that graduates possess, to a high degree, the skills and knowledge set out in the CACB's 24 Student Performance Criteria (SPCs). These criteria are satisfied either by coursework completed in the B.Arch.Sc. or M.Arch. programs, or as an admission requirement to the Master of Architecture program. Below we discuss how the SPCs are addressed in the program under the following categories:

A. Design (eight SPCs)
B. Culture, communications, and critical thinking (five SPCs)
C. Technical knowledge (five SPCs)
D. Comprehensive design (one SPC)
E. Professional practice (five SPCs)

A. Design (Eight SPCs):
The program understands design to fundamentally involve the design of buildings and related structures and systems. Hence, the program addresses design through a series of studios intended to develop the basic competencies needed for the design of buildings, supported by courses that provide additional skills and knowledge.

A1. Design Theories, Precedents, and Methods
The student must demonstrate an ability to articulate a design process grounded in theory and practice, an understanding of design principles and methods, and

the critical analysis of architectural precedents.

Students develop their own design processes, coupled with an understanding of various theoretical design processes, through the sequence of studio courses supported by additional analysis and use of precedents introduced in ASC103 The Built Context: Concepts and Themes for Architecture, and developed over the series of Ideas, Technologies and Precedents courses (ASC206, 306 and 406). The program does not present or espouse a single unified design process; rather, students are confronted with multiple voices in the studio in order to develop their own positions and methods. This becomes especially clear in the M.Arch. studios, which are explicitly intended to help students uncover their own critical methods and perspectives.

A2. Design Skills
The student must demonstrate an ability to apply design theories, methods, and precedents to the conception, configuration, and design of buildings, spaces, building elements, and tectonic components.

The series of design studios in Phases II and III of the pre-professional undergraduate program (semesters two through six) are designed, with support from concurrent courses, to establish fundamental design skills. These skills are then developed and extended by design work carried out in Phase IV of the program, and by the series of studios in the graduate program.

A3. Design Tools
The student must demonstrate an ability to use the broad range of design tools available to the architectural discipline, including a range of techniques for two-dimensional and three-dimensional representation, computational design, modeling, simulation, and fabrication.

Ryerson's program does not offer formal instruction in design tools, other than occasional workshops delivered as part of a studio. However, over the course of the studio sequence in Phases I and II, various design tools are introduced and students develop a high level of skill in all of the techniques listed. The department provides a number of online tutorials to assist students in developing this competency, and in 2018 additional optional workshops were introduced to further support students in this area.

As part of the M.Arch. thesis project, students are required to demonstrate a high level of competency—mastery—in the use of the broad range of design tools.

A4. Program Analysis
The student must demonstrate an ability to analyze and respond to a complex

program for an architectural project that accounts for client and user needs, appropriate precedents, space and equipment requirements, the relevant laws, and site selection and design assessment criteria.

Although program preparation exercises are carried out in the Phase II design studios, particularly in ASC401 Design Studio III: Technical and Regulatory Issues, it is the first of the two Integration Studios (ASC520) that addresses this most robustly. Program is also discussed as a cultural issue in the first semester of the graduate program, and graduate students again go through a complex programming exercise in AR8103 Studio in Collaborative Practice.

A5. Site Context and Design
The student must demonstrate an ability to analyze and respond to local site characteristics, including urban, non-urban, and regulatory contexts; topography; ecological systems; climate; and building orientation in the development of an architectural design project.

While consideration of site plays a critical role in each of our design studios, it is singled out for special attention in three core courses: ASC201 Design Studio I: Program and Site; ASC403 Site Development and Planning; and PLX599 The Human World: Urban Structures and Processes. In the M.Arch. studios, students are expected to show a understanding and ability to work with the local context in their design projects.

A6. Urban Design
The student must demonstrate an ability to analyze and respond to the larger urban context where architecture is situated; its developmental patterning and spatial morphologies; the infrastructural, environmental, and ecological systems; to understand the regulatory instruments that govern this context; the broader implications of architectural design decisions on the evolution of cities; and the impact of urbanism on design.

The Ryerson program makes considerable use of the Toronto context to ensure a discussion of urban design issues, and works with the local community to address local perspectives and issues. While consideration of urban design plays a critical role in each of the design studios, in our program it is singled out for special attention in three core courses: ASC401 Design Studio III: Technical and Regulatory Issues; ASC520 Integration Studio I; and PLX599 The Human World: Urban Structures and Processes.

A7. Detail Design
The student must demonstrate an ability to assess, as an integral part of design, the appropriate combinations of materials, components, and assemblies in

the development of detailed architectural elements through drawing, modeling, and/or full-scale prototypes.

At Ryerson, we consider the ability to assess and develop details to be an integral part of design, requiring appropriate understanding of combinations of building materials, components, and assemblies, as well as design intentions. Detailing is introduced in ASC202 The Building Project and ASC401 Design Studio III: Technical and Regulatory Issues, and developed to a high level of competency in ASC620 Integration Studio II. This is supported by two courses in Phase III: ASC621 Tectonics and Materiality and ASC623 Principles of Detailing. Technical knowledge relevant to detailing is further supported by other technical courses.

A8. Design Documentation
The student must demonstrate an ability to document and present the outcome of a design project using the broad range of architectural media, including documentation for the purposes of construction, drawings, and specifications.

As contracts and documentation are critical not only for architects, but also for other parties in the construction process including project managers, an entire course dedicated to this appears in Phase III of the undergraduate curriculum: ASC622 Documentation and the Construction Contract. This course is taught in conjunction with the ASC620 Integration Studio II, allowing students to explore design documentation directly related to their studio projects.

B. Culture, Communications, and Critical Thinking (Five SPCs):

B1. Critical Thinking and Communication
The student must demonstrate an ability to raise clear and precise questions; record, assess, and comparatively evaluate information; synthesize research findings and test potential alternative outcomes against relevant criteria and standards; reach well-supported conclusions related to a specific project or assignment; and write, speak, and use visual media effectively to appropriately communicate on subject matter related to the architectural discipline within the profession and with the general public.

Critical thinking and communication skills are integral to the practice of architecture, and students are exposed to these important aspects of their education from the outset of the program. In the first semester, the Communications Studio requires them to develop a strong vocabulary, both visual and verbal, related to the analysis and creation of architecture, and a series of lecture courses exposes them to the critical understanding of architecture and its role in society. These themes are developed throughout the architecture

program, reiterated repeatedly through to the completion of the Master's thesis project.

Students in the program are repeatedly required to carry out research in the built environment, from the preparation of measured site drawings in ASC201 Design Studio I: Program and Site to the production of a significant body of research related to the Master's thesis. The data collection is never understood as an end in itself; rather, students are required to collate, cross-reference, analyze, and interpret the data. Methods of data collection and analysis developed in the undergraduate program are significantly expanded in the graduate program, which addresses research as a fundamental component of critical practice.

These skills are developed incrementally by means of essays and presentations, which are requirements in a range of courses, but which are a particular focus of ASC103 The Built Context: Concepts and Themes for Architecture, and the series of Ideas, Technologies and Precedents courses (ASC206, 306 and 406). To provide students with a strong foundation for expression, an English literature course with a strong focus on writing is required as a Liberal Studies elective in the first semester. This is further supported in the first semester by ACS104 Ideas that Shape the World, a course in Arts and Contemporary Studies developed exclusively for students in the Department of Architectural Science. Students make oral presentations in courses and in studios, to their peers, to instructors, and to critics from outside the program. Graphic skills are developed primarily in the studios; the Communications Studio, offered in the first semester, introduces students to graphic techniques, both manual and computerized, as well as three-dimensional modeling techniques. These skills are further developed through studio projects and assignments in other courses.

The recent introduction of two new courses in the M.Arch. program, AR8109 Contemporary Architectural Theory and AR8110 Thesis and Design Research, provide graduate students with additional opportunities to critically review contemporary issues and develop design research skills.

B2. Architectural History
The student must have an understanding of the history of architecture and urban design in regard to cultural, political, ecological, and technological factors that have influenced their development.

A strong overall foundation in architectural history, understood in its cultural, political, ecological, and technological contexts, is developed through the series of Ideas, Technologies and Precedents courses (ASC206, 306, and 406) in Phase II of the program. These courses incorporate non-western, national, and regional traditions, as does ASC200 Sustainable Practices. The urbanism course PLX599 The Human World addresses the historical context at the urban scale. This disciplinary knowledge is further expanded, reconsidered, and critically addressed in later years, in elective courses such as ASC733 Canadian Architecture since 1945, and particularly in the M.Arch. program.

B3. Architectural Theory
The student must have an understanding of conceptual and theoretical frameworks and how they have shaped architecture and urban design.

Architectural theory is developed at various stages of the program, beginning in the first semester with ASC103 The Built Context: Concepts and Themes for Architecture, in Phase II via the series of Ideas, Technologies and Precedents courses (ASC206, 306 and 406), and by ASC621 Tectonics and Materiality in Phase III. In Phase IV, students are exposed to multiple theoretical frameworks through their chosen studios and elective courses, and we are developing proposals to add two fourth year core courses in contemporary theory—one focusing on theorizing technology in architecture and the other on the architect in society. In the M.Arch. program, a new course, AR8109 Contemporary Architectural Theory, has been added this year to develop a higher level of theoretical competency. An ongoing program of travel to the Venice and Chicago Biennales allows students to engage in current theoretical discourses. In the M.Arch. thesis, students are required to demonstrate an understanding of the theoretical context for their work.

B4. Cultural Diversity and Global Perspectives
The student must have an understanding of the diverse needs, values, behavioural norms, and social/spatial patterns that characterize different global cultures and individuals and the implications of diversity on the societal roles and responsibilities of architects.

Ryerson sits at the centre of the one of the most ethnically diverse cities in the world, and this diversity is reflected in our student population and to a large extent in the faculty complement of our department, and the university as a whole. The diverse cultural backgrounds of our students lead directly to a discussion of diversity in a number of courses in the program and often figure prominently in studio projects. In addition, the multiple questions posed by globalized economies and geopolitical developments form a background for many discussions, especially in the M.Arch. program.

Global perspectives are also developed, albeit not for all students, by a robust collection of mobility offerings, including study tours, studios abroad, and student exchanges. This area of the program has been developed significantly since the last CACB visit.

B5. Ecological Systems
The student must have an understanding of the broader ecologies that inform the design of buildings and their systems and of the interactions among these ecologies and design decisions.

Awareness of the ecological context is recognized at Ryerson as an essential component of architectural design. This includes the ability to apply the principles of sustainable design to produce projects that respect natural contexts, conserve natural and built resources, provide healthy environments for occupants/users, and reduce the impacts of building construction and operations on future generations. This is addressed specifically in courses such as ASC200 Sustainable Practices and ASC403 Site Development & Planning. This awareness is reinforced in studios via the expectation that student design projects show an understanding of and appropriate responses to the ecological context in which they operate.

C. Technical Knowledge (Five SPCs):

Ryerson's undergraduate pre-professional program in Architectural Science is particularly strong in the technical areas of student competency, and develops these areas with a strong focus on their relationship to design. The program is designed such that students have satisfied almost all of the technical Student Performance Criteria by the end of their undergraduate, pre-professional education. The presence of Building Science and Project Management traditions within the department ensures an ongoing discussion of technical issues throughout the program. A graduate program in Building Science with considerable research activity also bolsters the level of technical discussion in the department.

C1. Regulatory Systems

The student must have an understanding of the applicable building codes, regulations, and standards for a given building and site, including universal design standards and the principles that inform the design and selection of life-safety systems.

An understanding of building code compliance is developed in general terms in all design studio projects. However, this area of study is stressed in ASC401 Design Studio III: Technical and Regulatory Issues, ASC520 Integration Studio I: Feasibility Study, and ASC620 Integration Studio II: Comprehensive Building Project. Specific technical courses, such as the structures and HVAC courses (ASC203, 303 and 402, and CVL407), address regulatory issues particular to their subject areas.

C2. Materials

The student must have an understanding of the basic principles used in the appropriate selection and application of architectural materials as it relates to fundamental performance, aesthetics, durability, energy, resources, and environmental impact.

Materials and materiality are critical to the success of a work of architecture. This area of study is important in design studios, and students gradually build expertise and integrate more sophisticated material proposals as their architectural abilities develop. Students are asked to conduct a material study in most of their studio

projects. In addition, materials and materiality are directly targeted in five courses:

Phase I:	ASC102 The Built World: Concepts and Themes for Architecture
Phase II:	ASC202 The Building Project: Components
	ASC203 Structures I: Concepts and Systems
	ASC302 Envelope Systems
	ASC303 Structures II: Materiality and Detailing
Phase III:	ASC621 Tectonics and Materiality

C3. Structural Systems
The student must have an understanding of the principles of structural behavior in withstanding gravitational, seismic, and lateral forces, including the selection and application of appropriate structural systems.

This area of knowledge is developed through a series of three dedicated courses in Phase II of the program (ASC203, ASC303 and CVL407). In addition, in the first term of the program students take a physics course (PCS107 The Natural Context) to establish a fundamental understanding of the principles of physics relevant to Architectural Science.

C4. Envelope Systems
The student must have an understanding of the basic principles used in the design of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, durability, energy, material resources, and environmental impact.

The department has considerable strength in building envelope issues which are explored and researched by faculty with building science expertise. This is seen as an important area of knowledge for students. An understanding of the basic principles of envelope design is developed through two courses in Phase II of the program, ASC202 The Building Project and ASC302 Envelope Systems. The principles are then further developed in ASC401 Design Studio III and ASC620 Integration Studio II. In the fourth year students can choose to further explore this area in courses offered in the Building Science specialization.

C5. Environmental Systems
The student must have an understanding of the basic principles that inform the design of passive and active environmental modification and building service systems, the issues involved in the coordination of these systems in a building, energy use and appropriate tools for performance assessment, and the codes and

regulations that govern their application in buildings.
An understanding of the basic principles of passive and active environmental system design is principally developed through two courses in Phase II of the program, ASC200 Sustainable Practices and ASC402 Bodily Comfort Systems. The principles are then applied to design projects in ASC401 Design Studio III and ASC620 Integration Studio II.

D: Comprehensive Design (One SPC):

D1. Comprehensive Design
The student must demonstrate an ability to produce an architectural design based on a concept, a building program, and a site which broadly integrates contextual factors, structural and environmental systems, building envelopes and assemblies, regulatory requirements, and environmental stewardship.

Comprehensive design occupies a central position within our program, with the two Integration Studios (ASC520 and ASC620) offered in the third year of the undergraduate program serving as the linchpin in this area. In these two studios, students explore building design to a significant level of detail and with integration of a variety of technical considerations. Supported by a series of co-requisite courses, these studios allow students to apply knowledge developed in their foundational education to a complex building project resolved to a high degree of detail, with emphasis on the integration of building envelope, structure, and building services into the architectural project and including cost and energy efficiency analysis. This is reinforced in the graduate program, where students are expected to continue to develop these integrative skills in the execution of comprehensive architectural solutions.

E: Professional Practice (Five SPCs):

Ryerson's professional program in architecture focuses on the study of architectural practice and of the societal role of the architect. In the pre-professional undergraduate program, students are familiarized with these areas of study beginning in the first semester (ASC102 The Built World). By the time students enter the graduate program, they have developed a sophisticated level of understanding of the issues involved. These professional issues are then further developed in a number of undergraduate courses (notably ASC304 The Construction Project) and become core subject matter for AR8102 Seminar in Critical Practice and AR8104 Seminar in Contemporary and Future Practice in the M.Arch. program. The program benefits from project management expertise in the department, which constitutes one of the specializations in the fourth year.

E1. The Architectural Profession
The student must have an understanding of the organization of the profession,

the Architects Act(s) and its regulations, the role of regulatory bodies, the paths to licensure including internship, and the reciprocal rights and responsibilities of interns and employers.

These issues are introduced in ASC102 The Built World and reinforced in ASC304 The Construction Project, but find their most significant development in the M.Arch. program, in AR8104 Seminar in Contemporary and Future Practice. A new fourth year course focusing on the architect in society has been proposed to further explore the future role of the architect.

E2. Ethical and Legal Responsibilities
The student must have an understanding of the ethical issues involved in the formation of professional judgment; the architect's legal responsibility under the laws, codes, regulations, and contracts common to the practice of architecture; intellectual property rights; and the role of advocacy in relation to environmental, social, and cultural issues.

The ethical and legal issues related to the design of the built environment are a common theme throughout the practice-related courses in the program (including ASC102 The Built World, and reinforced in ASC522 Project Economics), but are discussed in relation to architectural practice in AR8102 Seminar in Critical Practice.

E3. Modes of Practice
The student must have an understanding of the basic principles and types of practice organization, including financial management, business planning, entrepreneurship, marketing, negotiation, project management, and risk mitigation, as well as an understanding of trends that affect the practice.

Ryerson students develop a strong understanding of the organization of architectural practice, including issues such as practice organization, business planning, marketing, and negotiation, as well as an understanding of trends that affect practice. These issues are introduced in ASC102 The Built World and reinforced in ASC304 The Construction Project and ASC522 Project Economics, but find their most significant development in the M.Arch. program, in AR8104 Seminar in Contemporary and Future Practice. Furthermore, the project management specialization courses in fourth year explore some of these issues in some detail, and these courses are available to all students as electives.

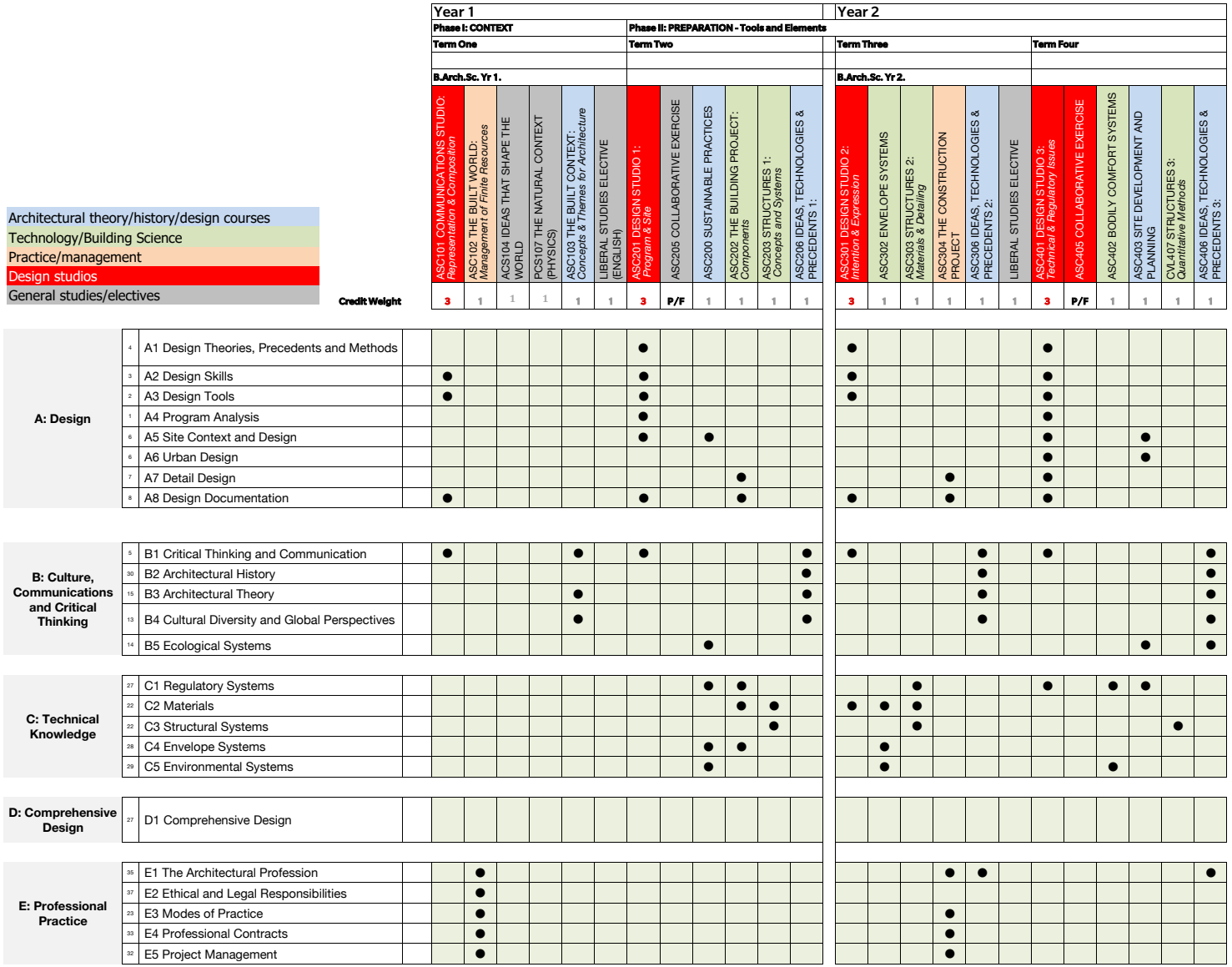
E4. Professional Contracts
The student must have an understanding of the various contracts common to the

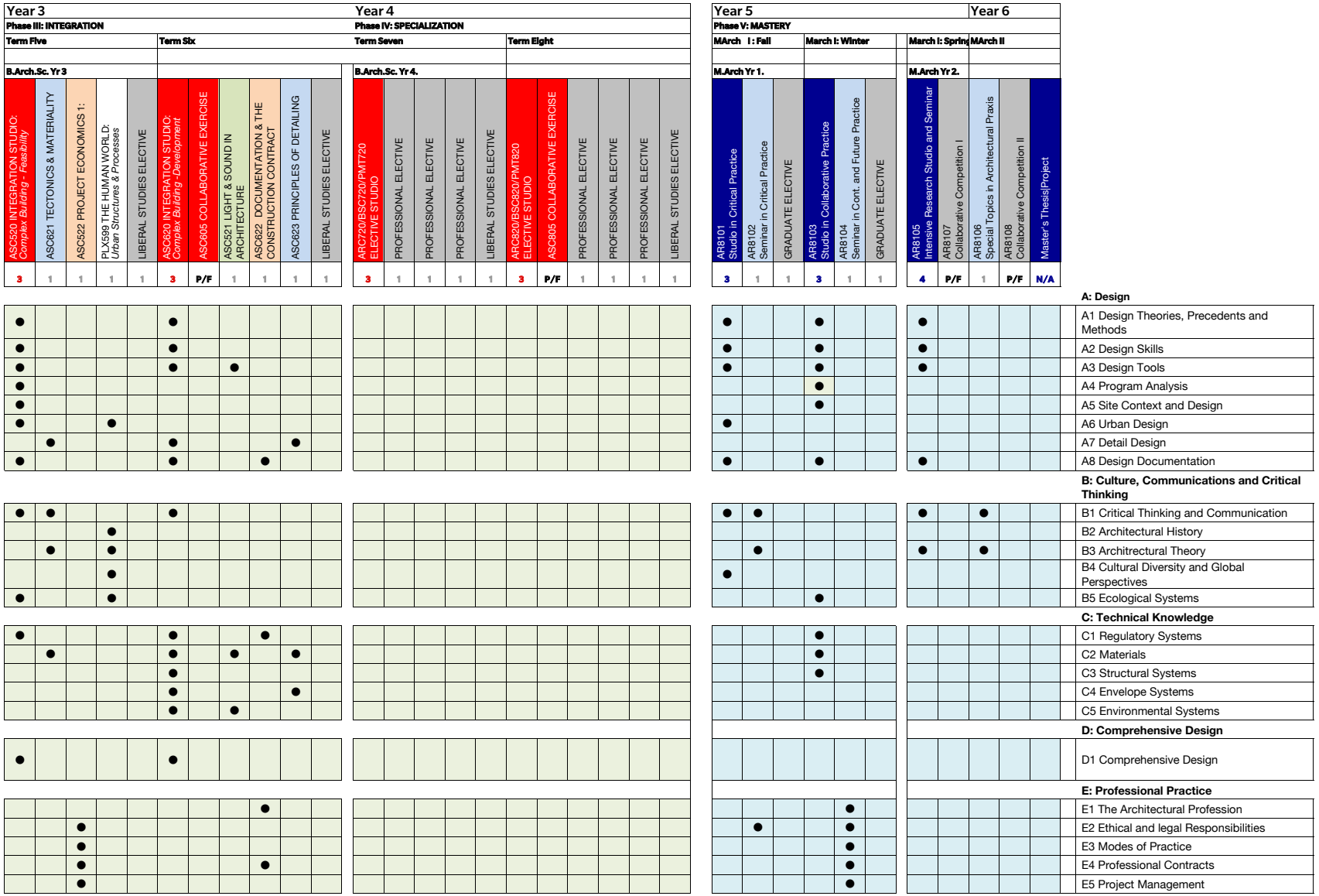
practice of architecture.

Ryerson students are expected to develop a good grasp of contractual issues in the construction industry, as preparing students for practice is one of our program's strengths. The study of contracts is introduced at the beginning of the program in ASC102 The Built World, and reinforced in ASC304 The Construction Project, ASC522 Project Economics, and ASC622 Documentation and the Construction Contract. Within the M.Arch. program, contracts are revisited in AR8104 Seminar in Contemporary and Future Practice.

E5. Project Management
The student must have an understanding of the relationships among key stakeholders in the design process; the methods for selecting consultants and assembling teams; building economics and cost control strategies; the development of work plans and project schedules; and project delivery methods.

Ryerson students develop a strong understanding of management in the construction industry and of architectural practice, including the basic principles of collaboration, design team and construction team relationships, financial management, negotiation, project management, and risk mitigation. Project Management is introduced at the beginning of the program in ASC102 The Built World, and reinforced in ASC304 The Construction Project and ASC522 Project Economics. Students have the opportunity to further explore project management themes in the fourth year either as electives or as a discrete area of specialization.


Year 1
Year 2
Phase I: CONTEXT
Phase II: PREPARATION - Tools and Elements
Term One
Term Two
Term Three
Term Four
B.Arch.Sc. Yr 1.
B.Arch.Sc. Yr 2.
Architectural theory/history/design courses
Technology/Building Science
Practice/management
Design studios
General studies/electives
Credit Weight
ASC101 COMMUNICATIONS STUDIO: Representation & Composition
ASC102 THE BUILT WORLD: Management of Finite Resources
ACS104 IDEAS THAT SHAPE THE WORLD
PCS107 THE NATURAL CONTEXT (PHYSICS)
ASC103 THE BUILT CONTEXT: Concepts & Themes for Architecture
LIBERAL STUDIES ELECTIVE (ENGLISH)
ASC201 DESIGN STUDIO 1 : Program & Site
ASC205 COLLABORATIVE EXERCISE
ASC200 SUSTAINABLE PRACTICES
ASC202 THE BUILDING PROJECT: Components
ASC203 STRUCTURES 1: Concepts and Systems
ASC206 IDEAS, TECHNOLOGIES & PRECEDENTS 1:
ASC301 DESIGN STUDIO 2: Intention & Expression
ASC302 ENVELOPE SYSTEMS
ASC303 STRUCTURES 2: Materials & Detailing
ASC304 THE CONSTRUCTION PROJECT
ASC306 IDEAS, TECHNOLOGIES & PRECEDENTS 2:
LIBERAL STUDIES ELECTIVE
ASC401 DESIGN STUDIO 3: Technical & Regulatory Issues
ASC405 COLLABORATIVE EXERCISE
ASC402 BODILY COMFORT SYSTEMS
ASC403 SITE DEVELOPMENT AND PLANNING
CVL407 STRUCTURES 3: Quantitative Methods
ASC406 IDEAS, TECHNOLOGIES & PRECEDENTS 3:
3 1 1 1 1 1 3 P/F 1 1 1 1 3 1 1 1 1 1 3 P/F 1 1 1 1
A: Design
4 A1 Design Theories, Precedents and Methods
3 A2 Design Skills
2 A3 Design Tools
1 A4 Program Analysis
6 A5 Site Context and Design
6 A6 Urban Design
7 A7 Detail Design
8 A8 Design Documentation
B: Culture, Communications and Critical Thinking
5 B1 Critical Thinking and Communication
30 B2 Architectural History
15 B3 Architectural Theory
13 B4 Cultural Diversity and Global Perspectives
14 B5 Ecological Systems
C: Technical Knowledge
27 C1 Regulatory Systems
22 C2 Materials
22 C3 Structural Systems
28 C4 Envelope Systems
29 C5 Environmental Systems
D: Comprehensive Design
27 D1 Comprehensive Design
E: Professional Practice
35 E1 The Architectural Profession
37 E2 Ethical and Legal Responsibilities
23 E3 Modes of Practice
33 E4 Professional Contracts
32 E5 Project Management


Year 3
Year 4
Year 5
Year 6
Phase III: INTEGRATION
Phase IV: SPECIALIZATION
Phase V: MASTERY
Term Five
Term Six
Term Seven
Term Eight
MArch I : Fall
March I: Winter
March I: Spring
MArch II
B.Arch.Sc. Yr 3
B.Arch.Sc. Yr 4.
M.Arch Yr 1.
M.Arch Yr 2.
ASC520 INTEGRATION STUDIO: Complex Building - Feasibility
ASC621 TECTONICS & MATERIALITY
ASC522 PROJECT ECONOMICS 1:
PLX599 THE HUMAN WORLD: Urban Structures & Processes
LIBERAL STUDIES ELECTIVE
ASC620 INTEGRATION STUDIO: Complex Building -Development
ASC605 COLLABORATIVE EXERCISE
ASC521 LIGHT & SOUND IN ARCHITECTURE
ASC622 DOCUMENTATION & THE CONSTRUCTION CONTRACT
ASC623 PRINCIPLES OF DETAILING
LIBERAL STUDIES ELECTIVE
ARC720/BSC720/PMT720 ELECTIVE STUDIO
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
LIBERAL STUDIES ELECTIVE
ARC820/BSC820/PMT820 ELECTIVE STUDIO
ASC805 COLLABORATIVE EXERCISE
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
LIBERAL STUDIES ELECTIVE
AR8101 Studio in Critical Practice
AR8102 Seminar in Critical Practice
GRADUATE ELECTIVE
AR8103 Studio in Collaborative Practice
AR8104 Seminar in Cont. and Future Practice
GRADUATE ELECTIVE
AR8105 Intensive Research Studio and Seminar
AR8107 Collaborative Competition I
AR8106 Special Topics in Architectural Praxis
AR8108 Collaborative Competition II
Master's Thesis|Project
3 1 1 1 1 3 P/F 1 1 1 1 3 1 1 1 1 3 P/F 1 1 1 1 3 1 1 3 1 1 4 P/F 1 P/F N/A
A: Design
A1 Design Theories, Precedents and Methods
A2 Design Skills
A3 Design Tools
A4 Program Analysis
A5 Site Context and Design
A6 Urban Design
A7 Detail Design
A8 Design Documentation
B: Culture, Communications and Critical Thinking
B1 Critical Thinking and Communication
B2 Architectural History
B3 Architrectural Theory
B4 Cultural Diversity and Global Perspectives
B5 Ecological Systems
C: Technical Knowledge
C1 Regulatory Systems
C2 Materials
C3 Structural Systems
C4 Envelope Systems
C5 Environmental Systems
D: Comprehensive Design
D1 Comprehensive Design
E: Professional Practice
E1 The Architectural Profession
E2 Ethical and legal Responsibilities
E3 Modes of Practice
E4 Professional Contracts
E5 Project Management

4.1.1 History, Description, and Mission of the Institution

The appendix of the APR must provide a brief history and description of the institution in which the Program exists, as well as the institution's current mission statement and the date of its adoption or last revision. This may be provided as a web link.

In 2018 Ryerson University celebrated 25 years as a university and 70 years as an academic institution. Since its founding as an Institute of Technology in 1948, Ryerson has been mandated to serve its larger community through the provision of applied education, a focus that we are proud to maintain. *Mente et Artificio*—with mind and skill—is the motto on the university crest, signifying the dual goals of educating students while also training them for specific careers. Ryerson is located in the very heart of Canada's largest and most culturally diverse city, less than a block from the corner of Yonge and Dundas Streets, with a campus that is embedded in the urban fabric.

A Brief History of Ryerson University

The Ryerson Institute of Technology was founded in 1948 as an experiment in postsecondary education. Established primarily as a training centre for the growing workforce of a booming post-war economy, the Institute was a novel alternative to the traditional apprenticeship system of technical learning. When it moved into the century-old buildings of the Toronto Normal School in historic St. James Square, the Institute followed in the footsteps of its namesake, Egerton Ryerson, the architect of Ontario's education system. It was on this site that Ryerson established the province's first teacher-training facility, as well as a museum, an art school, and an agricultural laboratory. These endeavours influenced cultural and scientific developments in Ontario for years to come and enhanced the Square's reputation as the province's cradle of education.

In its early years, Ryerson offered short trades-oriented programs geared to prospective job markets, and as such served an important role in preparing young veterans of the Second World War to re-enter civilian life. Under the guidance of its founding principal, Howard Kerr, it matured into an institution with a curriculum that increasingly emphasized management skills and the humanities, hallmarks which would later distinguish Ryerson from other vocational institutions. In the late 1950s, a multi-million dollar modernization program was launched to accommodate the Institute's rapid growth. Ryerson's expansion led to further changes in 1963-1964, when a provincial bill provided for the appointment of a board of governors, changed the Institute's name to Ryerson Polytechnical Institute and effectively gave the 15-year-old institution a mandate for reorganization and self-determination.

Several years later, wide-ranging recommendations were introduced in the areas of physical resources and facilities, academic policies and procedures, and communications. These resulted in three important developments: a building program incorporating new facilities for classrooms, administrative and student services, learning resources and technology; a more open and experimental approach in the classroom; and, most importantly, the authority to grant degrees in 1971.

Despite the financial difficulties of post-secondary educational institutions, especially in the early to mid-1970s, the capacity to grant degrees imbued Ryerson with a renewed sense of purpose and direction, and the

institution continued to grow. The implementation of the Ryerson Community Plan and an updated Ryerson Act completed a decade of frenetic activity.

In the 1980s, Ryerson strived to continue its active partnership with business, industry, and government in areas of educational concern ranging from social services to high technology. Growth and progress were emphasized through the construction and renovation of buildings and the addition of state-of-the-art equipment. Important initiatives such as the Centre for Advanced Technology Education, the Academic Computing Information Centre, the Office of Research and Innovation, and the Rogers Communications Centre, as well as the accreditation of Ryerson engineering programs, paved the way for what is perhaps Ryerson's greatest milestone as a post-secondary educational institution.

Building on this momentum, in 1993 a bill was passed to grant Ryerson full university status and the commensurate funding necessary to conduct research and establish graduate programs, and the institute was rechristened Ryerson Polytechnic University. Following several years of economic hardship in Ontario, a Vision Task Force was established to identify and focus on areas of concern and improvement and to provide the university with clear goals for the future. By 1998, the year of its 50th anniversary, Ryerson was poised to face the challenges of the new millennium.

In June 2002, in order to reflect Ryerson's emergence as a full-fledged university with a mandate to grant graduate degrees and engage in advanced research, the new name of Ryerson University was approved by the provincial government. In the first decade of the 21st century, Ryerson continued to undergo significant changes in both its curriculum and its infrastructure. Graduate programs and research centres in a variety of disciplines were established and new structures and additions – including the Ronald D. Besse Information and Learning Commons, the G. Raymond Chang School of Continuing Education, the George Vari Engineering and Computing Centre and the Ted Rogers School of Business Management – enhanced the Ryerson Campus and helped to accommodate a quickly growing student population.

Although Ryerson continues to evolve and grow, its mission remains the same today as it was in 1948: to provide leadership in career-focused education and to fulfill contemporary societal needs.

Ryerson Today

Ryerson University has evolved into a major university, with some 36,000 full-time undergraduate students, more than 2,100 master's students, 500 doctoral students, and over 60,000 annual enrolments in what has become Canada's leading institution for continuing education, the G. Raymond Chang School of Continuing Education. Ryerson is now recognized as a leading institution for research and innovation, being ranked the top institution for undergraduate research in Canada in 2014. In the past decade, the university has launched

various research centres and institutes, as well as Zone Learning, a system of incubators for students and business professionals interested in entrepreneurship.

Ryerson offers over 80 degree programs for full-time students, embedded in six faculties:

- Faculty of Arts
- Faculty of Business
- Faculty of Communication & Design
- Faculty of Community Services
- Faculty of Engineering and Architectural Science
- Faculty of Science

Many of these programs are both innovative in scope and unique among Canadian universities, including Disability Studies, Early Childhood Education, Fashion, Graphic Communications Management, Health Services Management, Image Arts, International Economics, and Radio and Television Arts.

Graduate programs at the Master and/or Doctoral level are now offered in 34 different disciplines. This rapid growth in graduate education is seen as one component of the equally rapid maturation of the institution and its growing scholarly, research and creative (SRC) activities.

The university is also growing rapidly in physical terms. Its location at the heart of downtown Toronto has inspired numerous strategic partnerships with surrounding businesses and spaces. The most significant recent development is the construction of five new Ryerson buildings: the Mattamy Athletic Centre at Toronto's historic Maple Leaf Gardens, the award-winning Student Learning Centre on Yonge Street, the Ryerson Image Centre on the pedestrianized Gould Street, the Daphne Cockwell Health Sciences Complex on Church Street, and the Centre for Urban Innovation (a redevelopment of the Ontario College of Pharmacy building) on Gerrard Street, these last two currently under construction. Nevertheless, the institution is short of space and expansion is particularly challenging given the downtown location of the campus. In April 2018, a second campus in Brampton was announced. The university plans to begin operating there with students, faculty, etc. in September 2020.

Truth and Reconciliation at Ryerson

In November 2015, the President and former Provost, Mohamed Lachemi, launched a community-wide consultation on the response to the Truth and Reconciliation Commission's final report. The report, entitled *Truth and Reconciliation at Ryerson: Building a Foundation for Generations to Come*, was presented to the president and provost in a community celebration in January 2018. The celebration included the unveiling of

a plaque to accompany the statue of Egerton Ryerson as a reminder to the university's commitment to truth and reconciliation in light of our namesake's connection to residential schools.

Ryerson's student population is highly diverse in cultural and ethnic terms. The majority of students come from the greater Toronto area, and they represent the broad diversity of the region's population; in addition, currently some 1,250 international students study at Ryerson. Although recent developments have significantly increased student residential spaces on campus, many students will continue to be commuters, living with family, often in the outer areas of the city.

Ryerson University Mission

Ryerson's mission statement was adopted by Ryerson's Board of Governors on October 4, 1994.

> The special mission of Ryerson University is the advancement of applied knowledge and research to address societal need, and the provision of programs of study that provide a balance between theory and application and that prepare students for careers in professional and quasi-professional fields.
>
> As a leading centre for applied education, Ryerson is recognized for the excellence of its teaching, the relevance of its curriculum, the success of its students in achieving their academic and career objectives, the quality of its scholarship, research and creative activity, and its commitment to accessibility, lifelong learning, and involvement in the broader community.
>
> The Strategic Mandate Agreement between the University and the Province sets out Ryerson's vision:
>
> Ryerson University will be a comprehensive innovation university, recognized as a national leader in high-quality professional and career-related bachelor, masters, and doctoral programs, and relevant research. It will be a global leader in interdisciplinary, entrepreneurial zone learning. Ryerson's students, graduates, and faculty will contribute significantly to Ontario's and Canada's economic, social, and cultural well-being. Ryerson will expand its strong foundation of distinctive career-related academic programs and related scholarly, research, and creative activities, producing graduates who enable change. Ryerson will enhance its leadership in experiential learning, adult learning, and transfer pathways. As a City Builder, Ryerson will build partnerships that foster social and cultural innovation, and economic development.

The university's current five-year academic plan, Our Time to Lead (2014 – 2019), outlines the university's vision to become Canada's leading comprehensive innovation university, recognized for its high quality, career-related programs and relevant SRC activities, where students, graduates, and faculty contribute significantly to Ontario's and Canada's social, cultural, and economic well-being (see section 1-2). One of the values in this plan focuses on respect for Aboriginal perspectives. The university aims to continue to cultivate and develop relationships with Aboriginal communities, both within and outside the university. The campus environment must embrace Aboriginal learners, faculty, and staff, and support Aboriginal people in taking a leading role in the advancement of Aboriginal education at Ryerson.

4.1.2 Program History

The appendix of the APR must provide a brief program history.

Ryerson University's Department of Architectural Science has a long history of offering education for the Architecture, Engineering and Construction (AEC) Industry, and has championed the teaching of architectural science for over 60 years. Building-related education at Ryerson University can be traced to the university's founding days in 1948 when the School of Architectural Draughting was one of Ryerson's first programs. It was originally created to provide returning servicemen and women with a two-year diploma preparing them for careers as architectural assistants. In 1951, it evolved into the School of Architectural Technology and introduced a three-year diploma with third year options in architecture or building technology. In 1973, Ryerson Polytechnic Institute became a degree-granting institution, and the Architectural Science program introduced a four-year degree with two foundation years and two years of specialized study in Architecture, Building Science, or Project Management. This development paralleled Ryerson's general expansion of programs from two- and three-year diplomas to four-year Bachelor of Technology and Bachelor of Applied Arts degrees. Ryerson achieved full university status in 1993 with a renewed emphasis on research and the introduction of graduate programs.

While Ryerson offers education that is equivalent in quality to that of a traditional university, it has consistently maintained the distinct focus on the immediate professional relevance of its education. This is what makes Ryerson unique, has been the source of its success, and in marketing terms, continues to provide it with a niche. Professional relevance has been maintained through curriculum, faculty practitioners, contract lecturers in ongoing practice, industry-responsive research, and advisory committees.

Students graduating from the former four-year Bachelor of Technology and the current Bachelor of Architectural Science programs have gone on to continue their studies in professionally accredited graduate programs in architecture across Canada and the United States, and overseas.

Fifteen years after Ryerson achieved full university status, the Department of Architectural Science reconfigured the undergraduate Bachelor of Architectural Science degree to be interdependent with the new Master of Architecture degree, thereby creating its own professionally accredited program in architecture. The M.Arch. program admitted its inaugural class in September 2007 and was supported by the hiring of additional faculty and the renovation of facilities. An additional graduate program in Building Science was launched in September 2008 at the master's level, which will soon be followed by a PhD program.

The professional architecture program achieved candidacy status from the CACB in the Spring of 2008 and full accreditation in the Spring of 2010. The program had a successful CACB maintenance visit in 2013, and was granted an unconditional six-year term of accreditation. Subsequent to that visit, in 2014 the program added the Architectural Science Co-operative Education Internship (ASCEI) program, initially with the equivalent of one studio section (15 to 16 students, between the third and fourth years of the undergraduate program), which was increased to two sections (32 students) in 2018. The program has also increased its international reach via expanded mobility opportunities, including establishing an annual

graduate study trip to the Venice and Chicago Architecture Biennales in alternate years, by increasing the number of undergraduate students travelling for one term on exchange at other universities (with reciprocal participation by foreign students coming to Ryerson), and by establishing a research partnership, including the participation of graduate students, with the Bergen School of Architecture in Norway (see Section 3.4 for details).

4.2 Student Progress Evaluation

The appendix of the APR must include:

- the procedures for evaluating student transfer credit and advanced placement; and
- the procedures for evaluating student progress, including the institutional and Program policies and standards for evaluation, advancement, graduation, appeal, and remedial measures.

Bachelor of Architectural Science Program

Advanced Standing and Transfer Credits (see also 3.10)

Ryerson University has clear policies on advanced standing and transfer credits, set out in the Full- and Part-Time Undergraduate Calendar. Because of its unique program structure, granting advanced standing into the B.Arch.Sc. program as it is defined by the university is impractical. Students transferring from other CACB- or NAAB- accredited programs or their equivalent from other countries are assessed on a case-by-case basis and will typically receive transfer credits for courses which have a direct correspondence between the required Ryerson course and a course taken at another institution.

Academic Standing

In order to progress in the program, students must maintain an Academic Standing of Clear, Conditional, or Probationary. These Academic Standings are defined in the Full- and Part-Time Undergraduate Calendar. In addition, students must receive a passing grade in studio to continue in the program.

Student Assessment Methods

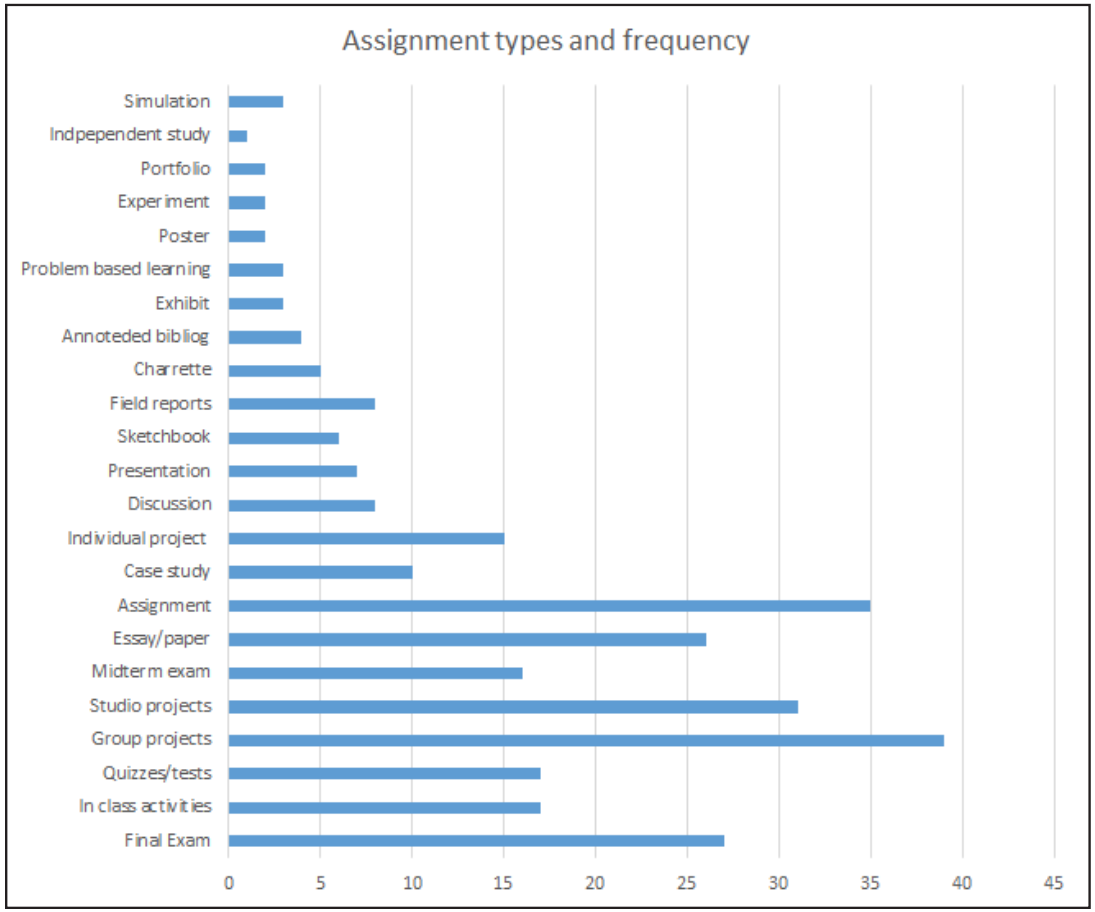
Each course uses a range of assessment methods commensurate with the learning objectives and course curriculum. Assessment in studios typically operates on two levels: instructor assessment of student progress, based on day-to-day observations of student work in the studio; and assessment of outcomes, which typically take the form of design projects submitted in digital and/or hard copy form and presented to design juries that typically include teaching faculty and guest critics drawn from the department, other institutions and the professional community. Only the teaching faculty are directly involved in formal assessment of the student work (i.e. in determining grades), but input from guest critics can provide important insights into the strengths and weaknesses of student submissions.

Depending on the nature of the studio, the number and type of assessments can vary. Typically, design projects are formally evaluated at two or more stages of development, so that students are provided with quantitative assessment feedback at various stages of the semester. Assessment in core courses varies widely depending on the nature of the material being taught and the type of assignment that best supports the learning objectives of each course. Courses in architectural history and theory adopt the general framework of liberal arts courses, with assessments taking the form of research papers, tests and exams, and, in some cases, preparation of visual materials (e.g. posters).

Courses addressing content of a more technical nature – structures, building envelopes, lighting and acoustics, etc. – provide students with both theoretical background knowledge and practical skills related

to technical issues in architectural science and construction. These courses typically require a significant amount of calculation and practical application. Assessments may take the form of assignments, quizzes, tests and exams requiring both a conceptual (qualitative) understanding of the material, and calculation to determine quantitative results. Assessments in courses addressing material related to professional and management practices often involve team exercises designed to help students develop collaborative skills as part of the course pedagogy.

Figure 4.2.1
Frequency of types of assignments occuring in the B.Arch.Sc. program.



Assessments in elective courses vary widely depending on topic. Courses that are more technical in nature may involve quantitative analysis including calculation, and may use tests or exams as part of the assessment strategy. More typically, elective courses involve research papers (for courses related to architectural history and theory) and design exercises (for courses that address specialised area of design, such as heritage conservation, or the use of glass in architecture).

The Collaborative Exercise is assessed on a pass/fail basis. Students are assessed on the basis of their participation and contribution to the team exercise.

Grading

In the B.Arch.Sc program studios and courses are assessed using the university undergraduate grading scale, i.e. the minimum passing grade is 50% (D-). The department adheres to university policy with regard to grading and other issues related to student assessment and promotion. The range of letter grades relates to a series of verbal descriptors, i.e. F = Unsatisfactory; D = Marginal; C = Satisfactory; B = Good; A = Excellent. Many of the evaluation forms used in the department to provide students with feedback make explicit reference to these categories.

Progress Reviews

Student progress is reviewed at the end of every semester according to university-wide processes. Students with Conditional or Probationary standing are given appropriate counselling by the Assistant Chair, Student Affairs. Student success is enabled through a range of supports within the department, the Faculty of Engineering and Architectural Science, and at the university level (see 3.6 Human Resources Development). In addition, several performance thresholds have been established at the completion of each phase of the pre-professional program, in order to ensure ongoing progress through the four phases.

Phase I: Performance Review

The previous plan of individual interviews has not proved to be logistically feasible; the Phase I faculty are currently developing a plan for providing students with feedback at the conclusion of their first semester of study and will implement the plan in this academic cycle.

Phase II: Block Promotion

Students may not progress to Phase III until they have achieved a clear standing in an all Phase II courses.

Phase III: Self-Selection and Guidance

Access to the Phase IV Specializations has been quite successful on a self-selection basis. Informal consultation with faculty members teaching in the Phase IV Specializations, and particularly in Phase III Integration Studios supports individual selections, whether based upon a desire to investigate a specialized aspect of the industry before continuing on to the Master of Architecture program, or to follow a particular career path. Infrequently, students who have underperformed in a particular aspect of the curriculum may be denied access to that specialization and instead guided to a course of study which may best support their individual academic success.

Phase IV: Graduation

Students apply to graduate when enrolled in their final course, year or semester of the program. Policies and processes for graduation are set out in the Full- and Part-Time Undergraduate Calendar.

Master of Architecture Program

One key component of progress evaluation is the filter between the undergraduate pre-professional and graduate professional programs. While the pre-professional program is large in terms of numbers of students, with a typical graduating class of 90, the student complement in the graduate program aims for an enrollment of 28 students. Furthering the competition for access, a number of students admitted to the M.Arch. program each year have completed their undergraduate studies at other institutions. With only a small proportion of students from the pre-professional program admitted into the graduate program each year, only the highest performing applicants are considered.

While the high degree of selectivity into the graduate program is beneficial to the professional program, it is not seen as a disservice to the balance of those who graduate from the pre-professional program. The departmental mission, in part, is "to provide education for a wide range of professional roles in the design, construction and management of the built environment... and for leadership roles in the AEC (Architecture, Engineering and Construction) Industry." Many of our graduates pursue careers within the full breadth of the AEC industry but outside of the architecture profession proper. In addition, many of our B.Arch.Sc. graduates elect to pursue their M.Arch. studies at other universities.

The Yeates School of Graduate Studies at Ryerson University establishes policies and standards for admissions, evaluation, advancement, and graduation, including policies for the defence of Master's theses. The specific admission requirements for the graduate program are discussed in Section 3.10.
Academic Standing

In order to progress in the M,Arch program, students must maintain an Academic Standing of Clear or

Provisional. These Academic Standings are defined in Ryerson's Senate Policy #142, Graduate Admissions and Study Policy, as follows:

CLEAR: Master's students must have at least a minimum passing grade of 2.67 B- equivalent (or PSD in the case of a pass/fail graded course) in each graduate course during the semester. Students with a CLEAR standing may continue in their Program of Study.

PROVISIONAL: A student has one of the following: no more than one Unsatisfactory (UNS) progress report for a Milestone OR one failed grade; a cumulative GPA lower than 2.67 for Master's students; or has failed to meet a specific program requirement. A student with PROVISIONAL standing may not continue his/her Program of Study until a specific Provisional Plan to correct academic deficiencies has been authorized in writing by their supervisor and Associate Chair, signed by the student, and recorded with the Office of the Registrar.

WITHDRAWN: Students with more than one failed grade or one UNS progress report for a Milestone, in any combination, or who fail to meet requirements related to a PROVISIONAL standing, will be withdrawn from the program. A student who has been withdrawn from the program is not eligible for readmission into that program.

Students are assigned a faculty advisor when they join the M.Arch program, with whom they meet to discuss and monitor progress in the program. For some students, this faculty advisor will become their thesis supervisor, and will continue in this overall advisory role; in cases where students elect to work with a different faculty member for their thesis, the thesis supervisor takes over this role. Advisors help with selection of electives and collaborative competitions, providing a context for program choices, and advising regarding aligning student thesis proposals with suitable faculty supervisors. At the end of each term the student submits a Graduate Student Progress Report which lists courses taken and provides a format for comments by the student and advisor regarding progress made in the semester and goals for the following semester. The progress report is reviewed, approved and signed by the faculty advisor and goes to the Associate Chair for review and signature. All progress reports are kept by the program administrator, and form one of the methods of monitoring student progress.

Assessment Methods

Each course uses a range of assessment methods commensurate with the learning objectives and course curriculum. Assessment in studios typically operates on two levels: instructor assessment of student progress, based on day-to-day observations of student work in the studio; and assessment of outcomes, which typically take the form of design projects submitted in digital and/or hard copy form and presented to design juries

that typically include teaching faculty and guest critics drawn from the department, other institutions and the professional community. Only the teaching faculty are directly involved in formal assessment of the student work – i.e in determining grades – but input from guest critics can provide important insights into the strengths and weaknesses of student submissions.

Depending on the nature of the studio, the number and type of assessments can vary. Typically design projects are formally evaluated at two or more stages of development, so that students are provided with quantitative assessment feedback at various stages of the semester.

Assessment in seminar courses typically take the form of written submissions documenting research in progress and culminate in a term paper. Verbal presentation of work in progress often forms part of the assessment, as does participation in discussions. These courses do not typically make use of tests or exams. Depending on the seminar topic, some courses may involve small design exercises as part of the assessment scheme. As noted in Section 3.4, the core seminar in the fall semester of first year requires students to organize a symposium as part of the course.

The flow-through nature of studies in the department from the pre-professional to the professional degree program means that many Student Performance Criteria (SPCs) are delivered in the B.Arch.Sc. program. The M.Arch. program completes the delivery of remaining areas as listed below in SPCs related to specific core studios and courses:

Criteria Evaluated in AR8101 Studio in Critical Practice
A1 Design Theories, Precedents and Methods
A2 Design Skills
A3 Design Tools
A6 Urban Design
A8 Design Documentation
B1 Critical Thinking and Communication
B4 Cultural Diversity and Global Perspectives

Criteria Evaluated in AR8103 Studio in Collaborative Practice
A1 Design Theories, Precedents and Methods
A2 Design Skills
A3 Design Tools
A4 Program Analysis
A5 Site Context and Design

A8 Design Documentation
B5 Ecological Systems
C1 Regulatory Systems
C2 Materials
C3 Structural Systems

Criteria Evaluated in AR8102 Seminar in Critical Practice or developed through the M.Arch. program
B1 Critical Thinking and Communication
B3 Architectural Theory
E2 Ethical and Legal Responsibilities

Criteria Evaluated in AR8104 Seminar in Contemporary and Future Practice
E1 The Architectural Profession
E2 Ethical and Legal Responsibilities
E3 Modes of Practice
E4 Professional Contracts
E5 Project Management

Criteria Evaluated through Transcript Review and re-evaluated in the Studio
B2 Architectural History
B3 Architectural Theory
C1 Regulatory Systems
C2 Materials
C3 Structural Systems
C4 Envelope Systems
C5 Environmental Systems
D1 Comprehensive Design

Elective courses vary widely depending on topic. Courses that are more technical in nature may involve quantitative analysis including calculation, and may use tests or exams as part of the assessment strategy. More typically, elective courses involve research papers (for courses related to architectural history and theory) and design exercises (for courses that address specialized area of design, such as heritage conservation, or the use of glass in architecture).

The collaborative competition is a pass/fail activity. The students are expected to find a faculty member willing to oversee the activity and to verify that they have completed the necessary requirements. The less

formal nature of this assessment is appropriate for an activity which encourages students to be self-guided and define their own objectives. This requirement adds an additional challenge to time management and has been an area of contention and dissatisfaction on the part of students, and the pass/fail nature of the assessment may also contribute to a degree of student indifference in relation to the extent and quality of their performance.

Grading

Studios and courses are assessed using the YSGS grading scale, i.e. the minimum passing grade is 70% (B-). Some students receiving scholarships are required to maintain a minimum standing as a condition of ongoing access to funding and are therefore very concerned about their assessed performance. Students receiving a failing grade in a course may repeat the course. Students receiving two or more failing grades are required to withdraw from the program. In some instances students receiving failing grades have appealed their grades or academic standing. While the appeal is in progress, they continue in the program. In cases where collaborative work forms part of the course requirements, as is the case for the winter semester Studio in Collaborative Practice, it can be quite disruptive to have students forming part of project teams withdraw partway through the semester. There is no clear solution to this situation.

Thesis

Students are not permitted to begin work on a thesis until all of the Student Performance Criteria have been satisfied. With the assistance of the faculty advisor, students are to identify a thesis topic and complete a body of preparatory work, including the identification of a thesis supervisor and second reader. A third faculty member is appointed by the Associate Chair to serve as Program Representative, rounding out the thesis committee.

Completion and evaluation of the thesis project follows the process outlined in the Yeates School of Graduate Studies policy handbook and includes public presentations at several stages. The thesis supervisor is a member of the Yeates School of Graduate Studies. Membership is acquired through a formal application. In special circumstances, a contract lecturer can supervise a thesis project with a full-time faculty member serving as a Co-Supervisor.

The official time to complete the M.Arch. program is six academic terms (two years). However, students are encouraged to attempt to complete the program in an accelerated schedule of five academic terms. Students have a maximum of nine academic terms (three years) to complete the degree. Students who wish to graduate soon after successfully defending their thesis project must have previously formally applied to the university to graduate. The deadline is set twice a year by the Yeates School of Graduate Studies.

Thesis project committees follow the work of each student in their final year of the program and review each student's work through oral presentations and by reading their reports.

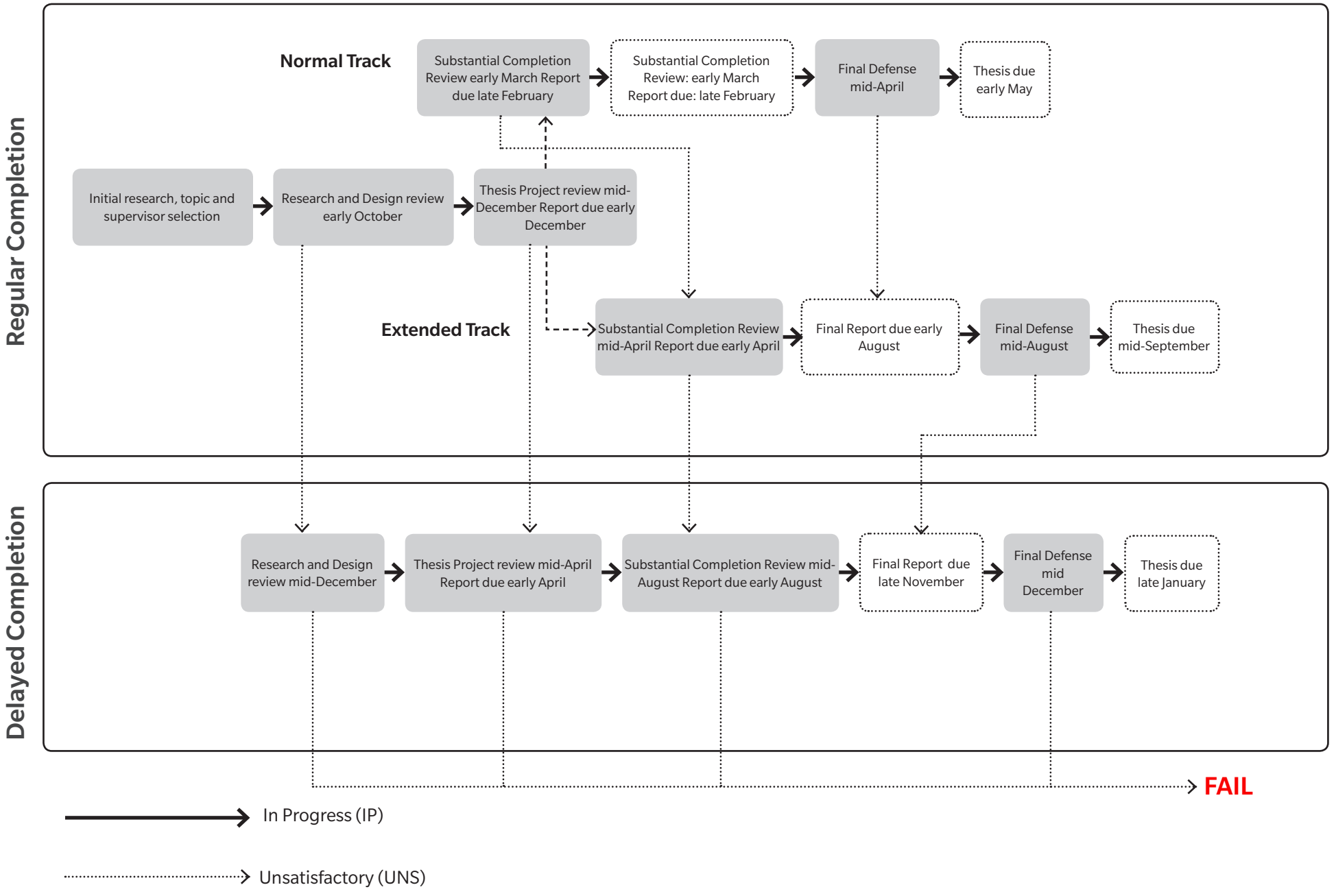
As work progresses, students are required to complete three formal submissions. The first requires students to prepare a submission of Research and Design in progress. The second formal submission is the Substantial Performance Review (SPR), determining whether the student is on schedule to complete in either the eight- or the twelve-month period. Once the SPR is complete, students proceed to a Final Defence. The Substantial Performance submission represents the most important milestone in the thesis, as this determines the student's satisfaction of the fundamental requirements of both the research and design components of the thesis. Work completed between the SPR and Final Defence represents a refinement and elaboration of work already clearly present in the SPR.

At each of these stages students make formal presentations to their committees; the Final Defence also includes guest critics invited from other institutions and the professional community. The thesis is not evaluated with a numerical or letter grade, but at each stage it is assessed by the committee on the basis of the following categories:

- Proceed: indicates that the work presented meets expectations for the respective stage of the work, without significant weaknesses.
- Proceed with revisions: indicates that the work presented is generally satisfactory for the respective stage of the work, but exhibits weaknesses that require correction or completion. These corrections do not require formal re-presentation to the committee.
- Re-present: indicates that the work presented marginally meets expectations for the respective stage of the work, but exhibits significant weaknesses that require immediate correction or completion before additional work can proceed, and that must be re-presented to the committee. Usually this happens within a few weeks of the original presentation and does not require additional semesters of work to complete the thesis.
- Unsatisfactory: indicates that the work presented does not meet expectations for the respective stage of the work, and requires significant reworking before it can be resubmitted. An evaluation of UNS typically means that a student will require at least one additional semester of work to complete the thesis. An evaluation of UNS has the same effect as a grade of F in a course or studio. A grade of F in a prior course combined with an evaluation of UNS in the thesis, or two evaluations of UNS in the thesis, may result in the student's withdrawal from the program.

The format of thesis project reports and the composition of committees follows guidelines and procedures outlined by the Yeates School of Graduate Studies. The M.Arch. program requires a few additional items

formatted to our own specifications. Historically a majority of students require three semesters to complete the thesis project, with a relatively small group completing in two; some students require four. Students who do not complete in four semesters (for reasons other than illness or other verifiable need for accommodation) may have faced two evaluations of UNS in the thesis, effectively failing the thesis project; to date, this has never occurred. While we have had a small number of students withdraw from the program, this has not resulted from an assessment of unsatisfactory performance in the thesis.


Regular Completion
Normal Track
Substantial Completion Review early March Report due late February
Substantial Completion Review: early March Report due: late February
Final Defense mid-April
Thesis due early May
Initial research, topic and supervisor selection
Research and Design review early October
Thesis Project review mid-December Report due early December
Extended Track
Substantial Completion Review mid-April Report due early April
Final Report due early August
Final Defense mid-August
Thesis due mid-September
Delayed Completion
Research and Design review mid-December
Thesis Project review mid-April Report due early April
Substantial Completion Review mid-August Report due early August
Final Report due late November
Final Defense mid December
Thesis due late January
FAIL
In Progress (IP)
Unsatisfactory (UNS)

4.3 Course Descriptions

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 101 COMMUNICATIONS STUDIO: Representation and Composition

Phase I: Context; Term 1
Format: Studio. 9 hrs; Weight: 3.00
Prerequisites: None
Instructors, 2015: Komisar (coordinator), Hui, Schank Smith, Zone, Hamilton, Grant, Jurkovic, Leu
Instructors, 2016: Smith (coordinator), Hui, Komisar, Zone, Hamilton, Grant, Jurkovic, Le Lay, Kobets-Singkh, George
Instructors, 2017: Smith (coordinator), Hui, Zone, Hamilton, Le Lay, Grant, Leu, Lam

Course Calendar Description:

This studio course introduces the basic techniques of visual communication through drawing (both manually and by computer), model building, etc. Techniques and theories of representation, composition and spatial organization are presented and developed through exercises and projects which relate the themes of the other first term courses, culminating in the design of a very simple building. Accompanying lectures provide students with background principles and theory for graphic communication.

Learning Objectives:

On completion of this course, students should be able to:

- Explore, use and understand fundamental design communication skills;
- Explore basic design communication principles and formal ordering systems;
- Recognize and achieve appropriate levels of craft and presentation skill;
- Utilize instruments of design in process and presentation (analog, digital and physical model construction);
- Apply basic concepts of architectural communication theory and its connection with design.

Course Evaluation:

Sketchbook	10%
Warm-up Project	10%
Project One	20% (5% of this grade is based on the course text report and questions)
Project Two	25%
Project Three	30%
Portfolio	5% (combined portfolio of projects 1-3 & scans of best sketches)

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	●
	E2	Ethical and Legal Responsibilities	●
	E3	Modes of Practice	●
	E4	Professional Contracts	●
	E5	Project Management	●

ASC 102 THE BUILT WORLD: Management of Finite Resources

Phase I: Context; Term 1
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: None
Instructor, 2015: Leshchyshyn
Instructor, 2016: Leshchyshyn
Instructor, 2017: Martinovic

Course Calendar Description:

This course provides the foundation for understanding how elements such as natural resources, time, money and human capital influence the creation of the built environment. Consideration is given to how these resources can best be managed and integrated into the built environment to meet social, economic, environmental and cultural needs in projects that vary in scale from the individual building to the city or region.

Learning Objectives:

On completion of this course, students should be able to:

- Understand the nature and purposes of the built world within the context of the natural world;
- Demonstrate an understanding of the implications of harnessing and using resources in the design and construction of the built world;
- Identify and understand the processes by which the built world is conceived and constructed as well as the roles and responsibilities of the various participants in such processes;
- Understand basic management concepts and how they affect the use of resources in the creation of the built world;
- Identify and understand the roles and responsibilities of key participants in the AEC industry and the decision-making and decision-communicating processes used;
- Be aware of ethical issues as they apply to architectural practice and the need to exercise professional judgement in the provision of architectural services.

Course Evaluation:

Architectural Performance	25%
Research Paper	35%
Tests	40%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	●
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 103 THE BUILT CONTEXT: Concepts and themes for Architecture

Phase I: Context; Term 1
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: None
Instructor, 2015: Kapelos
Instructor, 2016: Kapelos
Instructor, 2017: Kapelos

Course Calendar Description:

An introductory overview to the study of architecture and the built environment. Basic concepts, which are universal in most if not all times and places, will be discussed: shelter, protection, convenience, program, setting, light, air, beauty, etc. The role of the architect and of the architectural profession is discussed, as well as the role of the client or patron. Students will develop skills in research and analysis as well as a range of conceptual tools for examining the built environment.

Learning Objectives:

The Built Context course aims to provide an introduction to the language of architecture through its central concepts and themes, related to the context of current architectural practice.

On completion of this course, students should be able to:

- Conduct research through data collection;
- Use case studies as a research and design tool;
- Conduct field research in an urban context;
- Identify and utilize resources for conducting research including the university library and other resources, both physical and virtual;
- Work both collaboratively and individually to effect successful results;
- Articulate diverse global and local traditions in architecture, landscape and urban design as well as the factors that have shaped them;
- Undertake a comprehensive documentation, analysis and evaluation of a building, building complex or urban space; and
- Read and analyze a text of appropriate complexity and synthesize key concepts and formulate critical questions as they relate to the content.

Major Course Evaluation:

Two Assignments	50%
Two Workouts	30%
Final Exam	20%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	●
	A5	Site Context and Design	●
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 201 DESIGN STUDIO 1: Program and Site

Phase II: Preparation – Tools and Elements; Term 2
Format: Studio 9 hrs; Weight: 3.00
Prerequisites: ASC100 Communications Studio
Instructors, 2016: Hui (coordinator), Farah, Etkind, Leu, Grant, Luzar, Hamilton, Jurkovic
Instructors, 2017: Hui (coordinator), Farah, Smith, George, Zone, Hamilton, Leu, LeLay, Kobets-Singkh
Instructors, 2018: Hui (coordinator), Leong, Schank Smith, Zone, LeLay, Kobets-Singkh, Grant, Hamilton

Course Calendar Description:

This studio course introduces context, through an exploration of program and site, as a primary influence on architectural design. Principles and techniques of functional programming, program analysis, site investigation and site analysis form a framework for the development of a holistic design process. This is accompanied by an introduction to concepts ranging from human needs to means of defining space to create enclosure that are in turn applied to the site and context. Issues are assimilated into the architectural design process through a range of individual and team design exercises and projects.

Learning Objectives:

On completion of this course, students should be able to:

- Undertake a comprehensive program investigation and analysis to determine a program's functional, spatial, qualitative and quantitative requirements as they relate to human needs and behaviours;
- Undertake a comprehensive site investigation and analysis to identify a site's characteristics, constraints and potential;
- Articulate an architectural response, and intent, within the context of program and site;
- Apply design skills to the realization of the architectural intent;
- Employ appropriate language and graphic skills and media at each stage of the investigation, analysis and design process to communicate their findings and thoughts;
- Identify sites appropriate for particular programmatic scenarios;
- Conceive of possible programs for given sites;
- Undertake and resolve an architectural project of a basic level of complexity.

Major Course Evaluation:

Proejct 1: Small Cabin (RURAL)	20%
Project 2A: Initial Design Presentation (URBAN)	15%
Project 2B: Interim Presentation	15%
Project 2C: Final Presentation	30%
Precedent Video	10%
Participation	10%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	●
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	●
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	●
	C5	Environmental Systems	●
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 200 SUSTAINABLE PRACTICES: Principles

Phase II: Preparation – Tools and Elements; Term 2
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC101 The Built World, PSC 107 The Natural Context
Instructor, 2016: Brown
Instructor, 2017: Brown
Instructor, 2018: Tokarik

Course Calendar Description:

This course addresses the means by which the principles of sustainability can be addressed in architectural design. The importance of the environmental, social and economic aspects of sustainability are presented and students become famil- iar with the process of implementation of environmentally conscious design. Various strategies to reduce the environmen- tal impact of construction are discussed as are the means of measuring their success.

Learning Objectives:

On completion of this course, students should be able to:

- Describe the philosophical and practical elements of sustainability as it applies to buildings;
- Understand sustainable design principles and apply them in their work;
- Understand at an introductory level the flows of energy through a building and develop strategies for reduction;
- Understand the difference between passive and active systems and design such systems at an introductory level;
- Explain the relevance of green rating systems and understand their role in achieving sustainable buildings;
- Describe and quantify (at a preliminary level) the impact of material choice, embodied energy and life cycle analysis;
- Describe the importance of integrative design when creating sustainable buildings.

Major Course Evaluation:

1. Quizzes and short tasks	15%
2. Individual Research Paper	25%
3. Group Design Exercise (groups of 3 students)	20%
4. Examination - Multiple choice and short answer questions	40%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	●
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	●
	C3	Structural Systems	
	C4	Envelope Systems	●
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ACS 202 THE BUILDING PROJECT: Components

Phase II: Preparation – Tools and Elements; Term 2
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ACS 101 The Built World, PCS 107 The Natural Context
Instructor, 2016: Atkinson
Instructor, 2017: Van Driel
Instructor, 2018: Wójs

Course Calendar Description:

This course introduces the methods and materials of building construction with an examination of construction systems and components including: foundations, walls, floors, roofs, doors and windows, and finishes. Materials of construction are introduced and placed into the context of the interconnected systems that make up buildings.

Learning Objectives:

On completion of this course, students should be able to:

- Understand principles of enclosure; human comfort and safety, components of enclosure, construction methodology, sustainability, durability and assembly;
- Understand heavy construction; foundations, retaining walls, steel framing, reinforced concrete framing, masonry load bearing walls;
- Design with light wood, and post and beam wood framing and construction;
- Undertsand components and materials; walls, windows and roofs and design selection;
- Understand interior components and finishes;
- Understand site; soils, services and finishes;
- Understand and apply fundamental structural systems of wood, steel and concrete;
- Understand structural terminology;
- Understand the relationship between design, design development and contractual documentation.

Major Course Evaluation:

Six Sketch Assignments	30%
Quiz 1	15%
Quiz 2	15%
Model	20%
Quiz 3	20%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	●
	C3	Structural Systems	●
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 203 STRUCTURES 1: Structural Concepts

Phase II: Preparation – Tools and Elements; Term 2
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: PCS 107 The Natural Context
Instructor, 2016: Straka
Instructor, 2017: Straka
Instructor, 2018: Straka

Course Calendar Description:

This introductory course focuses on structure in architectural design. It investigates a variety of typical structural ele- ments, namely: columns, beams, trusses, arches, and cables operating in compression, tension, bending, or torsion to achieve structural equilibrium. This theme is expanded further through the application of these elements to form a struc- tural system, with an overview of one- and two-way spanning systems, and of load transfer through the structural system. Optimal selection of structural systems and reasons for structural failure are reviewed.

Learning Objectives:

On completion of this course, students should be able to:

- Understand loads which may be acting on the structure of a building and its elements;
- Quantify dead and some live loads acting on the structure and its elements;
- Understand the meaning of a structure, its function, form and relationship to architecture;
- Have awareness of the impact of the environment on structural form;
- Identify how a simple structural element responds to applied loads;
- Understand the basic principles of statics; force (external, internal), compression, tension, moment (external, internal), torsion, equilibrium (overall, element, node) and stability;
- Analyze a simple structural element (beam, column, truss, cable, arch);
- Understand properties of structural materials (e.g., stress, strain, elasticity, plasticity, creep);
- Understand the difference between one-way and two-way structural systems;
- Select an appropriate structural system and apply it to studio projects;
- Understand the four fundamental systems in wood, concrete, steel and masonry.

Major Course Evaluation:

Project	15%
2 Assignments	30%
Final Exam	35%
2 Quizzes	20%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	●
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	●
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 206 IDEAS, TECHNOLOGIES & PRECEDENTS 1: Ritual and Stone

Phase II: Preparation – Tools and Elements; Term 2

Format: Lecture. 3 hrs; Weight: 1.00

Prerequisites: ASC 103 The Built Context

Instructor, 2016: Komisar
Instructor, 2017: Komisar
Instructor, 2018: Komisar

Course Calendar Description:

This course is a study of ideas and approaches to architectural history through an examination of architecture from prehistory to the end of the Middle Ages in Europe. The relationships between built form, site, ritual, materials, and technology are explored through examples from both western and non-western traditions. Students are expected to be able to research, discuss and analyze the form, composition, and context of a building, and to situate current architectural practice within the larger history of the relationships between building, nature, and culture.

Learning Objectives:

On completion of this course, students should be able to:

- Gain an awareness of the scientific, technological, cultural, and climatic conditions within which the architecture under consideration develops and changes;
- Develop an awareness of iconic buildings and other built form from pre-history until the end of the Medieval period in both the Western and Non-Western architectural traditions;
- Be able to recognize major characteristics of the architectural periods and regions covered within this course as a foundation to the acquisition of a broad knowledge base of architectural developments;
- Acquire the fundamental aspects of a working vocabulary of architectural terms and components, both verbal/written and visual, to be used in presentations, writing, and design;
- Learn how to write critically about architecture and built form within the cultural and technological context, using newly acquired vocabulary to discuss technology, morphology, context, materials, use, history and design;
- Learn basic research skills including the use of secondary source material (ex: journal research), and primary source material (ex: observing the built form and its site conditions, sketching, photographing and finding historical data in archives).

Major Course Evaluation:

Project	25%
Class Participation	20%
Midterm Test	25%
Final Exam	30%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	●
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 301 DESIGN STUDIO 2: Intention and Expression

Phase Ii: Preparation – Tools and Elements; Term 3
Format: Studio 9 hrs; Weight: 3.00
Prerequisites: ASC 201 Design Studio 1
Instructors, 2015: Farah (coordinator), Etkind, Kapelos, Norbraten, Coelho, Sankrithi, Papatheodorou, Ourceau
Instructors, 2016: Farah (coordinator), Etkind, Leong, Schank Smith, Ourceau, Papatheodorou, Norbraten, Coelho
Instructors, 2017: Polo (coordinator), Etkind, Sankrithi, Ourceau, Coelho, Norbraten, Giaimo, Kobets-Singkh, Hendershott

Course Calendar Description:

This studio course continues the series of design studios begun in the previous semester with design exercises and projects of increasing complexity. It continues the development of skills in architectural representation and presentation. Adding to themes discussed in previous semesters, the studio and its accompanying lecture component focuses on the formulation of architectural intent (formal, material, political, or other), and its means of expression through architectural form (geometry, composition, materiality, light, and space).

Learning Objectives:

On completion of this course, students should be able to:

- Complete a comprehensive formal analysis of a building, building complex, or urban space and identify the intent behind a work of architecture;
- Explain, for a given work of architecture, how the intent is made manifest in the *parti*, form, massing, order, compositional strategies, materiality, tectonics and relationship to site and context;
- Present the intent clearly by means of oral, written and graphic representation, employing appropriate representational media to convey essential formal elements of the design;
- Articulate an intent for a design project and develop a design response to a variety of criteria (formal, material, programmatic, behavioural, contextual) using design methodologies and organizational/compositional strategies discussed in the studio.
- Apply a variety of organizational and compositional strategies to the design of a building of low to medium complexity;
- Carry out critical analysis of their design response in relation to the stated intent and conduct iterative design operations to refine the design in response to that intent;
- Prepare a complete, coherent and clear presentation – including oral, written and graphic material – documenting the design project, making use of a variety of media (manual and digital, two- and three-dimensional), conforming to architectural drawing conventions and at appropriate scales.

Course Evaluation:

Assignment 1	20%
Assignment 2.1	10%
Assignment 2.2	20%
Assignment 2.3	5%
Assignment 2.4	5%
Assignment 2.5	5%
Assignment 2.6	30%
Sketchbook	5%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	●
	C3	Structural Systems	
	C4	Envelope Systems	●
	C5	Environmental Systems	●
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 302 ENVELOPE SYSTEMS

Phase II: Preparation – Tools and Elements; Term 3
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC 200 and ASC 202
Instructor, 2015: Martinovic
Instructor, 2016: Ramakrishnan
Instructor, 2017: Ramakrishnan

Course Calendar Description:

This course examines how environmental forces acting on building envelope components and building systems guide decision making in building design. Building science theory and principles are applied to the control of heat, air and moisture flows across building envelope systems and to the design of a range of building envelope systems. Analytical techniques are used to assess the suitability of examples of building conditions. Life safety driven separator issues are addressed in reference to the Ontario Building Code. Related issues are reviewed within the context of existing and emerging building technology.

Learning Objectives:

On completion of this course, students should be able to:

- Explain the basic principles of building envelope physics;
- Determine the thermal gradient through a given assembly;
- Determine the amount of moisture which can be transferred through an assembly;
- Select materials and assemblies to perform specific functions;
- Describe the important properties of various building materials and compare their appropriateness;
- Identify important principles of load transfer and connections of building components;
- Use deductive reasoning to: integrate or select appropriate envelope assembly in order to respond to programmed requirements and intended architectural expression.

Major Course Evaluation:

In class quizzes	5%
Assignment	10%
Term Group Project – Individual	15%
Term Group Project - Group	15%
Mid-term	25%
Final Exam	30%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	●
	C3	Structural Systems	●
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 303 STRUCTURES 2: Materials and Detailing

Phase II: Preparation – Tools and Elements; Term 3
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC 203 Structures 1
Instructor, 2015: Doshi
Instructor, 2016: Doshi
Instructor, 2017: Doshi

Course Calendar Description:

This course applies principles of structural behaviour to material properties and construction methods. Students are introduced to properties of basic construction materials – steel, concrete, wood, and masonry. The design of structural components is addressed in conceptual terms, focusing on the advantages and possibilities that each material offers. Connections specific to each material are addressed. The issues of structural application of each material, such as deterioration due to exposure, fire performance and environmental impact, are discussed. Methods are presented for determining the size of basic building components in the various materials for known forces.

Learning Objectives:

On completion of this course, students should be able to:

- Understand the relationship between loads on buildings, structural systems and materials used for structural systems;
- Understand and apply requirements in the building code that control the use of structural materials;
- Identify properties that are relevant for choosing materials for building structures;
- Wood – Identify differences between light wood framing and timber construction;
- Wood – Identify properties of wood that are used in selecting wood members;
- Wood – Identify different shapes and sizes of wood members that are used for structural purposes;
- Wood – Study and understand the application of wood as a structural material in buildings;
- Steel – Identify differences between light gauge steel frame construction and steel frame construction using hot rolled steel;
- Steel – Identify properties of steel that are used in selecting steel members;
- Steel – Identify different types of steel members that are used for structural purposes;
- Steel – Study and understand the application of steel as a structural material in buildings;
- Concrete – Identify the differences between site-cast concrete and precast concrete;
- Concrete – Identify concrete properties relevant to its use as a structural material;
- Concrete – Identify different forms of concrete structures and understand their application in buildings;
- Apply simple rules of thumbs preliminary design charts to determine sizes of members using different materials and structural systems.

Evaluation:

Participation in working session and homework	25%
Term Test	50%
Team Project	25%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	●
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	●
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	●
	E4	Professional Contracts	●
	E5	Project Management	●

ASC 304 THE CONSTRUCTION PROJECT: Processes and Resources

Phase II: Preparation – Tools and Elements; Term 3
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC102 The Built World, ASC202 The Building Project
Instructor, 2015: Floerke
Instructor, 2016: Floerke
Instructor, 2017: Norbraten

Course Calendar Description:

This course introduces students to the broad scope of the AEC industry, and to the participants, practices and underlying principles that define activities related to it. Fundamental concepts are presented that are the foundation of the provision of architectural services, the roles of various participants in the construction process and the sequential project phases typical of any construction project. Project communications between members of the design team, contractors, authori- ties, and stakeholders and alternative approaches to project delivery are discussed.

Learning Objectives:

On completion of this course, students should be able to:

- Understand the roles and interests of different project participants in the AEC industry;
- Identify the possibilities of influencing/ controlling a project while following an architectural concept;
- Realize the individual steps and sequences necessary when building a project exemplified by focusing on significant building details;
- Understand fundamental models and methods of managing projects;
- Transfer their acquired skills to solve specific contextual problems.

Course Evaluation:

Assignment 1 - Group Project	20%
Assignment 2 - Individual Work	30%
Assignment 3 - Individual Work	50%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	●
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	●
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	●
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 306 IDEAS, TECHNOLOGIES & PRECEDENTS 2: Secular Representations

Phase II: Preparation – Tools and Elements; Term 3
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC 206 Ideas, Technologies & Precedents 1
Instructor, 2015: Etkind
Instructor, 2016: Schank Smith
Instructor, 2017: Schank Smith

Course Calendar Description:

A study of the cultural, political and technological forces and ideas shaping architecture in western civilization from the 15th to the 18th centuries. This historical and theoretical overview covers the Renaissance to the Enlightenment, using examples that embody the transition from theocentric to secular and humanist world views that formed the foundation for the cultural, political and industrial revolutions of the late 18th and 19th centuries. Material covered includes extensive reading, drawn from primary sources.

Learning Objectives:

On completion of this course, students should be able to:

- Identify the major cultural, political, technological and aesthetic movements of the Renaissance and Baroque periods and be able to demonstrate the effects of these movements on architectural production;
- Identify and analyze important buildings of this period;
- Grasp the meaning of critical reading, writing and thinking and demonstrate all these qualities in their essays;
- Understand principles of architectural history and concepts of architectural theory in the Renaissance and Baroque periods;
- Understand the ideas as well as the cultural, political and technological forces that shaped western civilization of the 15th to 18th centuries;
- Understand the impact of the Renaissance and Baroque periods on the contemporary architecture;
- Draw comparisons between Western and non-Western traditions during this time period;
- Understand Renaissance ideas expressed through built form and through architectural treatises;
- In the context of social change, understand the expansion of technology and science, visual arts, music and literature;
- Trace the evolution of formal ideas in the Renaissance and Baroque periods.

Course Evaluation:

Midterm Test	20%
Final Exam	30%
Quizzes & in-class analysis	15%
Sketchbook	10%
Essays	15%
Posters	10%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	●
	A5	Site Context and Design	●
	A6	Urban Design	●
	A7	Detail Design	●
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ACS 401 DESIGN STUDIO 3: Technical and Regulatory Issues

Phase II: Preparation: Tools and Elements; Term 4
Format: Studio 9 hrs; Weight: 3.00
Prerequisites: ACS 301 Design Studio 2
Instructors, 2016: Atkinson (coordinator), DeNegri, Kapelos, Zone, Polo, Coelho, Kobets-Singkh, Papatheodorou
Instructors, 2017: Ripley (coordinator), Etkind, Kapelos, Komisar, Coelho, Luzar, Ourceau, Papatheodorou
Instructors, 2018: Atkinson (coordinator), Geldart, Sankrithi, Jurkovic, Papatheodorou, Ourceau, Sorli, Coelho, Madonna

Course Calendar Description:

Students carry out design exercises and projects of increasing complexity, and develop skills in architectural representa- tion and presentation. Adding to themes discussed in previous semesters, this studio and its accompanying lecture com- ponent considers technical and regulatory issues including The Ontario Building Code and their contribution the design process, and focuses on the seamless relationship between technical resolution and tectonic expression. Constructability and durability in the Canadian climate is an area of focus.

Learning Objectives:

On completing this course, students should be able to:

- Design a building that demonstrates, mobilizes and provides a critical evaluation of the relationships between architecture and technology, on the one hand, and architecture and the human body in motion, on the other;
- Design a building of a medium level of complexity in accordance with general precepts of the Ontario Building Code (exiting, fire separations, accessibility, and health requirements) and the City of Toronto Zoning Bylaw;
- Make use of structural systems, environmental control systems (HVAC), and envelope systems to further the architectural intent in a building project;
- Make clear and compelling verbal presentations of their projects to their peers and instructors, aided by precisely constructed drawings, models and other representations of a professional standard;
- Make use of precedent studies in the design of aspects of a building project.

Major Course Evaluation:

Phase I: Site and Program	10%
Experiential section	15%
Process grading	15%
Accessibility Study	10%
Phase II: Schematic Design	20%
Phase III: Final Submission	30%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	●
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 402 BODILY COMFORT SYSTEMS

Phase II: Preparation - Tools and Elements; Term 4
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC 302 Envelope Systems
Instructor, 2016: Liao
Instructor, 2017: Liao
Instructor, 2018: Liao

Course Calendar Description:

This course introduces the design and assessment of environmental control systems in conformity with current codes and standards. Heating, ventilation and air-conditioning (HVAC) systems that provide anticipated indoor environmental conditions in the Canadian climate are investigated. Techniques for the design and performance of environmental control systems are presented through simulation exercises. Passive (non-mechanical) techniques for heating, cooling and venti- lating buildings are also explored.

Learning Objectives:

On completion of this course, students should be able to:

- Achieve a basic understanding of how a desired indoor thermal environment is created and of how the energy performance and indoor environment quality are influenced by the design, construction and operation;
- Carry out necessary calculations in determining heating and cooling load and select appropriate mechanical systems;
- Demonstrate familiarity with typical passive systems (solar heating, passive cooling) and active systems (i.e. HVAC: Heating, Ventilation and Air Conditioning).

Major Course Evaluation:

Participation	10%
Individual Assignments	2x15%
Section Test (closed book)	2x15%
Group Assignment	30%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	●
	A6	Urban Design	●
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	●
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 403 SITE DEVELOPMENT AND PLANNING

Phase II: Preparation – Tools and Elements; Term 4
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC 102 The Built World, ASC 304 The Construction Project
Instructor 2016: Farah
Instructor 2017: Farah
Instructor 2018: Bradbee

Course Calendar Description:

This course presents techniques for the analysis and planning of sites that respond to human, contextual and infrastructural criteria. The role of analysis is emphasized as the basis for site development, and various analytical approaches are surveyed. Methods of developing both large and small scale sites are explored with reference to the constraints and opportunities of the natural, controlled and built environment, project constructability, and the appropriate legal and planning setting.

Learning Objectives:

On completion of this course, students should be able to:

- Refer to a variety of site conditions;
- Research, document, analyse and diagram the existing conditions of a site;
- Research and develop a program;
- Articulate the links between a site, its surroundings and the natural and man-made factors that influence it;
- Apply environmental and ecological design principles to a project;
- Apply sustainable design principles in site planning.

Major Course Evaluation:

Assignment 1	35%
Assignment 2	30%
Final Exam	35%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	●
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	●
	B5	Ecological Systems	●
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	●
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 406 IDEAS, TECHNOLOGIES & PRECEDENTS 3: Discipline and Revolution

Phase II: Preparation – Tools and Elements; Term 4
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC 306 Ideas, Technologies & Precedents 2
Instructor 2016: Polo
Instructor 2017: Etkind
Instructor 2018: Etkind

Course Calendar Description:

A study of the cultural, political and technological forces shaping the architecture of western civilization in the 19th and 20th centuries. This historical and theoretical overview covers material from the Enlightenment to the present, using examples from the various traditions that inform the idea of modernity. Material is presented in the form of lectures and extensive reading, including numerous primary sources.

Learning Objectives:

On completion of this course, students should be able to:

- Identify the major cultural, political, technological, and aesthetic movements of the modern period and demonstrate the effects of these movements on architecture;
- Identify the various concepts, ideas and trends in modern and contemporary architecture;
- Analyze important buildings of the period;
- Recognize important works in the modern and contemporary canon of architecture;
- Utilize an understanding of the forces that lie behind architectural change in their own design work;
- Demonstrate an awareness of the major trends in architectural thought of the previous century;
- Prepare a properly researched, written and referenced term paper.

Major Course Evaluation:

Research Project	50%
Lecture / Exhibitions Reviews	10%
MERLO quizzes	10%
Final exam	30%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	●
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

CVL 407 STRUCTURES 3: Structural System Design

Phase II: Preparation - Tools and Elements; Term 4
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: ASC 303 Structures II
Instructor 2016: Rafiei (Civil Engineering)
Instructor 2017: Rafiei (Civil Engineering)
Instructor 2018: Aboshosha (Civil Engineering)

Course Calendar Description:

This course considers structural systems, commencing with the design of the individual member discussed in Structures 2 and moving to the design of the whole building. The course develops the concept of a building comprised of horizontal and vertical systems that are positioned strategically. Alternative arrangements of structural systems are considered based on their structural behaviour and their relationship to materials of construction. Building lateral loads and load transfer mechanisms are explored. The course concludes with a discussion on connections and detailing of components of complex systems, exploring examples for specific materials.

Learning Objectives:

On completion of the course, students should be able to:

- Understand the principles of structural behaviour withstanding gravity and lateral forces, and the evolution, range, and appropriate applications of structural systems;
- Demonstrate and apply core engineering principles and concepts to solve engineering problems;
- Use appropriate knowledge and skills to analyze, and solve complex engineering problems to reach substantiated conclusions;
- Apply engineering principles and theories to define an accurate problem statement;
- Describe differences between methods, perform a specified method in hypothetical design situation.

Major Course Evaluation:

Assignment 1	8%
Assignment 2	8%
Assignment 3	9%
Midterm Exam	30%
Final Exam	45%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	●
	A5	Site Context and Design	●
	A6	Urban Design	●
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	●
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	●
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 520 INTEGRATION STUDIO: Complex Building Feasibility Study

Phase III: Integration; Term 5
Format: Studio 9 hrs; Weight: 3.00
Prerequisites: Block Promotion form Phase II, Co-requisite: ASC 522 Project Economics 1, ASC 621 Tectonics and Materiality, PLX 599 The Human World
Instructors 2015: Wojs (coordinator), Berardi, Floerke, Madonna, Richman, Straka, Ingrao, McArthur
Instructors 2016: Wojs (coordinator), Cichy, Floerke, Geldart, Berardi, Ingrao, McArthur, Sankrithi
Instructors 2017: Wojs (coordinator), Madonna, Cichy, McArthur, Martinovic, Atkinson, Ingrao

Course Calendar Description:

In this studio course students will prepare a feasibility study and schematic design for a complex, multi-use building on an urban site. The project builds on the knowledge gained to date in years 1 and 2 and extends students' understanding and capability by requiring that they fully integrate co-requisite lecture course material. Site analysis, economic and functional feasibility studies are undertaken as pre-design research. These will directly inform schematic design work that will be the basis for further development of the project in 6th semester.

Learning Objectives:

On completion of this course, students should be able to:

- Identify dynamics and constraints of a spatial/building program of a comprehensive building project of moderate scale and complexity and its interdependent influence on function; structure, building systems, form and expression using appropriate design skills and tools;
- Critically analyze and evaluate the cultural, technological conditions for the progression of the comprehensive project to be designed;
- Consider related building typologies and contexts, defining underlying consistencies and diversities of the project content that will inform and be applied as a project design guide during the design process;
- Prepare a schematic design for an urban building project of moderate scale and complexity based on researched site analysis, developed building programme, feasibility and precedent studies including building regulation and sustainability concepts. Define its urban/site condition and context, concurrent to its spatial, constructability and comfort systems concepts. Reference to the materials used to support the design intention and integration are to be investigated;
- Learn, consolidate and implement/transfer interdisciplinary expertise in the framework of a comprehensive project with specific foci in structural, mechanical and electrical expertise in the building sciences. Develop a coherent proposal towards essential aspects of its process management, scope and cost feasibility on the basis of a schematic design;
- Design and document a project of moderate scale and complexity, identifying constitutive building concepts and components using appropriate tools for visualization, analysis and presentation (both visual and oral).

Major Course Evaluation:

Site Analysis	50%
Programming and Precedent Study	10%
Feasibility, Regulations Review and Sustainability Concepts for Project Assigned	5%
Schematic Design, Conceptualization and Preliminary Schematic Design	20%
Developed Schematic Design and Interim Proposal	20%
Final Design Proposal and Presentation	40%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	●
	E3	Modes of Practice	●
	E4	Professional Contracts	●
	E5	Project Management	●

ASC 522 PROJECT ECONOMICS: Fundamentals from Feasibility through Construction

Phase III: Integration; Term 5
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: Block Promotion from Phase II
Instructor 2015: McArthur
Instructor 2016: McArthur
Instructor 2017: McArthur

Course Calendar Description:

This course investigates economic decision-making by participants in the architecture, engineering and construction in- dustry by presenting and developing the concept of construction as an important economic activity. The course explores the application of financial analysis, cost and value determination for a range of project delivery methods, forms of tenure and building types. Students will apply techniques of value engineering and life cycle analysis including time value of money, price inflation, and dollar devaluation. They will also consider risk and sensitivity analysis in decision-making, and methods of cost planning and control and quantity take-off techniques for building design evaluation using traditional approaches and current software.

Learning Objectives:

On completion of this course, students should be able to:

- Identify and assess the financial and economic factors that impact the management of projects in the Architecture, Engineering, and Construction industries;
- Perform high-level cost estimates and simplified valuation exercises to develop predesign feasibility studies;
- Demonstrate an understanding of the key participants, processes, and planning of construction projects including bidding and procurement, lifecycle costing, cost control, and scheduling;
- Prepare a project plan, including project schedule and work breakdown structure;
- Identify, analyze, and provide appropriate responses to shifts in resources in the delivery of a construction project;
- Use current models of organizing and managing resources (cost and time) including BIM, database, and scheduling tools;
- Understand the relationship between project economics in the AEC industries and their fiduciary and legal implications;
- Understand the necessary leadership and soft skills required to oversee the operations of a construction project;
- Explain the impact of alternative procurement methods on the design and construction process.

Major Course Evaluation:

Data-Driven Design Project	15%
Midterm Exam	20%
Group Project	15%
Construction Site Assignment	5%
Online Quizzes	10%
Final Exam	35%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	●
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	●
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 621 TECTONICS & MATERIALITY

Phase III: Integration; Term 5
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: Block Promotion from Phase II
Instructor 2015: Wrigglesworth
Instructor 2016: Wrigglesworth
Instructor 2017: Wrigglesworth

Course Calendar Description:

This course looks in depth at the means by which architects combine various materials in order to express an architectural intent. Properties of materials are discussed, as well as the major tectonic hierarchies: solid and sheet materials, frames and skins, heavy and light volumes, bearing walls and screens. Methods of expressing joints between materials (hidden, expressed, revealed, exaggerated, trimmed) are also explored. Students are asked to carry out a number of tectonic and material design exercises, taken from and in connection with their studio work of the same term. This course is complementary to ASC623, which looks at many of the same issues from a technical standpoint.

Learning Objectives:

On completion of this course, students should be able to:

- Compose assemblies of construction materials in accordance with an expressed tectonic idea;
- Demonstrate an understanding of the basic tectonic ideas that underlie the assembly of architectural materials;
- Demonstrate an understanding of material properties and techniques of connection for construction materials;
- Demonstrate an awareness of the use of the basic principles of tectonics by various architects and how these tectonic ideas affect the reading of a building.

By the conclusion of this course, and in conjunction with the ASC520 Studio, students should be capable of designing with a rich set of expressive possibilities and understand the material basis of architectural design. Students should be able to effectively demonstrate their ability to design aspects of architectural details including: the selection of construction materials; their appropriate configuration to support the expression of architectural intentions; and to demonstrate their ability to articulate, through design and discourse, appropriately intricate forms and spaces within the detail to reflect the building's architectural ideas and forms.

Major Course Evaluation:

Critical Analysis	15% individual
Critical Synthesis	20% individual/team
Critical Design Study	10% individual
Design Analysis/ Synthesis	25% individual
Unscheduled In-Class Assignments & Tests	10% individual
Final Exam	20% individual

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	●
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	●
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	●
	B5	Ecological Systems	●
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

PLX 599 THE HUMAN WORLD: Urban Structures and Processes

Phase III: Integration; Term 5
Format: Lecture 3 hrs; Weight: 1.00
Prerequisites: Prerequisites: Block Promotion from Phase II
Instructors 2015: Biberstein (School of Urban and Regional Planning)
Instructors 2016: Biberstein (School of Urban and Regional Planning)
Instructors 2017: Hertel (School of Urban and Regional Planning)

Course Calendar Description:

This course investigates ideas and theories about the city, providing students with tools needed to select, analyze and plan an urban site, as well as to design an appropriate building in this complex environment. The relationship with and reaction to physical, social, economic, political, and cultural contexts are discussed using both local and international examples. Planning and zoning principles, including height, density, use, traffic and pedestrian flows are addressed, as are the administrative and political processes for controlling urban development.

Learning Objectives:

On completion of this course, students will be familiar with:

- Planning and zoning principles, including height, density, use, accessibility, traffic and pedestrian flows;
- The administrative and political structures and processes that control urban development;
- Ideas and theories about the city – historic, contemporary, and emerging;
- How to select, analyze and plan an urban site and design an appropriate building in a complex urban environment;
- The roles of public health, safety, welfare, property rights, and building codes in planning a site and designing an appropriate building in a complex urban environment.

Major Course Evaluation:

Assignment 1: Situating the City	15%
Mid-Term Exam	25%
Assignment 2: The Shape(s) of the City	25%
Final Exam	35%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	●
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	●
	C3	Structural Systems	●
	C4	Envelope Systems	●
	C5	Environmental Systems	●
D: Comprehensive Design	D1	Comprehensive Design	●
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 620 INTEGRATION STUDIO: Complex Building – Design Development

Phase III: Integration; Term 6
Format: Studio 9 hrs; Weight: 3.00
Prerequisites: ASC 520 Integration Studio within the same academic year or permission of the Associate Chair
Co-requisite: ASC 521 Light and Sound in Architecture, ASC 622 Documentation and the Construction Contract, ASC 623 Principles of Detailing
Instructors 2016: Wrigglesworth (coordinator); McArthur, Geldart, Ourceau, Norbraten, Madonna, Sankrithi, Ingrao
Instructors 2017: Floerke (coordinator), McArthur, Norbraten, Ingrao, Cichy, Sankrithi, Geldart, Martinovic
Instructors 2018: Wigglesworth (coordinator); Straka, Wojs, McArthur, Ingrao, Norbraten, Martinovic

Course Calendar Description:

This studio course continues to develop the technical and design features of students' projects from fifth semester, including systems integration, material development, technical detailing, and preparation of a limited set of contract documents. The course depends heavily on the integration of concepts from corequisite lecture courses. Further economic analysis, building code review and construction documentation including specifications are addressed as part of the complex building design development project.

Learning Objectives:

On completion of this course, students should be able to:

- Reinforce and innovate an established building design, providing a critical evaluation of the relationships between architecture and technology;
- Recognize, organize and visualize the integration of sustainable structural and building technology systems in the Design Development of a building of moderate scale and complexity;
- Identify details (i.e. building envelope) for a building design of moderate scale and complexity. Demonstrate the possible execution of these details while integrating knowledge from appropriate areas of material development. Visualize and justify the proposals, showing explicitly how they reinforce the overall chosen architectural concept;
- Distinguish the cost estimation of essential components for a building of moderate scale and complexity in relation to overall allocated building costs;
- Develop an understanding of documentation and presentation as a means of communication between all project participants, primarily between planners and executors.

Major Course Evaluation:

Phase 1: Schematic Design	15%
Phases 2&3: Design Development	50%
Phase 4: Design Development	35%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	●
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	●
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	●
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 521 LIGHT AND SOUND IN ARCHITECTURE

Phase III: Integration; Term 6
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: Block Promotion from Phase II
Instructor 2016: Berardi
Instructor 2017: Berardi
Instructor 2018: Berardi

Course Calendar Description:

This course presents the fundamentals of lighting and acoustic design in buildings. Subjective responses to light and sound are explored, and simple lighting calculations are used to evaluate spatial acoustic and lighting performance. Natural lighting processes and energy management techniques are investigated. Fundamentals of acoustic separation are presented. Students will analyse case studies of a variety of room types, including interior office spaces, public galleries and performance spaces that present opportunities to evaluate sound and light in various applications. Model testing of room acoustic performance and lighting will be introduced.

Learning Objectives:

On completion of this course, students should be able to:

- Understand the basics of sound and sound perception;
- Understand the concept of sound propagation outdoors;
- Understand the concept of room acoustics and the behaviour of sound in confined spaces;
- Begin to understand the design applications for acoustical spaces;
- Understand the basics of light and light perception;
- Understand the concept of lighting conditions and basic evaluations;
- Understand the concept of room light sources;
- Apply day-lighting to buildings;
- Begin to understand the design applications for lighting in buildings.

Major Course Evaluation:

Acoustic Assignment	20%
Lighting Assignment	20%
Acoustics Test	30%
Lighting Exam	30%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	●
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	●
	E5	Project Management	

ASC 622 DOCUMENTATION & THE CONSTRUCTION CONTRACT

Phase III: Integration; Term 6
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: Block Promotion from Phase II
Instructor 2016: Zone
Instructor 2017: Zone
Instructor 2018: Zone

Course Calendar Description:

This course develops in detail an understanding of the design and construction documentation systems used in the AEC industry, focusing on the design development, construction documents, and construction procurement phases of the construction project. Central to this course is the preparation of construction documents as a means of communicating design intent. Principles, such as clarity, consistency, and completeness, are to be represented in these documents. These will be considered with regard to a range of project delivery methods, and their impact on relationships among the vari- ous parties to a construction contract will also be discussed.

Learning Objectives:

On completion of this course, students should be able to:

- Apply the fundamental skills required to prepare construction documents (primarily working drawings and specifications) during the development phase of a building project;
- Recognize the various relationships, responsibilities and legal requirements imposed upon the various parties to a construction contract.

This course is intended to harmonize with objectives and intended learning outcomes established in ASC 620 Integration Studio II, ASC 521 Light & Sound in Architecture and ASC 623 Principles of Detailing.

Major Course Evaluation:

OBC Matrix Review	5%
Working Drawings	25%
Working Drawings	50%
Outline Specification	10%
File of Materials, Components and Systems	5%
Test	15%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	●
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	●
	C3	Structural Systems	
	C4	Envelope Systems	●
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

ASC 623 PRINCIPLES OF DETAILING

Phase III: Integration; Term 6
Format: Lecture. 3 hrs; Weight: 1.00
Prerequisites: Block Promotion from Phase II
Instructor 2016: Martinovic
Instructor 2017: Norbraten
Instructor 2018: Norbraten

Course Calendar Description:

This course presents principles and criteria for the technical design of the detail. These principles and criteria will be applied to the development of details, found in a variety of conditions in a building. For each condition, approaches toward detailing and performance specification are discussed, and design strategies developed. Students will critically analyse case studies of the performance of existing details. The communication of detail design from designer to the constructor, and the role of drawing review in ensuring appropriateness of details are discussed.

Learning Objectives:

On completion of this course, students should be able to:

- Understand detailing practice, construction materials and methods;
- Develop construction details as solutions that respond to a range of building conditions and material assemblies;
- Communicate these solutions using accepted documentation conventions.

Major Course Evaluation:

Project 1	10%
Project 2	40%
In-class and take away quizzes and assignments	20%
Exam	30%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	●
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	●
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

AR8101 STUDIO IN CRITICAL PRACTICE

M.Arch. I, Fall
Format: Studio 12 hrs; Weight: 3 credits
Prerequisites: None
Instructors, 2015: Wrigglesworth, Sorli
Instructors, 2016: Wrigglesworth, Sorli
Instructors, 2017: Wrigglesworth, Sorli

Course Calendar Description:

In this studio, students will be expected to develop a critical approach to architectural design and production. Students will be confronted with complex design problems which require a close examination of both the conditions that underlie the practice of architecture (including the students' own assumptions and beliefs) and the contexts within which and on which architectural practice acts. The development of an architectural response to these conditions and contexts, using ethical and professional judgment as well as techniques of critical analysis, will be the key objective of the studio.

Learning Objectives:

On completion of this course, students should be able to:

- Develop research skills; collect, analyse and synthesise information from multiple sources;
- Develop and exercise critical judgment;
- Work successfully, both in a collaborative team environment, and individually;
- Produce outcomes that represent – and advance – the skills and abilities developed prior to entering the M.Arch. Program;
- Develop design, presentation and communication skills – visual, written and verbal – of a standard consistent with graduate school studio work and preparation for future leadership in professional practice;
- Develop clear working methodologies that address design not only as the outcome of research and analysis, but as a form of research and analysis.

Major Course Evaluation:

1A Document (individual)	5%
1B Analyze (individual)	10%
2A Transform (individual)	15%
2B Territory (individual/team)	10%
3A Location (individual)	20%
3B Orientation (individual)	35%
4 Reflection (individual/team)	5%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	●
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

AR8102 SEMINAR IN CRITICAL PRACTICE

M.Arch. I, Fall
Prerequisites: None
Format: Seminar, 3 hrs; 1.0 credit
Instructor, 2015: Cirka
Instructor, 2016: Cirka
Instructor, 2017: Cirka

Course Calendar Description:

This course presents students with exemplars of critical practice and with methods of architectural research. The role of the architect as observer, critic, and form-maker within society will be discussed; critical practices will be discussed within the framework of contemporary directions in cultural and critical theory. The development of new technologies, either directly through research or indirectly through developing a demand, will be presented as a key role of the critical practice. Students may be asked to prepare a paper or other document which takes a critical position on a topic taken from one of the program's key areas of engagement – sustainability, technological innovation and the GTA.

Learning Objectives:

On completion of this course, students should be able to:

- Discuss at a knowledgeable level important critical issues facing the architectural profession in the near future;
- Identify leading practitioners of critical/projective architectural practice and discuss the various modalities by which they carry out this work;
- Communicate to others a developed theoretical understanding of the relationship between design and research in architectural practice, including a clear understanding of what constitutes design research;
- Lead a seminar discussion;
- Develop carefully constructed written arguments based on a critical review of a selected theoretical subject, its effects within architectural discourse understood as both a profession of practitioners and a discipline with a long history is a significant component of the written review;
- Create a proposal for architectural design research with the framework of theoretical discourses as established in this seminar.

Major Course Evaluation:

Symposium	10%
Seminar Discussion and Reading Evaluations	15%
Seminar Presentation	20%
Individual Seminar Essay	25%
Design Research Project Brief	30%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	●
	A5	Site Context and Design	●
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	●
C: Technical Knowledge	C1	Regulatory Systems	●
	C2	Materials	●
	C3	Structural Systems	●
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

AR8103 STUDIO IN COLLABORATIVE PRACTICE

M.Arch. I, Winter
Format: Studio 12 hrs; Weight: 3.0 credits
Prerequisites: AR8101 Studio in Critical Practice
Instructors, 2016: Floerke, Richman
Instructors, 2017: Polo, Giaimo
Instructors, 2018: Komisar, Dowsett

Course Calendar Description:

Architecture is never the product of a single individual. The myth of the star architect, of the heroic and creative genius, is out of step with the reality of architectural practice in our increasingly complex society. Working collaboratively in teams, and with input from specialised consultants and stakeholder groups, students will develop the design of a complex building. A design process of enquiry, analysis and integration of technical, cultural, social, and economic issues will be stressed.

Learning Objectives:

On completion of this course, students should be able to:

- Use design as a method of research and use research to inform design;
- Make use of primary and secondary source research tools and resources in support of furthering their design work;
- Design a project that would support an architectural design proposition;
- Design a comprehensive building of a medium level of complexity in accordance with general precepts of the Ontario Building Code (exiting, environmental and fire separations, accessibility, and health requirements) and the City of Toronto Zoning Bylaws;
- Understand and deploy strategies of sustainable architectural practices;
- Present projects with clarity, with both verbal and visual presentations of their projects, to their peers and instructors. (Presentations should include drawings, models, and other representations of a professional standard);
- Adopt various methods of collaborative techniques to design and research.

Major Course Evaluation:

Research/predesign	30%
Class participation	10%
Design phase 1	15%
Design phase 2	20%
Design phase 3	25%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	
	B2	Architectural History	
	B3	Architectural Theory	
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	●
	E2	Ethical and Legal Responsibilities	●
	E3	Modes of Practice	●
	E4	Professional Contracts	●
	E5	Project Management	●

AR8104 SEMINAR IN CONTEMPORARY AND FUTURE PRACTICE

M.Arch. I, Winter
Format: Lecture. 3 hrs; Weight: 1.0 credit
Instructor, 2016: Leong, Martinovic
Instructor, 2017: Leong, Martinovic
Instructor, 2018: Leong

Course Calendar Description:

This course is meant to offer students a theoretical basis for working in or operating an architectural practice in the 21st century. Topics will include the legal framework for architectural practice, the role of internship, basic financial management of a practice, management and leadership principles, and so on. All aspects are presented from a critical rather than a prescriptive viewpoint: students will be asked to examine current structures of practice and propose alternative versions. Alternative forms of practice, including the Integrated Design Process, will be discussed.

Learning Objectives:

On completion of this course, students will be familiar with:

- fundamentals of development financing
- building economics
- construction cost control
- life-cycle cost accounting
- professional judgment regarding social, political and cultural issues
- different methods of project delivery
- corresponding forms of service contracts and documentation
- competent and responsible professional service
- basic principles of practice organization
- financial management
- business planning
- marketing
- negotiation
- project management
- risk mitigation
- trends that affect practice

Major Course Evaluation:

Participation + Journal	20%
In-seminar assignment	20%
Research Study – Presentation	30%
Research Study – Report	30%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	●
	A3	Design Tools	●
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	●
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

AR8105 INTENSIVE RESEARCH STUDIO AND SEMINAR (Discontinued from Fall 2018)

M.Arch. I, Spring
Format: Studio and Seminar 30 hrs/week – 6 weeks; Weight: 4.0 credits
Instructors, 2016: Gorgolewski, Floerke
Instructors, 2017: Kapelos, Komisar
Instructors, 2018: Cirka, Kapelos

Course Calendar Description:

In this course, students will work under the close supervision of an instructor on design projects related to a current issue in the instructor's area of research. Building on the introduction to research in architecture from the previous year, this course gives students an in-depth view of one research project. This course may be offered at Ryerson or off-campus, depending on the subject of the research. As part of this studio, a seminar will be offered in which students are presented with the essential characteristics and methods of research in architecture, discussed in the context of the research project being undertaken.

Learning Objectives:

On completion of this course, students should be able to:

- Set up, frame, and carry out a research project; Analyse a new situation, a new country;
- Demonstrate an understanding of: modes of research; how to engage in research as an architect issue of topical importance as framed by instructor;
- Analyze and work within a global cultural setting, recognizing diverse economic, solcial, cultural and technological patterns.

Major Course Evaluation:

This will vary from term to term and instructor to instructor.
1.0 credit (25%) of this course is considered to be general education.

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

AR8106 SPECIAL TOPICS IN ARCHITECTURAL PRAXIS

M.Arch. II, Fall
Format: Seminar 3 hrs; Weight: 1 credit
Instructors, 2015: Polo, Nguyen
Instructors, 2016: Polo, Ripley
Instructors, 2017: Ripley, Grant

Course Calendar Description:

This course, offered in seminar format, will allow students in the final semester of the program to enter into a discussion of topics of current interest in architecture. Topics will vary year to year, as proposed by faculty and elected by students. To be taken concurrently with the thesis.

Learning Objectives:

Upon completion of this course students should be able to:

- Collect, analyze and synthesize information from multiple sources; exercise critical judgment;
- Understand the relationship between philosophical, literary and cinematic representations of the future and their role in shaping and disseminating architectural culture, as well as the role of architecture in responding to likely futures and in producing desired futures;
- Develop, articulate and support a critical position in relation to current themes in architectural praxis and in relation to their individual thesis topics;
- Prepare written material of high quality, in accordance with academic style standards, with attention to clarity, conciseness, correct use of grammar, spelling, vocabulary and composition.

Major Course Evaluation:

Book Review (individual)	20%
Position Paper (individual)	20%
Participation in discussions (individual) Design phase 2	25%
Collaborative project (group, with peer-review evaluation)	35%

A: Design	A1	Design Theories, Precedents and Methods	
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

AR8109 CONTEMPORARY ARCHITECTURAL THEORY (New course introduced Fall 2018)

M.Arch. I, Fall
Format: Lect. 3 hrs; Weight: 1.0 credit
New course introduced for Fall 2018

Course Calendar Description:

The theory course provides an intellectual framework within which the student will develop their own architectural position over the next two years of graduate study. The context and development of recent architectural theory will be discussed in relation to late twentieth century architectural theory and current architectural practice. The survey of theoretical perspectives in this course will culminate in the generation of each student's own theoretical position in their thesis next year.

Learning Objectives:

Upon completion of this course students should be able to:

- Discuss at a knowledgeable level important positions in recent architectural theory;
- Identify ideas in critical/projective architectural practice and discuss the various modalities by which they are presented;
- Communicate to others a developed theoretical understanding of the relationship between theory, design and research in the architectural discipline;
- Lead a seminar discussion;
- Develop carefully constructed written arguments based on a critical review of a selected theoretical subject. Its effects within architectural discourse understood as both a profession of practitioners and a discipline with a long history is a significant component of the written review;
- Place the key elements of contemporary architecture theory in a framework to develop position for the near future of the architecture discipline.

Major Course Evaluation:

Critical Analysis Assignment	15%
Reading Evaluations	5%
Seminar Discussion	10%
Seminar Presentation	10%
Theory Essay	60%

A: Design	A1	Design Theories, Precedents and Methods	●
	A2	Design Skills	
	A3	Design Tools	
	A4	Program Analysis	
	A5	Site Context and Design	
	A6	Urban Design	
	A7	Detail Design	
	A8	Design Documentation	
B: Culture, Communications and Critical Thinking	B1	Critical Thinking and Communication	●
	B2	Architectural History	
	B3	Architectural Theory	●
	B4	Cultural Diversity and Global Perspectives	
	B5	Ecological Systems	
C: Technical Knowledge	C1	Regulatory Systems	
	C2	Materials	
	C3	Structural Systems	
	C4	Envelope Systems	
	C5	Environmental Systems	
D: Comprehensive Design	D1	Comprehensive Design	
E: Professional Practice	E1	The Architectural Profession	
	E2	Ethical and Legal Responsibilities	
	E3	Modes of Practice	
	E4	Professional Contracts	
	E5	Project Management	

AR8110 THESIS AND DESIGN RESEARCH (New course introduced Winter 2019)

M.Arch. I, Winter
Format: Lect. 3 hrs; Weight: 1 credit
New course introduced for WInter 2019

Course Calendar Description:

Thesis significantly engages with the discipline of architecture through a student's extensive body of unique design research and rigorous academic scholarship. This course prepares students for work on their Thesis and the development of a personal architectural position. The course introduces thesis structure, approaches to critical thought, the role of theory, and research methods, as design research in architecture. Students will have prepared the foundation of their Thesis with this course.

Learning Objectives:

Upon completion of this course students should be able to:

- Identify the forms of research relevant to individual theoretical inquiry;
- Work with the accepted formats of academic inquiry in a thesis structure;
- Learn to communicate to others a developed theoretical understanding of the relationship between design and research in architectural practice, including a clear understanding of what constitutes design research;
- Learn to develop carefully constructed arguments based on a critical review of a selected theoretical subject;
- Create a proposal for architectural design research with the intellectual framework of theoretical discourses in the discipline of architecture;
- Prepare the preliminary material of a Thesis;

Major Course Evaluation:

Thesis Statement	5%
Table of Contents	5%
Bibliography + Glossary of Terms	10%
Design Research Proposal	20%
Thesis Outline	20%
Preliminary Thesis Document	40%

Required Variable Courses

These courses, required by all students in the program, vary in their content from student to student and from year to year. As a result, they are not presented as evidence towards the Student Performance Criteria, and are considered to be electives.

ASC 205/405/605/805: COLLABORATIVE EXERCISE (B.Arch.Sc. Winter)

Format: Charrette

Course Calendar Description:

Students in Collaborative Exercise I will have the opportunity to explore architecture in context and develop an awareness of contextual issues. Collaborative Exercise I may involve a field trip and exercises in the field related to recording, documentation and analysis of sites visited. Expectations: Students will be required to present the documentation of their work, which they undertook in Collaborative Exercise I, in an appropriate form and medium. This course is graded on a pass/fail basis.

AR8107, AR8108 COLLABORATIVE COMPETITION 1 AND 2 (M.Arch I and II)

Format: Variable - self initiated

Weight: 1 credit (2 in total). Pass/Fail.

Course Calendar Description:

In collaboration with fellow students at the graduate and undergraduate level, students take part in architectural competitions or other design activities approved by the Associate Chair. Competition teams will normally be led by Ryerson faculty members.

MASTERS THESIS PROJECT

M.Arch. II

Format: Unscheduled and self-directed; two terms minimum; Weight 5 credits equivalent (milestone)

Course Calendar Description:

Working closely with a faculty supervisor, students will carry out independent research on an approved topic within the field of architecture, resulting in the development of a thesis report and subsequently a critical project. The student will be required to publicly present the thesis report, which forms the critical, historical, and theoretical basis for the thesis project. A comprehensive review of literature and relevant works will form a core component of this report. The thesis project must be grounded in architectural praxis, but is not limited to the design of a building. This course culminates in a public juried presentation of thesis projects. This is a "Milestone." Pass/Fail.

Required General Education Courses

These courses are required of all students in the program but do not contribute to satisfying the Student Performance Criteria. These courses are designed to contribute to the broader education of an architect or to the Department of Architectural Science's mandate of educating students for a broad range of roles within the AEC Industry, including as Building Scientists and Project Managers.

PCS 107 THE NATURAL CONTEXT: Physical Concepts and Processes

B.Arch.Sc.

Instructor, 2015: Carvalho (Physics)
Instructor, 2016: Carvalho (Physics)
Instructor, 2017: Springer (Physics)

Course Calendar Description:

This course offers an introduction to the application of basic physical concepts and processes in the physical world to the built environment. Basic concepts of physics are introduced in the context of the building project: gravitation, fluid mechanics, heat transfer, waves, and properties of materials. Structural concepts of applied loads balanced by structural resistance are also considered. The concept of natural versus controlled environments is introduced and implications are discussed.

ACS 104 THE HUMAN CONTEXT: Ideas that Shape the World

B.Arch.Sc.

Instructor, 2015: Toop, Beillard (Philosophy)
Instructor, 2016: Beillard (Philosophy)
Instructor, 2017: Beillard, Bali (Philosophy)

Course Calendar Description:

This course is for Architecture students only. This course studies ideas that shape the contemporary world, and explores what it means to live as an individual, citizen, and member of our complex, multifaceted, volatile global society. The focus is on these issues as they arise in the Canadian context; it studies the contribution of Canadian thinkers to global debates, and it challenges students to articulate their own responses to central issues of the contemporary experience.

Option Studios

Students in the fourth year of the B.Arch.Sc. program elect all studios and courses.

Students who elect to take the Building Science or Project Management studios must take the accompanying suite of courses. Students who elect an Architecture studio are free to take courses in any of the three options.

All studios run for 9 hours per week and have a weight of 3.00.

ARC 720/820 ARCHITECTURE STUDIO

B.Arch.Sc.

Instructors, 2015: Atkinson, Martinovic, Polo, Cichy, Leong, Liao
Instructors, 2016: Liao, Kapelos, Martinovic, Ripley, Polo

Instructors, 2017: Kapelos, Leong, Ripley, Schank Smith, Papatheodorou, Jurkovic

Course Calendar Description:

Option studios are offered each term, on the basis of demand, availability and faculty interest. (Examples may include: The Essential Detail; Spatial Syntax; Architecture & Structure; Landscape / Urban Design, Housing / Community Design; Digital Architecture; Intervention in an Historical Context).

BSC 720 BUILDING SCIENCE STUDIO 1: Building Investigation

B.Arch.Sc.

Instructors, 2015: Doshi
Instructor, 2016: Doshi
Instructor, 2017: Doshi

Course Calendar Description:

This studio course deals with the practical assessment of the performance of existing buildings. It applies the theoretical knowledge gained in associated lecture courses that are co-requisite with this studio. Students will have the opportunity to apply investigative, survey, measurement and testing techniques, use assessment protocols to assess the performance of real buildings, and use this information to suggest ways to improve performance. The course includes assessment of the building fabric, mechanical systems, energy use, indoor environment, and user satisfaction. An important component of student evaluation is the preparation of a comprehensive technical report including an interpretation of results.

BSC 820 BUILDING SCIENCE STUDIO 2: Investigating Details

B.Arch.Sc.

Instructors, 2015: Ramakrishnan
Instructor, 2016: Ramakrishnan
Instructor, 2017: Ramakrishnan

Course Calendar Description:

Students will undertake an individual research project of a particular technology, material or component. Areas for possible student research include: innovative use, reduction of environmental impact and practical application to the construction industry. Outcomes of this project may be the design of a new component or detail, the application of a material or component in a small design project, or the development of a prototype.

PMT 720 PROJECT MANAGEMENT STUDIO 1

B.Arch.Sc.

Instructors, 2015: Poh
Instructors, 2016: Poh
Instructors, 2017: Poh

Course Calendar Description:

This studio course studies development processes as applied to specific project conditions. Students undertake group and individual examinations of market and feasibility studies, real estate planning, approvals processes, proposal calls, construction phase issues, and facilities operation. The course provides students with opportunities to apply and integrate knowledge gained in Phases I, II and III to a variety of project management problems. Students will continue to develop skills in critical examination and problem solving methodologies. In this studio, students are expected to develop demonstrably higher order leadership and team building skills and abilities in graphic, written and verbal communication and to gain a working understanding of the component elements of all phases of a development project.

PMT 820 PROJECT MANAGEMENT STUDIO 2

B.Arch.Sc.

Instructors, 2016: Poh
Instructors, 2017: Poh
Instructor, 2018: MacKenzie

Course Calendar Description:

In this course, students work in consultation with faculty on an individually directed research paper in a project management topic with current relevance to the AEC industry. In addition, studio group projects are used to simulate the construction procurement process.

Elective Courses

Students in the fourth year of the B.Arch.Sc. program elect all studios and courses.

Students who elect to take the Building Science or Project Management studios must take the accompanying suite of courses. Students who elect an Architecture studio are free to take courses in any of the three options.

Courses with an AR8xxx course number are cross-listed with Graduate Studies. Both fourth year undergraduates and first year graduate students may take these courses.

ASC704/ASC804 INDEPENDENT STUDY

Instructors: Various

Course Calendar Description:

This course gives students an opportunity to explore subject areas which are not part of the regular curriculum. The student must submit a written proposal of independent study for approval by the Department—see Architectural Science for information.

ASC732/AR8202 ARCHITECTURE THEORY SINCE 1968

Instructor: Komisar

Course Calendar Description:

This course surveys the major trajectories in architectural theory since 1968 that form part of the context for current architectural practice. The first half of the course will focus on a number of trajectories that can now be treated historically; semiotics, critical histories, phenomenology, deconstruction, critical regionalism, and identity politics. Building on this foundation, the second half of the course will consider current and emerging theoretical frameworks for architecture.

ASC733/AR8206 CANADIAN ARCHITECTURE SINCE 1945

Instructor: Polo

Course Calendar Description:

This course exposes students to the recent history of Canadian architecture, from the immediate post-war to the present. The conditions will be examined that led to and facilitated the spread of modernism as an important mode of architectural production and expression in post-war Canada, and how these contributed to a national architectural identity, particularly in the context of Canada's celebration of the 1967 centennial of Confederation.

ASC734/AR8209 ADVANCED DIGITAL DESIGN

Instructor: Ramelson

Course Calendar Description:

Digital design using computer software has evolved through a number of modes of design practice. Recent software applications have introduced more fluid interfaces that allow for serendipitous design discovery that can emerge from sketching and experimenting with forms. Students in this course will explore the potential of a number of types of software to support the digital design process. These digital tools will be examined within a general creative contex.

ASC735/AR8214 HERITAGE CONSERVATION THEORY AND PRACTICE

Instructor: Etkind, Giaimo

Course Calendar Description:

A course on the theoretical and practice issues of heritage conservation, particularly with regard to the preservation of buildings and sites of architectural, historical and cultural significance in the Canadian context. The course reviews theories of conservation and explores methods of documenting heritage resources and methodologies and techniques available for physical interventions into heritage structures.

ASC750/AR8204 ARCHITECTURE AND PUBLIC POLICY

Instructor: Leshchyshyn

Course Calendar Description:

This course investigates the application of architectural principles and processes to facets of public policy not traditionally addressed by the discipline of architecture. The intent is to identify how such principles and processes can shed new light on, and positively contribute to, the evolution of public policy. Some of the public policy issues to be considered include: infrastructure (transportation, waste handling, supply of water, energy and communication), social policy (relating to poverty, homelessness and health), education and governance.

ASC751/AR8203 ARCHITECTURAL WRITING

Instructor: Schank Smith

Course Calendar Description:

The objective of the course is to provide students with exposure to the various forms of writing related to architecture as a professional practice and critical/cultural discipline. The goal is to improve students' writing and verbal communication in the context of architectural practice and discourse. The process of critical assessment and documentation of architecture will help students focus and clarify the intentions underlying their own design work.

ASC752 BUSINESS PRACTICES IN THE AEC INDUSTRY

Potential Instructor: Leong

Course Calendar Description:

The structure of the AEC industry is examined from the perspective of the shareholders and stakeholders of a design, management or construction firm. The application of tools essential for the effective management of resources in a firm are considered. Principles of business negotiations as they apply to scope of work, professional fees and value for services are also considered. Students are exposed to fundamental theories of ethics encountered in professional practice.

ASC754/AR8208 CREATIVE SPACE SIMULATION

Potential Instructors: Cichy

Course Calendar Description:

Increasingly, computer modeling allows designers to simulate a range of performance factors of a building, including thermal performance, ventilation, lighting, acoustics, structure and others. This course will allow students to experience the use of such software and explore the opportunities for the design of spaces and for current architectural practice. Students will use simulation software to analyze spaces and develop design proposals based on the results of simulation.

ASC755/AR8210 DIGITAL TOOLS

Instructor: Hui

Course Calendar Description:

Digital Tools: Ways of conceiving and communicating architectural ideas. An advanced level seminar taught by department faculty members, either singly or as a team. Topics offered in various semesters will be determined by faculty expettise available at the time. Open to students in all architectural science options.

ASC756/AR8212 FIRE SAFETY IN THE BUILT ENVIRONMENT

Instructor: Liao

Course Calendar Description:

This course provides students with an introduction to fire safety engineering. The principal objective of fire safety engineering is to provide an acceptable level of safety when an accidental fire occurs. Computational simulation software packages will be used to demonstrate fire growth and smoke movement under different scenarios. This course is de- signed for architecture students who have developed some basic understanding of fire and knowledge about regulations associated with fire safety in buildings.

ASC852/AR8216 LANDSCAPE ECOLOGICAL DESIGN

Instructor: Bradbee

Course Calendar Description:

In this course students will explore the fundamentals of landscape design principles and applied ecological form. This course will focus on theories of both designed and natural composition of landscape elements. The course objectives are achieved through lectures, field trips, case studies and in-class assignments.

ASC853/AR8217 LANDSCAPE DESIGN, THEORY AND APPLICATION

Potential Instructor: Bradbee

Course Calendar Description:

This course in landscape design, site and environmental planning engages students in the development and application of personal design philosophy towards the built and naturalistic environment. This is achieved through researching the professional work, styles and paradigms of internationally recognized architects, landscape architects, artists, planners and designers from the 19th-21st centuries.

ASC855/AR8220 SUSTAINABLE RATINGS SYSTEMS

Instructor: Straka

Course Calendar Description:

The course will critically evaluate current and emerging practices in the assessment of environmental impacts of built environments. Students will investigate different approaches to the assessment and rating of sustainable buildings, how these are reflected in various rating systems such as LEED, Living Building Challenge, Green Globes, Passive House, and new initiatives as they transpire. The course addresses rating systems as tools for analysis, and critically examines how they inform the design process.

ASC856/AR8219 THE SMALL BUILDING

Instructor: Zone

Course Calendar Description:

Throughout history, the small building has engaged the landscape and been part of the urban environment. This course will study the small building in many cultures and will provide a greater understanding of human scale, meaning, symbol, and function, and the relationship of these factors to architecture.

ASC857/AR8213 GLASS IN ARCHITECTURE

Instructor: Atkinson

Course Calendar Description:

This course will take us on an in-depth study of that most expressive of modern materials, glass. The material will be looked at in a holistic manner, that is, we will approach our study from technical, historical, theoretical, and expressive directions.

ASC900 - ASC909 SELECTED TOPICS IN ARCHITECTURAL SCIENCE

Potential Instructors: Various

Course Calendar Description:

An advanced level course taught by Department faculty members either singly or as a team. Topics offered in any semester determined by faculty expertise available. Open to all three options and to graduate students as a professional elective. Registration may be limited to students in a specific year of the program at the Department's discretion and numbers will be limited. Not offered every year.

AR8221 ARCHITECTURAL REPRESENTATION

Instructor: Smith

Course Calendar Description:

The emphasis of this course is to read, write and discuss issues of architectural representation. Representation—very basically, imitation with a change—is a key element in how we read and provide meaning in architecture. The main goal of this class is ot learn how concepts of representation impact the architecture that we make and the architecture that we experience.

AR8224 DESIGNING THE PRODUCTIVE CITY

Instructor: Komisar

Course Calendar Description:

Architects can contribute to the transformation of our cities into more sustainable environments. This task encompasses designing higher density living and working environments, including farmers' markets, greenhouses, edible landscapes, living walls, productive green roofs, community gardens, and other strategies. The course will review these strategies and apply them to a real-world project in Toronto, looking at actual and proposed development projects that allow food production and provision inside planned and existing neighborhoods.

AR8226 DIRECTED STUDIES IN CANADIAN CONSTRUCTION

Instructor: Cirka

Course Calendar Description:

This course is available to internationally educated students enrolled in the graduate program in architecture, who lack the knowledge of Canadian construction. Students are required to present appropriate assignments (exam, report, etc) for assessment as agreed by the supervisor and Program Director. Registration approval is required from the Associate Chair of the M.Arch. program.

AR8229 RESEARCH SEMINAR: Emerging Technologies

Potential Instructor: TBD

Course Calendar Description:

Digital fabrication, parametric design and mass customization offer not only form-making tools for designers but can also enhance the performative qualities of our buildings. How do we harness and mobilize these tools for the future? How can architecture respond to the hybridization of real and virtual spaces to enrich human experience? In this seminar, students will prepare and present research papers discussing the architectural effects of emerging technologies as well as participating in discussions and focused readings on a theme put forward by the instructor and approved by the Program Committee.

AR8230 RESEARCH SEMINAR: Sustainable Design

Potential Instructor: Peters

Course Calendar Description:

How do we ensure that our world is available for the use and enjoyment of future generations? How do we offer a better quality of life to more citizens through the built environment? Beyond the design of energy-efficient buildings, our holistic view of social, cultural and economic sustainability looks to uncover and design the new infrastructures that will be needed to ensure a healthy, vital future. In this seminar, students will prepare and present research papers discussing aspects of sustainable design as well as participating in discussions and focused readings on a theme put forward by the instructor and approved by the Program Committee.

BSC 721 THEORY/PERFORMANCE 1: Existing Buildings

Required for Building Science option students

Instructor: Ramakrishnan

Course Calendar Description:

Looking at Existing Buildings. This course examines the role of the building forensic consultant. Students learn the processes, methodologies and techniques used for diagnosing failures in building systems and/or building components. The theories behind protocols for testing and surveying are discussed and familiarity with the role of Codes, Standards and construction documentation is developed. Post-occupancy evaluation of buildings, and how this can be used as a diagnostic tool, is presented and developed. There will also be a focus on the theory and practice of decision-making related to building performance, including economic considerations using techniques presented in ASC 522.

BSC 722 SUSTAINABLE ENVIRONMENTAL CONTROL SYSTEMS

Required for Building Science option students

Instructor: Liao

Course Calendar Description:

This course explores the role of sustainable mechanical, electrical and control systems for buildings. Students explore innovative ways of heating, cooling, ventilating and lighting buildings. The course will consider renewable energy technologies, such as solar, wind, geothermal, and biomass energy, and the implications of their use on architectural form and details. Analytical techniques for choosing appropriate options are presented.

BSC 821 THEORY/PERFORMANCE 2: Sustainable Detail Design

Required for Building Science option students

Instructor: Doshi

Course Calendar Description:

This course focuses on issues of detail design, particularly with reference to sustainable buildings. It addresses the concept of integrated design of components and systems, and strategies for innovations to reduce environmental impacts. Students develop a detailed knowledge of the issues related to construction systems aimed to minimise environmental impact. The course develops some of the underlying theories of appropriate decision making such as the role of statistics in data analysis and synthesis, and the importance of Life Cycle Assessment. Students become knowledgeable in green building ratings, and are introduced to environmental modeling programs.

BSC 822 ADVANCED ENVELOPES/COMPONENTS

Required for Building Science option students

Instructor: Richman

Course Calendar Description:

This course develops an advanced level of understanding of the design of building envelopes and cladding. Students investigate new and advanced forms of cladding and cladding systems, and develop an understanding of complex detail design. Sustainability aspects of alternative materials and systems are considered.

PMT 721 ECONOMICS FOR PROJECT MANAGEMENT

Required for Project Management option students

Instructor: Poh

Course Calendar Description:

Financing, cost planning and control are addressed in depth. In the course, the physical factors affecting the value of real property, methods of budget determination, quantity and scope of work estimation, elemental cost analysis and determination, and planning, scheduling and control are explored. These are considered in the programming, planning and approvals stages of developments, and are applied to a range of ownership options and building types. Tools and techniques for building programming, decision-making, implementation control and life cycle costing will be evaluated.

PMT 722 INFORMATION SYSTEMS

Required for Project Management option students

Instructor: Bower

Course Calendar Description:

This course provides students with an in-depth exposure to the information systems, tools and techniques that are com- monly used in the AEC industry. The course examines how management information systems, using current computer technology, can provide project managers with the data necessary to perform their management functions. Information systems currently in use in the industry are examined, with particular emphasis on project planning, scheduling, resource allocation and the control of time and cost, from both practical and theoretical standpoints. Innovative approaches are also explored.

PMT 821 CONSTRUCTION PRACTICES & MANAGEMENT

Required for Project Management option students

Instructor: Poh

Course Calendar Description:

Students undertake a detailed study of the materials and methods of construction service, delivery and control as applied to a variety of building types. Included are investigations of building materials, construction techniques, and contract and cost control methodologies. Attention is given to the context of the AEC industry, organizations and the project manager's roles and responsibilities. Students will appraise the multiple aspects of site operations and evaluate site management performance. There is a focus on the role of value engineering as an integrated decision-making tool throughout all phases of a construction project.

PMT 822 PROCUREMENT AND CONSTRUCTION MANAGEMENT

Required for Project Management option students

Instructor: McArthur

Course Calendar Description:

This course presents a study of the project management process as applied to projects of the built environment, with an emphasis on novel methods of project delivery and procurement procedures, site management, commissioning, and facility management. The use of project control systems in the management of these phases is studied, as are techniques of construction management in relation to the planning and control of site operations. Students are introduced to contemporary construction methods and equipment. The importance of the role of the project manager in ensuring the buildability and cost efficiency of the project is stressed and environmental management issues in the construction process are presented. In a review of the construction industry, the changing roles of the participants, and current trends and problems are discussed.

4.4 Faculty CVs

Cheryl Atkinson, B.E.S., B.Arch., OAA, MRAIC
Associate Professor

Date of Appointment 2010
Area of Expertise Design, Design & Health, Design & Phenomenology, Design & Public Space, Design & Construction
Recent Teaching Assignments

2017-2018	ASC 205: Collaborative Exercise	ASC 605: Collaborative Exercise III
	ASC 401: Design Studio III	ASC 805: Collaborative Exercise IV
	ASC 405: Collaborative Exercise II	ASC 857/AR 8213: Glass in Architecture
	ASC 520: Integration Studio I	
2016-2017	Sabbatical	
2015-2016	ARC 720: Architecture Studio	ASC 202: The Building Project
	ASC 401: Design Studio III	ASC 857/AR 8213: Glass in Architecture

Education

1984	Bachelor of Architecture, University of Waterloo
1982	Bachelor of Environmental Science, University of Waterloo

Teaching Experience

2010 - Pres.	*Faculty*, Department of Architectural Science, Ryerson
1986 - 2002	*Adjunct Faculty,* University of Waterloo School of Architecture and the John H. Daniels Faculty of Architecture , Landscape and Design, and Ryerson University

Professional Experience

1991 - 2008	*Senior Associate,* Teeple Architects Inc., Toronto
1988 - 1991	Private Practice
1987	Oleson Worland Architects, *Toronto*
1985 - 1987	Curtner/Brown Architects, Quadrangle Architects, Toronto
1981 - 1983	A.J. Diamond, Donald Schmitt and Co. Architects and Planners, Toronto

Recent Honours and Awards

2016	Fellow of RAIC
2013	Toronto Urban Design Award of Merit, Linea Bayview Town Homes, Project Designer and Project Architect with Teeple Architects Inc. (2007-2008)
2010	Prairie Design Award of Excellence, Montrose Cultural Centre, Grand Prairie Alberta (Project Architect, Design Team Member, Associate in Charge 2006-2008) with Teeple Architects Inc.
2009	OAA Award of Excellence for the Langara College Library and Classroom Building and Master Plan, Vancouver, Project Architect, Associate in Charge with Teeple Architects Inc.

Recent Publications

2016	Atkinson, C., "Healthy Outcomes, A Major Pre- and Post-Occupancy Study of a New Toronto Hospital Provides Evidence for Design's Impact on Qualitative Aspects of Wellness." *Canadian Architect*. (October 2016): 40-43
2015	Atkinson, C., "A Thick Green Line: Extracting a New Public Realm within Existing Hyper Density," *Spaces & Flows and International Journal of Urban and Extraurban Studies*
2014	Atkinson, C. Architectural Comparative Analysis Report for the POE of Bridgepoint Active Healthcare (June 2014): 1-109 submitted to the Ontario Ministry of Health and Long Term Care, Toronto ON.
2014	Atkinson, C., "Architectural metrics - developing design analysis tools for post- occupancy evaluations" *World Health Design, Design and Scientific Review*. (October 2013): 60-69
2012	Atkinson, C."Readymade," 2012, in ACSA 101 *New Constellations New Ecologies* Proceedings of the 101st Annual Meeting of the Association of Collegiate Schools of Architecture (ACSA)

SRC Activities

2017	Installation: Design ZeroHouse at EditDX
2017	Grant-funded Research - NetZERO Hous[ing], A Built Prototype for Exhibition
2016	Exhibition: Design Matters: Bridgepoint POE at Paul Cocker Gallery Ryerson

Academic, Professional, and Public Service

Member of Metrolinx Design Review Panel, GTA

OAA SBEC (Sustainable Built Environment) Committee

OAA Mentor and member of OAA Mentorship Committee

Cheryl Atkinson

Umberto Berardi, M.Arch, M.Eng., PhD
Associate Professor

Date of Appointment 2014
Area of Expertise Design, Design & Health, Design & Phenomenology, Design & Public Space, Design & Construction
Recent Teaching Assignments

2017-2018	BL8100: Building Science Theory	BL8104: Building Design Studio
	ASC 521: Light/Sound in Architecture	BL8207: Building Performance
2016-2017	BL8100: Building Science Theory	BL8104: Building Design Studio
	ASC 521: Light/Sound in Architecture	ASC 520: Integration Studio
2015-2016	BL8100: Building Science Theory	BL8104: Building Design Studio
	ASC 521: Light/Sound in Architecture	ASC 520: Integration Studio

Education

2011	PhD, Politecnico di Bari
2009	MEng, University of Southampton
2008	MArch, Politecnico di Bari

Teaching Experience

2002 - 2014	*Faculty*, Department of Civil and Environmental Engineering, Worchester Polytechnic Institute, MA, U.S.

Recent Honours and Awards

2018	Early Research Career Excellence Award, Ryerson University
2017	CFI - JELF, BeTOP – Building efficiency: Testing, Operation and Performance of advanced building systems
2017	Ontario Ministry of Research, Innovation and Science, Early Researcher Award
2016	Franco Strazzabosco Award for Best Young Engineer – ISSNAF, Italian Scientists and Scholars in North America Foundation

Umberto Berardi

Recent Publications	2018	U. Berardi, S. Soudian, "Benefits of Latent Thermal Energy Storage in The Retrofit of Canadian High-Rise Residential Buildings", *Building Simulation*
	2018	U. Berardi, R. Nosrati, Long-Term Behaviour of Aerogel-Enhanced Insulating Materials Under Different Aging Laboratory Conditions, *Energy*
	2018	U. Berardi, Aerogel-Enhanced Solutions for Building Energy Retrofits: Insights From a Case Study, *Energy and Buildings*
	2018	U. Berardi, H. Anaraki, The Benefits of Light Shelves Over The Useful Daylight Illuminance in Office Buildings, *Indoor and Built Environment*
	2018	R. Nosrati, U. Berardi, Hygrothermal Characterization of Aerogel-Enhanced Insulating Materials Under Different Humidity and Temperature Conditions, *Energy and Buildings*
SRC Activities	2017-2022	Ontario Ministry of Research, Innovation and Science, Early Researcher Award (ERA), Integrating nanotechnologies in advanced building systems, $190,000
		Ontario Center for Excellence - VIP I + NSERC Engage, Optimization
		BeTOP - Building efficiency: Testing, Operation, and Performance. Material Research Laboratory, external link
Academic, Professional, and Public Service		Editor-in-chief of the *Canadian Acoustics* journal
		Associate Editor of *Intelligent Building International*
	2018-2020	IBPSA-Canada, Member of the Board of Directors
	2019	Conference Chair IAQVEC 2019 (Indoor air quality, ventilation & energy conservation) and Elected President
	2016	International Committee Chair of the International Conference on Sustainable Design, Engineering and Construction - ICSDEC 2016, Tempe-Arizona, May 2016
	2016	Technical Committee Chairman and Liaison PLEA Conference, Los Angeles, July 2016
	2015	Technical Program and Leadership Committee Chair of ICSDEC 2015, Chicago, May 2015
	2017-2020	Canadian Association of Acoustics, Member of the Board of Directors
		Member of the Scientific Committees of 30 international congresses, in 20 countries, and Plenary Speaker

Umberto Berardi

John Cirka, B.Arch., M.Sc.Arch, Ph.D.
Associate Professor, Associate Chair, Graduate Studies Architecture

Date of Appointment 2004
Area of Expertise Advanced Design Methods in Architecture
Recent Teaching Assignments

2017-2018	AR 8102: Seminar in Critical Practice	AR 8105: Intensive Research Studio and Seminar
	ARC 820: Architecture Studio	
2016-2017	AR 8102: Seminar in Critical Practice	ARC 820: Architecture Studio
2015-2016	AR 8102: Seminar in Critical Practice	ARC 820: Architecture Studio

Education

2011	PhD in Media and Communications, European Graduate School
1984	Master of Science in Architecture (Building Design), Columbia University
1980	Bachelor of Architecture, Carleton University

Teaching Experience

2004 - Pres.	*Faculty*, Department of Architectural Science, Ryerson University
1988 - 1997	*Adjunct Assistant Professor*, School of Architecture, University of Toronto, Toronto, Ontario
1984 - 1987	*Assistant Professor*, School of Architecture, Carleton University, Ottawa, Ontario

Professional Experience

2003 - 2004	*Senior Designer*, Teeple Architects, Toronto, Ontario
1993 - 2002	*Senior Designer*, Zeidler Roberts Partnership, Toronto, Ontario
1987-1989	*Intern Architect*, A. J. Diamond and Partner, Toronto, Ontario
1980-1983	*Intern Architect*, Barton Myers + Associates, Toronto, Ontario

Academic, Professional, and Public Service

2017	CACB Accreditation Team Member 2017 University of Calgary
2015	SSHRC 2015 External Assessor

John Cirka

John Cirka

Hitesh Doshi, BTech, MAsc., PEng.
Professor

Date of Appointment 1994
Area of Expertise Building Science
Recent Teaching Assignments

2017-2018	ASC 303: Structures II	BL 8201: Sustainability - Existing Buildings
	BSC 720: Building Science Studio I	BSC 821: Theory/Performance II
2016-2017	ASC 303: Structures II	BSC 720: Building Science Studio I
	BSC 821: Theory/Performance II	
2015-2016	ASC 303: Structures II	BL 8210: Building Science and Architectural Research Methods
	BSC 720: Building Science Studio I	BSC 821: Theory/Performance II

Education

1983 - 1985 *Master of Applied Science (Civil Engineering),* University of Toronto, Toronto, Ontario
1978 - 1983 *Bachelor of Technology (Civil Engineering),* Indian Institute of Technology, Mumbai, India

Teaching Experience

1994 - Pres. *Faculty,* 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

Professional Experience

1994 - Pres. *Sole Proprietor,* Registered Engineering Firm (Architectural Engineering Services)
1994 - Pres. *Retainer,* Trow Consulting Engineers Limited.
1991 - 1994 *Department Head and Associate Building Science Engineer*, Trow Consulting Engineers Limited

SRC Activities	2016 - Pres.	Member and Vice Chair - Condominium Managers Standards, Council of the Association of Condominium Managers of Ontario
	2013 - Pres.	Consultant - Professional Standards Committee of the Professional Engineers Ontario
	2015	Impact of Insulated Concrete Curb Balcony Slab, Procedia Engineering, Vol. 118, 2015 pp. 1030-1037
	2014	Consultant - Tarion Corporation, Policy Framework for Builder Education
	2007 - Pres.	Green Roof Policy Maker - CMHC
	2003 - Pres.	Green Roof Policy Development - City of Toronto

Academic, Professional, and Public Service	Certificate of Authorization Holder with the Professional Engineers Ontario working as a sole proprietor providing building science services

Masha Etkind, BArch, MArch, MRAIC
Professor

Date of Appointment 1989
Area of Expertise Architectural Design, History and Theory of Architecture, Heritage Conservation Theory and Practice
Recent Teaching Assignments

2017-2018	ARC 820: Architecture Studio	ASC 301: Design Studio
	ASC 406: Ideas, Technologies & Precedents II	ASC 735/AR 8214: Heritage Conservation Theory & Practice
2016-2017	ASC 301: Design Studio II	ASC 401: Design Studio III
	ASC 406: Ideas, Technologies & Precedents II	
2015-2016	ASC 201: Design Studio I	ASC 301: Design Studio
	ASC 306: Ideas, Technologies & Precedents II	ASC 735/AR 8214: Heritage Conservation Theory & Practice

Education

1981	*M.E.S,* completed required course work, York University, Faculty of Environmental Studies, Toronto, Ontario.
1979	*Master of Architecture,* University of Toronto, School of Architecture, Toronto, Ontario.
1971	Bachelor of Architecture, Leningrad State University, Department of Architecture and Urban Planning,Russia.

Teaching Experience

1989 - Pres.	*Faculty.* Ryerson University, Department of Architectural Science

Professional Experience

1983 - 1992	*Architectural Design,* Dharam Malik Architects and Planners (Toronto)
1979 - 1983	Coombes, Kirkland, Berrige Architects and Planners

Recent Publications

Shafrir, U., & Etkind, M. (2018). Concept Parsing Algorithms (CPA) for Textual Analysis and Discovery: Emerging Research and Opportunities. IGI Global. ISBN 9781522521761.

Etkind, M., Kenett, R. S., & Shafrir, U. (2016). Learning in the Digital Age with Meaning Equivalence Reusable Learning Objects (MERLO). In Railean, E., Walker, G., Elçi, A., & Jackson, L. (Eds.), *Handbook of Research on Applied Learning Theory and Design in Modern Education*, Chapter 15, 310-333, IGI Global. ISBN 9781466696341.

Shafrir, U., & Etkind, M. (2012). Memory and History in the Digital Age with Conceptual Curation and Pedagogy for Conceptual Thinking. Memory at War Project Symposium, Department of Slavonic Studies, University of Cambridge, UK.

Etkind, M (2012).Heritage Canada: 'Language and Roots of Canadian Architecture'. Canadian Network for Inclusive Cultural Exchange (CNICE)

Etkind, M (2014). Tel Aviv: World Heritage Site – Revised Guidelines for Conservation of designated Modern buildings in Tel Aviv, Israel

SRC Activities

2012 - Pres.	Pedagogical Innovations: Meaning Equivalence (ME) pedagogy
2009 - Pres.	Pedagogical Innovations: Memorandum of Understanding (MOU) between Ryerson University and Tel Aviv University

Academic, Professional, and Public Service

2005 - 2018	Member, Review Board International Journal of Teaching and Learning in Higher Education (IJTLHE)
2005 - 2018	Member, ICOMOS Canada International (International Council of Monuments and Sites)
2007 - 2016	Member, ICOMOS Israel

Masha Etkind

Leila Marie Farah, PhD, M.Arch, DPLG
Associate Professor

Date of Appointment 2011
Area of Expertise Ecology and Design, Integrated Design, Environmental Design, Healthy and Inclusive cities
Recent Teaching Assignments

2017-2018	Sabbatical	
2016-2017	ASC 201: Design Studio I	ASC 301: Design Studio
	ASC 403: Site Development & Planning	
2015-2016	ASC 201: Design Studio I	ASC 301: Design Studio
	ASC 401: Site Development & Planning	

Education

2011	*Ph.D.,* McGill University, School of Architecture, Montreal, Canada
2006	*M. Arch.,* McGill University, School of Architecture, Montreal, Canada.
2004	*Architect, Hons.,* Ecole Nationale Supérieure d'Architecture Paris-Malaquais, Paris, France.

Teaching Experience

2011 - Pres.	*Faculty,* Department of Architectural Science, Ryerson University.
2011 - 2009	*Lecturer,* McGill University, School of Architecture
2008 - 2006	*Teaching Assistant,* McGill University, School of Architecture

Recent Honours and Awards

2017	Merit award for excellence. International Making Cities Livable. Public places for community, democratic dialogue, health and equity. Entry: Edible Campus.Building communities. Co-recipients: Vikram Bhatt and Leila M. Farah.
2017	Outstanding Papers & Design Works Award recipient, 26th International Union of Architects 2017 Seoul World Congress
2006-2009	Dean's Doctoral Student Recruitment Award, McGill University
2008	National Urban Design Award in the urban fragments category, member of the lead team. Awarded jointly by the Royal Architectural Institute of Canada, the Canadian Institute of Planners and the Canadian Society of Landscape Architects. Entry: 'Making the Edible Campus.'

Recent Publications

2016	Bhatt, Vikram and Leila Farah (2016). "Cultivating Montreal: A brief history of citizens and institutions integrating urban agriculture in the city." *Urban Agriculture & Regional Food Systems*. American Society of Agronomy and Crop Science Society of America Volume 1, issue 1: 1-12.
2016	Farah, Leila (2016). "Meatscapes: Spaces and processes associated to subsistence livestock." CuiZine. *The journal of Canadian food cultures*. McGill University Library, Volume 7, issue. 2.
2016	Farah, Leila and Michael Good (2016). "Organics Shaped by and Shaping the Constructed Environment." *The international journal of the constructed environment*. Volume 7, issue 1: 1-17.
2016	Farah, Leila, Michael Good, Mark Gorgolewski and John Han (2016). "Vivarium." *Landscapes I Paysages Magazine*, Canadian Society of Landscape Architects, Naylor Publications vol.18. no.2: 46-47.
2009	Bhatt, Vikram and Leila M. Farah (eds) (2009). *Designing Edible Landscapes*. Open House International. 34.2. London.

SRC Activities

2017	Grant-funded Research: Healthy City, Granting agency: Mitacs Globalink
2017	Grant-funded Research: Foodscapes, Grantor: FEAS, DRF-URE
2016	Grant-funded Research: Neighborhood ecologies, Granting agency: Mitacs Globalink
2016	Publications: Peer-reviewed academic journal article - Bhatt, Vikram and Leila Farah. 2016. "Cultivating Montreal: A brief history of citizens and institutions integrating urban agriculture in the city." Urban Agriculture & Regional Food Systems. American Society of Agronomy and Crop Science Society of America, Volume 1, issue 1: 1-12.
2015	Grant-funded Research: The Interconnected City, Granting agency: Mitacs Globalink

Leila Marie Farah

Paul Floerke, Architect, Dr.-Ing., Dipl.-Ing.
Associate Professor, Associate Chair, Undergraduate Curriculum and Mobility

Date of Appointment 2012
Area of Expertise Architectural Design, Theory, Methods and Processes, Building Construction
Recent Teaching Assignments

2017-2018	ARC 820: Architecture Studio	
2016-2017	ASC 304: The Construction Project	ASC 520: Integration Studio I
	ASC 620: Integration Studio II	
2015-2016	AR 8103: Studio on Collaborative Practice	AR 8105: Intensive Research Studio Seminar
	ASC 304: The Construction Project	ASC 520: Integration Studio I

Education

1994	PhD (Architecture and Engineering: Dr.-Ing. German standard)
1992	DAAD Scholarship to support research stays in: Berkeley, California/ USA; Toronto and Ottawa/Canada, London/ England; Gothenburg und Stockholm/Sweden
1990	Scholarship from the University of Hannover to promote the dissertation: "Architecture has no spectators only participants - consistency and diversity in the office environment as part of a practice orientated architectural theory"

Teaching Experience

2012	*Faculty*, Department of Architectural Science, Ryerson University
1998 - 2012	*Assistant Professor*, Technical University of Dortmund, Faculty of Architecture and Civil Engineering, Department of Design and Building Construction, Prof. Gunter R. Standke
2008 - 2012	*Lecturer*, University of Applied Sciences Detmold, Building Construction and Building Physics

Professional Experience

2009	Extension to residential building in Detmold
2006 - 2007	Siemens VDO - developing planning modules for office buildings and production halls
2005	Dortmund, remodeling of a condominium, handicapped accessible (building built in 1909)
2004	Community Center Brackel, Dortmund, invited competition participant
2003	Rotterdam harbor, high density housing in collaboration with West 8, Rotterdam; JHK Architects, Utrecht; Joe Coenen und Hermann Zeinstra
2002	Conference Pavilion at the TU Dortmund, steel skeleton building in collab with B. Kaiser, A. Brüning

Recent Honours and Awards	2014	Faculty supporter/consultant of Team Urban Harvest consisting of students from Architecture and Building Science graduate programs won the overall Grand Award as well as awards for: Best Design, Best Technical Integration, Best Presentation. The competition consisted of 28 teams from all over North America. This is a major competition introduced by the U.S. Department of Energy
	1999	Nominated for the Teaching Prize of the Technical University of Dortmund, Germany
Recent Publications	2017	Publications: Paper, Conference - Building in Existing Contexts – Densification, World Sustainable Built Environment Conference Hong Kong, China
	2016	Publications: Book Chapter - Floerke,Paul, et.al.; Densification in the Urban Context - Extensions to Exisiting Buildings in Steel. Stahlbau-Kalender
	2014	Catalogue of Typologies - Rooftop Extensions Paul Floerke, Sonja Weiß, et al., Full bilingual (German/ English) book on rooftop extensions on buildings in existing contexts, Editor bauforumstahl e.V., Düsseldorf, 2014
	2016	Stahlbaukalender 2016, Paul Floerke, Sonja Weiß, et al., Editor: Ulrike Kuhlman, Berlin 2016, pages 1-72
	2010	On Teaching Architecture, Architektur lehren, Paul Floerke with Matthias Hiby, Bettina Knüvener, Alexander Siassi, Published: 2010
	2011	Manual of Design and Building Construction, Ma14nual Entwerfen und Baukonstruktion, Gunter R. Standke, Paul Floerke, with Bjøern Kaiser, Lehrstuhl Entwerfen und Baukonstruktion, Last Published: 2011
SRC Activities	2017	Publications: Paper, Conference - Building in Existing Contexts – Densification, World Sustainable Built Environment Conference Hong Kong, China
	2016	Publications: Book Chapter - Floerke,Paul, et.al.; Densification in the Urban Context - Extensions to Exisiting Buildings in Steel. Stahlbau-Kalender
	2014	Publications: Book - Floerke, Paul; Weiß, Sonja; Stein, Lara; Wagner, Malte, Catalogue of Typologies - Rooftop Extensions

Paul Floerke

Mark Gorgolewski, BSc, Msc, Dip Arch, PhD, ARB, LEED AP
Professor, Department Chair

Date of Appointment 2003
Area of Expertise Sustainable Design
Recent Teaching Assignments

2017-2018	BL8102: Ecological Resource Efficient Design
2016-2017	Sabbatical
2015-2016	AR 8105: Intensive Research Studio & Seminar BL 8102: Ecological Resource Efficient Design BL 8104: Building Design Seminar/Studio

Education

1995	Ph.D. (Architecture and Energy Efficiency), Oxford Brookes University, Oxford, England
1993	Master of Science, (Energy in Buildings), Cranfield University, Cranfield, Bedfordshire, England
1990	RIBA Professional Practice part 3, Oxford Brookes University, Oxford, England
1985	Diploma in Architecture, (Masters equivalent) University College, London, England
1983	Bachelor of Science in Architecture, Honours, University College, London, England

Teaching Experience

2008-Pres.	*Faculty*, Department of Architectural Science, Ryerson University, Director of Graduate Program in Building Science, Department Chair
2003- 2008	*Associate Professor*, Ryerson University, Toronto, Ontario
1994 - 1998	*Part-time Technical Lecturer*, Oxford Brookes University, School of Architecture, Oxford, UK

Professional Experience

1998 - 2003	Environmental Consultant. Self employed, Oxford, UK. (part-time)
1995 - 2003	Principal Architect & Environmental Consultant. Steel Construction Institute, Ascot, UK.
1995 - 1998	Architect, Rickaby Thompson Associates - Project Architect and Energy Consultant

Recent Honours and Awards

2018	Canada Green Building Council Inspired Educator Award
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

Recent Publications

2017	Gorgolewski, M.T., (2017) *Resource Salvation: The Architecture of Reuse*, Wiley, UK.
2017	Gorgolewski, M.T., Brown, C., Chu, A., Turcato, A, Bartlett, K. Ebrahimi, G., Hodgson, M., Mallory-Hill, S., Ouf, M., Scannell, L., (2017) Performance of Sustainable Buildings in Colder Climates, *Journal of Green Building* Volume 11, no.4.
2017	Publications: Journal Article - Flynn, M, Saunders, K., Race, C., Gorgolewski, M.T., Richman, R. (2017) An Investigation into the Hygrothermal Performance of a Mineral Wool Based Externally Insulated Enclosure in a Cold Climate, *Energy Procedia 132*, pp345 - 350
2015	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
2015	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.

SRC Activities

2015 - 2016	Grant-funded Research: Social Sciences and Humanities Research Council (SSHRC) Knowledge Synthesis Grants, Richard Shaker & Mark Gorgolewski Funding - $25,000
2015 - 2016	Grant-funded Research: Natural Sciences and Engineering Research Council of Canada (NSERC) Engage, Mark Gorgolewski, Co-investigators – Hui, McArthur, Berardi Funding - $25,000
2015	Grant-funded Research: Natural Sciences and Engineering Research Council of Canada (NSERC) Engage, Mark Gorgolewski, Funding - $24,630
2014 - 2015	Grant-funded Research: Natural Sciences and Engineering Research Council of Canada (NSERC) Collaborative Research and Development (CRD) grant, Mark Gorgolewski Co-investigators - Mallory Hill (UM), Hodgson (UBC), Issa (UM), Funding - $82,000

Academic, Professional, and Public Service

	Member of the editorial board for *Journal of Green Building*
	International Initiative for a Sustainable Built Environment (IISBE) Canada team World Sustainable Building Challenge member
2008 - 2016	OAA Sustainable Built Environment Committee
2007 - 2013	Canada Green Building Council Director
2002 - 2003	Chair of the Association for Environment Conscious Building

Mark Gorgolewski

Miljana Horvat, B.Arch., M.Arch., Ph.D
Associate Professor, Associate Dean of Faculty of Engineering and Architectural Science

Date of Appointment 2004
Area of Expertise Architecture and Building Science
Recent Teaching Assignments

2017-2018	BL 8104: Building Design Seminar/Studio
2016-2017	BL 8104: Building Design Seminar/Studio
2015-2016	Sabbatical

Education

2005	*Ph.D.,* Department of Building, Civil and Environmental Engineering, Concordia University, Montreal, QC, Canada.
1998	*M.Arch.,* School of Architecture, McGill University, Montreal, QC, Canada,
1992	*B. Arch.,* Faculty of Architecture, University of Belgrade, Belgrade, Yugoslavia

Teaching Experience

2004 - Pres.	*Faculty*, Department of Architectural Science, Ryerson University, Toronto, Ontario
1999 - 2004	*Assistant Instructor & Marker,* Department of Building, Civil and Environmental Engineering, Concordia University, Montreal, Quebec
1992 - 1995	*Part-time Instructor*, Department of Structures and Materials in Architecture, Faculty of Architecture, University of Belgrade, Belgrade, Yugoslavia

Professional Experience

1994	*Junior Architect.* University of Belgrade, Faculty of Architecture, Belgrade, Yugoslavia.
1992 - 1995	*Junior Architect.* KOLING DD (Engineering & Construction Company), Belgrade, Yugoslavia.
1993	*Junior Architect.* Nas Stan (Architectural & Engineering Company), Belgrade, Yugoslavia.

SRC Activities	2017 - Pres.	Curriculum Development: New PhD program in Building Science, as a part of the SMA2
	2016 - Pres.	Curriculum Development: Dean's Planning Group (DPG)
	2015 - Pres.	Curriculum Development: Associate Dean, Graduate Studies
	2015 - Pres.	Curriculum Development: YSGS Program and Planning Committee
	2017	Publications: Presentation - Inerviewed for a documentary series "Résilience Urbaine" (Urban Resilience), premiered in the Fall 2017 on FibeTV. It is also available for free on their app Télé Fibe, in the category Sur demande (with English subtitles)
	2013-2015	Curriculum Development: Graduate Program Director / Associate Chair, Graduate Program in Building Science
Academic, Professional, and Public Service	2016 - Pres.	Dean's Planning Group (DPG)
	2016 - Pres.	YSGS Program and Planning Committee
	2013 - 2015	Associate Chair, Graduate Program in Building Science

Vincent Hui, B.E.S., M.Arch, C.U.T., M.B.A, MRAIC, Assoc. AIA
Associate Professor, Associate Chair Experiential Learning

Date of Appointment 2009
Area of Expertise Digital Design and Prototyping
Recent Teaching Assignments

2017-2018	ASC 101: Communications Studio	ASC 201: Design Studio I
	ASC 755: Digital Tools	AR8103: Studio in Collaborative Practice
2016-2017	ASC 101: Communications Studio	ASC 201: Design Studio I
	ASC 755: Digital Tools	
2015-2016	ASC 101: Communications Studio	ASC 201: Design Studio I
	ASC 755: Digital Tools	

Education

2011	*Leader in Energy and Environmental Design (LEED) Accreditation,* Canada Green Building Council
2008	*Master of Business Administration,* Schulich School of Business, York University
2003	*Master of Architecture,* University of Waterloo
2003	*Certificate in University Teaching,* University of Waterloo
2000	*Bachelor of Environmental Studies, Pre-architecture,* University of Waterloo

Teaching Experience

2009	*Faculty,* Department of Architectural Sciences, Ryerson University
1990 - 2002	*Adjunct Professor,* University of Waterloo School of Architecture, School of Planning
2000 - 2008	*Guest Critic / Lecturer / Thesis Advisor,* University of Waterloo, University of Toronto, York University School of Architecture, School of Planning, Fine Arts

Professional Experience

2007 - 2008	*Marketing & Design Consultant,* Apple Canada, Markham, Canada
2000-2005	*Assistant Project Designer,* Zeidler Roberts Partnership Architects, Toronto, Canada
2003	*Partner,* Atelier Anaesthetic, Toronto and Montreal, Canada
1999	*Intern Architect,* Sunnybrook & Women's' Health Centre, Toronto, Canada
1998	Intern Architect, Wong and Tai Associates Architects, Hong Kong, People's Republic of China

Recent Honours and Awards

2017-2018	Ryerson University's President's Teaching Award
2016	"People's Choice Award," Toronto Design Offsite Award for "Flummox"
2014-2015	Ontario Confederation of University Faculty Associations Teaching Award
2013-2014	Ryerson University's Innovative Teaching Award

Vincent Hui

Recent Publications

2017	"Successful Integration of Virtual Reality in Architectural Curricula", Paper Presentation and Proceedings, co-author with Agnes Yuen, Farah Elmajdoub, and Adrian Chiu, International Conference on Education, Research, and Innovation (ICERI), Seville, Spain
2017	"Digital Integration: Synthesizing Poetic Possibilities and Pragmatic Production", Paper Presentation and Publication, Building Technology Educators' Society, "Poetics and Pragmatism", Des Moines,
2017	USA"Integrating Experiential Learning and Digital Fabrication", Paper Presentation and Proceedings, co-author with Cira Nickel, International Technology, Education and Development Conference, Valencia, Spain, ISBN: 978-84-617-8491-2
2016	"Parametric Pedagogy: Adaptation in Industry and Adoption in the Classroom", Paper Presentation and Proceedings, co-author with Shiva Kumar, Hrishikesh Tailor, Jason Brijraj, and David Luong, International Conference on Education, Research, and Innovation (ICERI), Seville, Spain, ISBN: 978-84-617-5895-1
2016	"Low [High] Tech & High [Low] Fidelity", Presentation, Invited Speaker at CISC Architecture and Engineering Educators Forum 2016 "A Building Revolution: Integrated Project Delivery", Calgary, Canada

SRC Activities

2018	Shape Lab
2017	Dean's Research Fund, Undergraduate Research Experience Competition Awarded for investigative work in Architectural Design Metrics of Virtual Reality (valued at $6,700)
2017	Ryerson Creative Fund Awarded for the Architectonics Using Destructive Interference Acoustics (AUDIA) project with Professor Umberto Berardi (valued at $10,000)
2017	MITACS Globalink Application for international support for research project entitled "Arch-App 2.0: Augmented Reality in Higher Education" with Chinese research student (valued at $15,000)
2017	Ontario Centres of Excellence, VIP 1 Program Awarded for the development and integration of virtual reality in architectural praxis with Masri O. Architects (valued at $60,000)
2016	Ontario Centres of Excellence, VIP 1 Program Awarded for advanced toolpath generation workflow optimization in tandem with Partisans Projects (valued at $60,700) 2016 Extreme Redesign 2016 Competition, Faculty Representative Faculty sponsor of the top 2 teams in an international 3D printing design competition
2016	Dean's Teaching Fund Awarded for developing ARVIBE (Augmented Reality in Built Environments) modules to use augmented reality in Building Information Modeling in the Department (valued at $23,500)

Academic, Professional, and Public Service

2015-Pres.	Co-Director, Design Fabrication Zone, Ryerson University
2016-Pres.	Editorial Reviewer, TAD Technology: Architecture + Design and Building Technology Educators' Society
2016-Pres.	Grant Review, Ontario Centres of Excellence
2016-Pres.	Teaching Award Review Committee, Ontario Confederation of University Faculty Associations
	[R]ed[U]x Lab director, Faculty Mentor over local and international design-build projects
2013	International Journal of the Constructed Environment, Associate Editor, April 2013 Volume, "Virtual
2011	Juxtapositioning of Architecture from the Scottish Diaspora", Laing, R ISSN: 2154-8587
	2011: Conference Co-Chair, Building Technology Educators' Society
	Conference "Convergence to Confluence"

Vincent Hui

George Thomas Kapelos, AB MCP MArch OAA FRAIC RPP MCIP
Professor

Date of Appointment 2000
Area of Expertise Architecture
Recent Teaching Assignments

2017-2018	AR 8105: Intensive Research Studio & Seminar	ARC 720: Architecture Studio
	ASC 103: The Built Context	
2016-2017	AR 8105: Intensive Research Studio & Seminar	ARC 720: Architecture Studio
	ASC 103: The Built Context	ASC 205: Collaborative Exercise
	ASC 401: Design Studio III	ASC 405: Collaborative Exercise II
	ASC 605: Collaborative Exercise III	ASC 805: Collaborative E
2015-2016	ASC 103: The Built Context	ASC 205: Collaborative Exercise
	ASC 301: Design Studio	ASC 401: Design Studio III
	ASC 405: Collaborative Exercise II	ASC 605: Collaborative Exercise III
	ASC 805: Collaborative Exercise IV	

Education

1993	*Master of Architecture,* Yale University,
1975	*Master of City Planning,* Harvard Graduate School of Design,
1971	*Bachelor of Arts (Magna cum laude),* Princeton University, Architecture and Urban Planning

Teaching Experience

2005 - 2010	*Visiting Professor,* Daniels Faculty of Architecture, Landscape and Design, University of Toronto
2000 - Pres.	*Faculty,* Ryerson University, Department of Architectural Science (Toronto), Mode II Faculty, Teaching Focus, Granted Tenure, 17 March 2003
1988 - 2003	*Assistant Professor and Adjunct Assistant Professor,* University of Toronto, School of Architecture, Landscape and Design
2000	*Lecturer,* Harvard Design School, Career Discovery Program (Cambridge), MA
1992 - 1993	*Teaching Assistant,* Yale College (New Haven), CT

Professional Experience

2000	Principal, George Thomas Kapelos Architect (Toronto), OAA, Certificate of Practice 3645
1995 - 2000	George Thomas Kapelos Design and Planning (Toronto),
1982 - 1995	Design Competition and Independent Consulting
1997 - 1999	Architect (Intern), Quadrangle Architects Limited (Toronto)
1997	Humber College Master Plan, Taylor Hazell Architects (Toronto)
1996 - 1997	Architect (Intern), Oleson Worland Architects (Toronto)

Recent Honours and Awards

2014	Royal Institute of Canada / Canadian Institute of Planners / Canadian Society of Landscape Architects 2014 National Urban Design Awards, "An Architecture of Civility"
2013	City of Toronto Urban Design Award of Merit - "An Architecture of Civility"
2007	Fellow, Royal Architectural Institute of Canada

Recent Publications

2014	"Health, planning, design and shade: a critical review." *Journal of Architectural and Planning Researc*h, Lead author, with Mitchell Patterson, V31 (2) 2014, 91 - 111
2015	*Competing Modernisms: The Toronto City Hall and Square Competition*. Halifax: Dalhousie Architecture Press, 2015. With an introduction by Christopher Armstrong. 128 pages.
2018	"Shaping Public Institutions" George Thomas Kapelos in *Northern Building: Canadian Architecture 1967-2017*. Elsa Lam and Graham Livesey, Editors. New York: Princeton Architectural Press / Canadian Architect, forthcoming 2018.
2017	"Heat! Cooling spaces for high-rise places" Film, 17 minutes, Peter Conrad, Filmmaker, Ryerson University, January 2017.
2016	"Integrating shade design for cancer prevention into public places" 2016 OPPI Symposium, Hamilton ON 5 – 6 October 2016, with Sheila Boudreau, City of Toronto.
2016	"Partners in Action: Integrating shade design for cancer prevention into public places", workshop presenter, Latornelle Conservation Symposium, Alliston, ON, 17 November 2016

Academic, Professional, and Public Service

2018	Conference Co-Chair, 4th International Conference on UV and Skin Cancer Prevention, Toronto ON, May 2018
2016 - Pres.	Chair, Ultraviolet Radiation Group, Toronto Cancer Prevention Coalition, 2016 - present
2015 - Pres.	Board Member (Order-in-Council Appointment), Ontario Heritage Trust, Toronto ON, 2015 – present
2010	Guest Editor. Journal of the Society for the Study of Architecture in Canada / Journal de la Société pour l'étude de l'Architecture au Canada. 35(2) 2010. 80

George Thomas Kapelos

June Diana Komisar, BA, MSc, Ph.D., MRAIC, AIA
Professor, Associate Chair, Undergraduate Student Affairs

Date of Appointment 2003
Area of Expertise Architectural Design, Theory and History of Architecture, Designing for Urban Agriculture
Recent Teaching Assignments

2017-2018	AR 8103: Studio in Collaborative Practice	ASC 206: Ideas, Techniques & Precedents I
2016-2017	AR 8105: Intensive Research Studio & Seminar	ASC 101: Communication Studio
	ASC 206: Ideas, Techniques & Precedents I	ASC 401: Design Studio III
	ASC 900/AR8224: Selected Topics	
2015-2016	ARC 820: Architecture Studio	ASC 101: Communications Studio
	ASC 206: Ideas, Techniques & Precedents I	

Education

2004	*Ph.D,* University of Michigan, Taubman College of Architecture and Urban Planning, Ann Arbor, MI
1999	*M.Sc,* University of Michigan, Taubman College of Architecture and Urban Planning, Ann Arbor,
1980	*M. Arch,* Yale University School of Architecture, New Haven, CT
1976	*AB,* Clark University, Worcester, MA

Teaching Experience

2003 - Pres.	*Faculty,* Ryerson University, Department of Architectural Science, Toronto, ON
2003	*Adjunct Professor,* University of Central England, Faculty of the Built Environment, Birmingham, UK
2002 - 2003	*Lecturer,* University of Michigan, College of Engineering, Ann Arbor, M*I*
1999-2000	*Teaching Assistant,* University of Michigan, Taubman College of Architecture & Urban Planning, Ann Arbor, MI

Professional Experience

2004- Pres.	*Architectural Consultant*
1996 -1997	*Project Architect. Childs Bertman & Tseckaris Architects, Boston, MA*
1992 - 1995	*Project Architect.* Shepley Bulfinch Richardson & Abbott Architects, Boston, MA
1991 - 1992	*Architect.* D'Agonistion Izzo Quirk, Somerville, MA
1989 -1990	*Project Architect.* Cannon Boston, Boston, MA
1989	*Architect.* Hisaka Associates, Cambridge, MA
1987 - 1988	*Architect.* Sandy and Babcock Architects, San Francisco, CA

Recent Publications

2017 Joe Nasr, June Komisar, Henk de Zeeuw, "Section 1b. A Panorama of Rooftop Agriculture Types," in *Handbook of Rooftop Farming*, Francisco Orsini, Marielle Dubbeling, Georgio Gianquinto, Eds. Switzerland: Springer Nature, 2017.

Book Chapter: sections of "Chapter 5. Rooftop agriculture experiences across the world" (sections on North America), Henk de Zeeuw, Jessie Banhazi, June Komisar

2016 Mark Gorgolewski, Joe Nasr and June Komisar, "Resilient City = Carrot City: Urban Agriculture Theories and Designs" in *Integrated Urban Agriculture: Precedents, Practices, Prospects*, ed. Robert France, Karen Landman, Luc Mougeot, Vancouver: University of British Columbia Press, Chapter 6. 2016.

2014 Joe Nasr, June Komisar, Mark Gorgolewski "Urban agriculture as ordinary urban practice: trends and lessons," in *Second Nature Urban Agriculture – designing productive cities*, ed. Katrin Bohn and Andre Viljoen, London, Routledge, 2014. https://www.routledge.com/Second-Nature-Urban- Agriculture-Designing-Productive-Cities/Viljoen-Bohn/p/book/9780415540582

2008 June Komisar, "The Art of Ornamentation" in *Architectura: Elements of Architectural Style*, ed. Miles Lewis, Sydney, Australia: Global Publishing, 2008 and New York: Barrons, 2008, pp 320 - 347

2006 June Komisar, "Blanche Lemco Van Ginkel et les CIAM," translation by Christophe Mâle, in *La modernité critique: autour du CIAM d'Aix* (1953), ed. Daniel Pinson, Paris: Imbernon, 2006, pp 261 - 272

Yew-Thong Leong, BTech, B.Arch, OAA, MRAIC, FIIAS
Associate Professor

Date of Appointment 1996
Area of Expertise Architectural Design
Recent Teaching Assignments

2017-2018	AR 8104: Contemporary & Future Practice	ARC 720: Architecture Studio
	ASC 201: Design Studio I	ASC 752: Business Practices in the AEC Industry
2016-2017	AR 8104: Contemporary & Future Practice	ARC 820: Architecture Studio
	ASC 301: Design Studio	ASC 752: Business Practices in the AEC Industry
2015-2016	AR 8104: Contemporary & Future Practice	ARC 720: Architecture Studio
	ARC 820: Architecture Studio	ASC 904: Kultour

Education

1986	Bachelor of Architecture, Pratt Institute
1985	Certificate in Contemporary Economic Analysis Ryerson University
1985	Bachelor in Technology (Architecture) Ryerson University

Teaching Experience

1996 - Pres.	*Faculty*, Ryerson University, Toronto, Canada
1995-1996	*Lecturer* , Ryerson University, Toronto, Canada
1988-1995	*Instructor,* Ryerson University, Toronto, Canada

Professional Experience

2007 -Pres.	Managing Director, SSA Architecture Inc.
1987 - 2007	Partner, Robbie/ Young + Wright Architects Inc
1986 - 1987	Designer Draftsman, Richard Williams Architect Inc

Recent Honours and Awards

2015	College of Fellows, Royal Architectural Institute of Canada, Inducted 2015
2013	Asian Heritage Award, 2013
2012	PUG X Awards Nominee (Life Sciences Building, York University), 2012
2011	Structural Innovations - Ontario Concrete Awards (Life Sciences Building, York University), 2011

Recent Publications

2018	Y.T. Leong, et. al. "The Design Approach to Rebuilding Frank Lloyd Wright's Banff Pavilion", 2018. Thirteenth International Conference on The Arts in Society, Emily Carr University of Art and Design, Vancouver
2018	Y.T. Leong, et. al. "Working with Wright: RE-Creatives and RE-Creating the Banff National Park Pavilion", 2018, Banff Sessions 2018, Alberta Association of Architects
2018	Y.T. Leong, et. al. "Rebuilding the Frank Lloyd Wright Pavilion: A Collaborative Approach", 2018. Twelfth International Conference on Design Principles & Practices, ELISAVA Barcelona School of Design and Engineering, Barcelona
2017	Y.T. Leong, "Practice Management: Technology and Information Management", 2017, Ontario Association of Architects
2012	Y.T. Leong. "Coding National Architectural Identities: Is There a Canadian Architectural Identity?", 2012, Tongji University, Shanghai

SRC Activities

2017 - Pres.	Frank Lloyd Wright's Banff Pavilion Revival Group

Academic, Professional, and Public Service

2019	Conference Chair, Architectural Research Center Consortium Conference, Toronto
2018 - Pres.	Editorial Board, Canadian Handbook of Practice
2018	Jury, WAN Awards – Wood in Architecture

Yew-Thong Leong

Jurij Leshchyshyn, BA, BTech, March, OAA, MRAIC
Professor

Date of Appointment 1989
Area of Expertise Architecture
Recent Teaching Assignments

2017-2018	Sabbatical	
2016-2017	ASC 102: The Built World	
2015-2016	ASC 102: The Built World	ASC 704: Independent Study
	ASC 804: Independent Study	

Education

1984	Master of Architecture, University of Manitoba, Winnipeg, Ontario
1980	Bachelor of Technology - Architectural Science, Ryerson Polytechnical Institute, Toronto, Ontario
1975	B.A. (Hons.) Geography and Urban Studies, York University, Toronto

Teaching Experience

1989 - Pres.	*Faculty*, Department of Architectural Science, Ryerson University
1984 - 1989	*Part-time Instructor*, Department of Architectural Science, Ryerson University

Jurij Leshchyshyn

Zaiyi Liao, BEng, MEng, PhD , PEng
Professor

Date of Appointment 2004
Area of Expertise Building Science
Recent Teaching Assignments

2017-2018	ASC 402: Bodily Comfort Systems	ASC 756/AR 8212: Fire Safety in the Built Environment
	ASC 904: China Studios	BL 8103: Energy Efficient Building Systems
2016-2017	ARC 720: Architecture Studio	ASC 402: Bodily Comfort Systems
	ASC 756/AR 8212: Fire Safety in the Built Environment	BL 8103: Energy Efficient Building Systems
2015-2016	ARC 720: Architecture Studio	ASC 402: Bodily Comfort Systems
	ASC 756/AR 8212: Fire Safety in the Built Environment	BL 8103: Energy Efficient Building Systems

Education	2004	*Ph.D, Engineering Science,* the University of Oxford (Thesis title "An Inferential Control Scheme for Optimising the Operation of Boilers in Multi-zone Heating Systems"), Oxford, England
	2001	*Ph.D, in Building Services Engineering*, the Hong Kong Polytechnic University (Thesis title "Forecasting Residential Energy Consumption in China: An Approach to the Technological Impacts")
	1990	*M.Phil in Building Services Engineering*, School of Architecture, Tsinghua University, China
	1988	*Bachelor's Degree in Building Services Engineering*, School of Architecture, Tsinghua University, China
Teaching Experience	2004 - Pres.	*Faculty,* Department of Architectural Science, Faculty of Engineering and Applied Science, Ryerson University.
Professional Experience	1999 - 2004	1999 - 2004 Senior Scientist, Building Research Establishment (BRE), UK
	1994 - 1999	1994 - 1999 Dept. of Architecture, The Chinese University of Hong Kong
	1990 - 1994	1990 - 1994 Senior engineer and division manager, Beijing Tsinghua Tong Fang

Recent Publications

2018	Dagmawi Mulugeta Degefu, Weijun He, Zaiyi Liao, Liang Yuan, Zheng Wei Huang, and Min An (2018), Mapping Monthly Water Scarcity in Global Transboundary Basins at Country-Basin Mesh Based Spatial Resolution, *Scientific Report*s (accepted for publication)
2017	Liang Zhang, Yongfa Wu and Zaiyi Liao (2017), Inter-disciplinary, integrating and Communicating Approach – Joint Architecture Studio between Sochoow University and Ryerson University, *China's Architecture Education*, Vol 17, pp 11-17
2017	Jieqing Wang, Zaiyi Liao, Rong Li, Xueling Huang, and Menghui Du (2017), Effect of Plant Community Structure and Road Greenbelt Width on PM2.5 Concentration, *Journal of Engineering Science and Technology Review*, Vol 10 (2), pp 80-85
2017	J Chen, Z Liao, S Lu, G Hu, Y Liu and C Tang (2017), Study on a stepped eco-filter for treating greywater from single farm household, *Applied Water Science*, 7: 3849-3857, DOI 10.1007/s13201-017-0536-2
2017	Yaoxing Liu, Yuxin Lei, Yin Xi, Zaiyi Liao and Xia Zhang (2017), High-load domestic wastewater treatment using a combined anaerobic-aerobic bio-filter with coal cinder as medium, *Environmental Technology*, DIO 10.1080/09593330.2017.1296496

SRC Activities

2017-2022	Grant-funded Research: Banff Pavilion ReBuild – Research and Design Developmemt of Banff Pavilion – a legendary heritage building designed by Frank Lloyd Wright (Research fund up to 300K – 32500 confirmed and more funding being sought. Rebuild project: $8,000,000 Canadian Dollar)
2016-2021	Grant-funded Research: NSERC DiscoveryGrant, Next generation of thermal modelling methods, CAD $120,000.
2017	Grant-funded Research: NSERC ENGAGE Grant – Optimization of Building Integrated PV, CAD $25,000.
2015-2016	Grant-funded Research: Ontario Centre of Excellence (OCE) Project #23975 – Voucher for Innovation and Productivity (VIP), Optimal Charging Scheduling for Electrical Vehicles with Smart Grid, CAD $40,800.
2015-2016	Grant-funded Research: FEAS Dean Research Fund, Ryerson University, Emission Reduction for Green Transportation – Stage II, CAD $15,000.
2011-2015	Grant-funded Research: Chutian Scholar Program,Hubei Province of China

Carlo Parente, BTech, MArch, OAA, AIA, NCARB
Assistant Professor, Limited Term Appointment

Date of Appointment 2018
Area of Expertise Architecture
Recent Teaching Assignments

2017-2018	Newly appointed in 2018
2016-2017	Not hired
2015-2016	Not hired

Education

2007	MArch, Illinois Institute of Technology
1998	Bachelor of Technology (Architectural Science), Ryerson University

Teaching Experience

2018 -	*Faculty*, Department of Architectural Science, Faculty of Engineering and Applied Science, Ryerson University.
2012 - 2018	*Adjunct Professor*, College of Architecture, Illinois Insitute of Technology
2008 - 2010	*Instructor*, School of the Art Institute of Chicago
2006 - 2007	*Adjunct Assistant Professor*, Illinois Institute of Technology

Professional Experience

2016 - Pres.	*Principal*, Collective Office
2012 - Pres.	*Principal*, Carlo Parente Architect, Chicago/Toronto
2007 - 2012	*Team Leader/Senior Designer*, Adrian Smith + Gordon Gill Architecture, Chicago
2000 - 2004	*Designer/Project Manager*, RDH Architects, Toronto
1998 - 2000	*Designer/Project Manager*, Brown and Storey Architects, Toronto
1997 - 1998	*Designer*, Robbie Sane Architects, Toronto

Recent Honours and Awards	2017	2017: Graham Foundation for Advanced Studies in the Fine Arts, $10,000 Film Production Grant, Tigerman Documentary, [Chicago Architectural Club: Co-President]
	2015	2015: Kellogg School Competition [Green Design Award, Chicago Atheneum w/AS+GG]
	2013	2013: Solar EV Dock [AISC IDEAS2 Merit Award Winner (Category-less than $15 Million) w/AS+GG]
Recent Publications	2014	"Roofscape as Field Condition," in *ARQ* (Issue 169: Le Toit, Épiderme Urbain Aérien, 2014)
SRC Activities	2017	(2017) Exhibition: Under the Dome, Chicago Cultural Center as part of the 2017 Chicago Architecture Biennial (CAC Co-President/Co-Curator)
	2016	(2016) Research/Exhibition: Exhibition: Frame-Work, 50 Designers, 50 Ideas, 50 Wards, Chicago Architecture Foundation/ Panel Discussion: Design Dialogues: 50 Designers, 50 Ideas, 50 Wards, Chicago Architecture Foundation
	2016	(2016) Exhibition: Currencies of Architecture, Chicago Architecture Foundation as part of the 2016 Chicago Architecture Biennial (CAC Chair responsible for design and programming)
	2014	(2014) Grant funded Research/Publication: IGNIS, Colloque Acfas 631 Conference University of Montreal, 'Roofscape as Field Condition, 2014 Publication: 'Roofscape as Field Condition,' in ARQ (Issue 169: Le Toit, Épiderme Urbain Aérien, 2014)
Academic, Professional, and Public Service	2014	2014: National Conference on the Beginning Design Student (NCBDS) Abstract Reviewer
	2014	2014: National Conference on the Beginning Design Student (NCBDS) Session Moderator

Jenn McArthur, MASc, BASc
Assistant Professor

Date of Appointment 2014
Area of Expertise Project Management
Recent Teaching Assignments

2017-2018	ASC 522: Project Economics	PMT 822: Procurement & Construction Management
	ASC 520: Integration Studio I	ASC 620: Integration Studio II
2016-2017	ASC 522: Project Economics	PMT 822: Procurement & Construction Management
	ASC 520: Integration Studio I	ASC 620: Integration Studio II
2015-2016	ASC 522: Project Economics	PMT 822: Procurement & Construction Management
	ASC 520: Integration Studio I	ASC 620: Integration Studio II

Education

2003	University of Waterloo, MASc
2003	University of Waterloo, Certificate in University Teaching
2001	University of Waterloo, BASc

Teaching Experience

2014 - Pres.	*Faculty*, Department of Architectural Science, Faculty of Engineering and Architectural Science, Ryerson University

Professional Experience

2016 - Pres.	Jennifer McArthur BIM and Existing Building Consulting (2016-present)
2009 - 2014	Sr. Engineer, & later Associate/Project Manager, Buildings Practice, Arup
2009	Sr. Mechanical Engineer/Department Manager, Design Department, MP Leo Kivisalo
2004 - 2009	Engineering Consultant/Project Manager, Emmanuel Hospital Association

Jenn McArthur

Recent Publications

2015	McArthur, J.J., 2015. A building information management (BIM) framework and supporting case study for existing building operations, maintenance and sustainability. *Procedia engineering*, 118, pp.1104-1111.
2018	Bortoluzzi, B., Carey, D., McArthur, J.J., Menassa, C. (2018) Measurements of Workplace Productivity in the Office Context: A Systematic Review and Current Industry Insights. *Journal of Corporate Real Estate*. (in press)
2017	McArthur, Jennifer. "Achieving Holistic Sustainability: considering wellness alongside resource use in buildings." *In Creating the Productive Workplace: Places to Work Creatively*, 335-48. 3rd ed. New York, NY: Routledge, 2017.
2017	McArthur, J. J., and Sun, X. 2017. Disrupting the Status Quo with Early-Stage BIM-Based Energy Modeling. *TAD Journal* 2(1):231-239.
2017	Bortoluzzi, B., Sobieraj, D., McArthur J. (2017). Automating Creation of Facility and Energy Management Building Information Models. *Proc. Lean & Computing in Construction Congress (LC3)*, Vol. 1 (CIB W78), Heraklion, Greece, pp. 153-160.

SRC Activities

	Smart Building Analytics Living Lab
	Building Information Research Group
2016 - 2018	2016 – 2018 Data Analytics for Facilities Management, Grant, Ontario Ministry of Research and Innovation (ON) Centre of Excellence: Total Funding - 58,750, Co-investigator
2016 - 2018	2016 – 2018 Building Automation System Integration into a Cloud-based BIM-FM Model, Grant Ontario Ministry of Research and Innovation (ON) Centre of Excellence: Total Funding - 61,250, Co-investigator
2016 - 2018	2016 – 2018 Development and Pilot Testing of Productivity Key Performance Indicators and Benchmarking Methodologies, Grant Social Sciences and Humanities Research Council of Canada (SSHRC), Insight Grant, Total Funding - 53,650
2016	2016 District Energy Mapping Tool Expansion (follow-on investment to continue OCE VIP1 Research), Grant Arup Canada Incorporated, External Collaborative R&D, Total Funding - 14,000

Academic, Professional, and Public Service

Director, Canada Green Building Council (GTA Chapter)

Technology Director, Board, Subtle Technologies

Editorial Board, Intelligent Buildings International

Jenn McArthur

Terri Peters, PhD, PGDip, Dip Arch, BEDS, BA
Assistant Professor

Date of Appointment 2018
Area of Expertise Architecture
Recent Teaching Assignments

2017-2018	Newly appointed in 2018
2016-2017	Not hired
2015-2016	Not hired

Education	2015	PhD Aarhus Architecture School, Denmark
	2008	PGDip Professional Practice (RIBA III) with Commendation, Kingston University, UK
	2006	Diploma in Architecture (RIBA II), Sir John Cass School of Art, Architecture and Design, London Metropolitan University, London, UK
	2002	Bachelor of Environmental Design Studies (Architecture), Dalhousie University, Canada
	2000	Bachelor of Arts (Honours), University of Victoria, Canada
Teaching Experience	2018 -	*Faculty*, Department of Architectural Science, Faculty of Engineering and Applied Science, Ryerson University.
	2018	*Assistant Professor*, Azirieli School of Architecture & Urbanism, Carleton University
	2016 - 2017	*Instructor*, John H. Daniels Faculty of Architecture, Landscape and Design, University of Toronto
Professional Experience	2005-2008	*Architect*, Building Design Partnership, London, UK
	2004 - 2005	*Intern Architect*, Haverstock Associates, London, UK
	2003 - 2004	*Intern Architect*, GHM Rock Townsend, London, UK
	2001	*Intern Architect*, Koski Solomon Ruthven, London, UK
Recent Honours and Awards	2017	Social Sciences and Humanities Research Council of Canada, (SSHRC) Postdoctoral Fellow

Recent Publications

2017	Peters T, Peters B. *Computing the Environment: Digital Design Tools for Simulation and Visualisation of Sustainable Architecture*, (Chichester: John Wiley & Sons, 2017) 2018. ISBN: 978-1-119-09789-1
	Peters T, Kesik T, "Daylight Simulation for Multi-Unit Residential Buildings: Occupant-Centered Approaches to Assessment", eSim: IBPSA-Canada Building Simulation to Support Building Sustainability, Montreal 9-10 May 2018
2018	Peters T, (Editor) *Special Issue: Design for Health: Sustainable Approaches to Therapeutic Architecture. Architectural Design Series*. (Chichester: John Wiley & Sons, March/April 2017). ISBN: 978-1-119-16213-1
2017	Peters T, "Superarchitecture: Building Better Health", *Architectural Design Special Issue: Design For Health: Therapeutic Approaches to Sustainable Architecture* (March/April 2017), p. 24-31. ISBN: 978-1-119-16213-1
2016	Peters T, "Social Sustainability in Context: Rediscovering Ingrid Gehl's Bo-miljø" *Architectural Research Quarterly (ARQ)* December 2016 Issue 20 Volume 4, p 371-380

Academic, Professional, and Public Service

2008 - Pres.	Registered Architect (ARB) UK
2017	Invited Workshop Presenter, "Superarchitecture", Canadian Institute for Advanced Research (CIFAR) Interdisciplinary Workshop on Multi-Systemic Resilience, led by Dr Michael Ungar, Johannesburg, South Africa
2017	Invited Keynote Speaker: "Superarchitecture: Daylight and Health" at 5th Active House Symposium Designing for People First, What Comes Second?, Bornholm Denmark. 27-28 September 2017
2017	Invited Speaker and Panelist (2017), Daylight as a Driver for Change, 7th VELUX Daylight Symposium, Berlin, Germany, 3-4 May 2017
2017	Invited Talk: "Superarchitecture: Building Better Health" at School of Environment Research Day, University of Toronto. April 19 2017

Paul Poh, BSc (Hons.), MBA, PEng, CEng, EurIng, MICE, MIES, MCSCE, Ph.D
Associate Professor

Date of Appointment 1999
Area of Expertise Project Management
Recent Teaching Assignments

2017-2018	PMT 720: Project Management Studio I	PMT 721: Economics for Project Management
	Sabbatical - one term	
2016-2017	PMT 720: Project Management Studio I	PMT 721: Economics for Project Management
	PMT 820: Project Management Studio II	PMT 821: Construction Practices & Management
2015-2016	PMT 720: Project Management Studio I	PMT 721: Economics for Project Management
	PMT 820: Project Management Studio II	PMT 821: Construction Practices & Management

Education

1993	MBA, Construction Management, Distinction, University of Dundee, United Kingdom
1985	PhD, The Effects of Soil Restraint on Crack Propagation in Gas Pipelines, University of Edinburgh, United Kingdom
1981	BSc (Hons), Civil Engineering, First Class Honours, University of Edinburgh, United Kingdom

Teaching Experience

1999 - Pres.	*Faculty*, Department of Architectural Science, Ryerson University, Toronto, Ontario
1992 - 1998	*Senior Lecturer,* Nanyang Technological University, Singapore
1990 - 1991	*Lecturer*, Nanyang Technological University, Singapore

Professional Experience

1987 - 1990	*Deputy Director (Planning),* BatamIndo Industrial Management Pte Ltd,
1986 - 1987	Singapore Senior Civil Engineer, Reliance Contractors Pte Ltd, Singapore
1986 - 1987	*Graduate Engineer,* Scott Wilson Kirkpatrick & Partners (Scotland), United Kingdom
1976 - 1978	*Technical Officer (Civil)*, Public Works Department, Singapore

Recent Publications

2014 Poh, PSH & Lam, YM (2014), "Confidence based scheduling procedure (CBSP); a pragmatic approach to manage project schedule uncertainty", *The International Journal of Construction Project Management*, vol. 6, issue 2, pp. 119-138.

2014 Soetanto, R, Childs, M, Poh, P, Austin, S & Hao, J (2014), "Virtual collaboration learning for building design", ICE Proceedings, *Procurement and Law*, vol. 167, issue 1, pp. 25-34.

2014 Poh, PSH, Soetanto, R, Austin, S & Adamu, ZA (2014), "International multidisciplinary learning: an account of a collaborative effort among three higher education institutions", International Association for Development of the International Society - 8th International Conference on e-Learning, Multi Conference on Computer Science and Information Systems, proceedings of a conference, IADIS, Lisbon, pp. 389-393.

2017 Soetanto, R, Childs, M, Poh, PSH, Glass, J, Austin, S, Adamu, ZA & Isiadinso, C 2017, "Online learning for STEM subjects: International examples of technologies and pedagogies in use", Taylor and Francis, London.

SRC Activities

"Designed to be employed? Measuring the impact of a multidisciplinary collaborative design project on learner perceptions of employability attributes."

"Virtual collaboration in the built environment", European Distance and E-Learning Network – EDEN Annual Conference, proceedings of a conference, EDEN, Zagreb.

Academic, Professional, and Public Service

Editorial Advisory Board Member, *The International Journal of Construction Project Management*

Paul Poh

Marco L. Polo, B.A., B.Arch. (UBC), OAA, FRAIC
Professor

Date of Appointment 2002
Area of Expertise Architecture
Recent Teaching Assignments

2017-2018	ASC 301: Design Studio	One term sabbatical
2016-2017	AR 8103: Studio on Collaborative Practice	AR 8106: Current Topics in Architectural Practice
	ARC 720: Architecture Studio	ASC 733/AR 8206: Canadian Architecture 1945
2015-2016	AR 8106: Current Topics in Architectural Praxis	ARC 721: Architecture Studio
	ASC 401: Design Studio III	ASC 406: Ideas, Techniques & Precedents II

Education

1985	*Bachelor of Architecture*, University of British Columbia, School of Architecture
1981	*Bachelor of Arts*, University of British Columbia, Faculty of Arts

Teaching Experience

2002 - Pres.	*Faculty*, Department of Architectural Science, Ryerson University, Toronto
2009 - 2013	*Program Director,* Bachelor of Architectural Science program, Department of Architectural Science, Ryerson University, Toronto
2008 - 2009	*Visiting Professor*, Centre for the Study of Theory and Criticism, University of Western Ontario, London, Ontario
2001	*Instructor*, Department of Architectural Science and Landscape Architecture, Ryerson University, Toronto, Continuing Education Division, 2001
1996 - 1997	*Adjunct Assistant Professor*, University of Toronto School of Architecture and Landscape Arch.

Professional Experience

1997 - 2003	*Editor, Associate Publisher and Editorial Director*, Canadian Architect
1988 - 1997	*Project Architect*, Montgomery and Sisam Architects, Toronto
1985 - 1988	*Intern Architect*, Schefter and McCallum Architects, Toronto

Recent Honours and Awards

2010	Elected to College of Fellows, Royal Architectural Institute of Canada (FRAIC)
2008	Selected to represent Canada at the 11th Biennale of Architecture, Venice, Italy
2006	Faculty of Engineering, Architecture and Science Research Excellence Award

Recent Publications

2017	Polo, M. "Goodbye to all that" (2017). *Canadian Architect*, Vol. 62, No. 11, p. 66.
2017	"Architecture and National Identity: The Centennial Projects 50 Years On. Marco Polo and Colin Ripley in conversation with Amery Calvelli"(2017) . *Utopia Factory*. Lisa Baldissera, ed. Calgary: Contemporary Calgary, pp. 45-56.
2015	Polo, M. and Ripley, C., "Confederation Centre for the Arts" (2015). *Canadian Architect*, Vol. 60, No. 3, p. 34.
2014	Polo, M. and Ripley, C., *Architecture and National Identity: The Centennial Projects 50 Years On* (2014). Halifax, NS: Dalhousie Architectural Press.

SRC Activities

2017	Co-curator, with Professor Colin Ripley, Architecture and National Identity: Canada's Centennial Projects 50 Years On. Paul H. Cocker Gallery, Ryerson University, Toronto, ON, September 14 – November 10, 2017.
2017	Co-curator, with Professor Colin Ripley, Architecture and National Identity: Canada's Centennial Projects 50 Years On. Contemporary Calgary, Calgary, AB, May 4 – July 30, 2017.
2017	Co-curator, with Professor Colin Ripley, Architecture and National Identity: Canada's Centennial Projects 50 Years On. Grenfell Art Gallery, Memorial University, Corner Brook, NL, March 3 – April 1, 2017.
2015	Co-curator, with Professor Colin Ripley, Architecture and National Identity: Canada's Centennial Projects 50 Years On. National Arts Centre, Ottawa, ON, July 1 -31, 2015.
2015	Presenter, with Professor Colin Ripley, "Architecture and National Identity: The Centennial Projects 50 Years On." National Arts Centre, Ottawa, ON, July 1, 2015.

Academic, Professional, and Public Service

2015 - 2018	Member, Awards Committee, Royal Architectural Institute of Canada
2014 - Pres.	Curator, Paul H. Cocker Gallery, Department of Architectural Science, Ryerson University
2018	Member, Canadian Architectural Certification Board Visiting Team, McGill University, Montreal, QC
2016	Jury member, Gregory H. Woods Fellowship in Collaborative Design, Lassonde School of Engineering, York University
2015	Member, Canadian Architectural Certification Board Visiting Team, University of Manitoba, Winnipeg, MB
2014	Jury Chair, Ontario Association of Architects Awards of Excellence
2013	Member, Canadian Architectural Certification Board Visiting Team, Université Laval, Québec, QC

Marco L. Polo

Ramani Ramakrishnan, D.Sc., M.S, B. Tech, PEng
Professor

Date of Appointment 2000
Area of Expertise Building Science in Architecture
Recent Teaching Assignments

2017-2018	ASC 302: Envelope Systems	ASC 905/AR 8221: Advanced Acoustics
	BL 8211: Lighting Design in Buildings	BSC 721 : Sustainable Control Systems
	BSC 820: Building Science Studio II	
2016-2017	ASC 302: Envelope Systems	ASC 905/BL 8206: Selected Topics
	BL 8211: Lighting Design in Buildings	BSC 721 : Sustainable Control Systems
	BSC 820: Building Science Studio II	
2015-2016	ASC 905: Special Topics	BL 8211: Lighting Design in Buildings
	BSC 721 : Sustainable Control Systems	BSC 820: Building Science Studio II

Education

1973- 1977	*D.Sc. (Acoustics),* Joint Institute of Acoustics and Flight Sciences NASA Langley Research Centre (VA, USA),Department of George Washington University (Washington), Dissertation: Acoustic Propagation through Wall-Jet Flow with Compliant Plates, 1977.
1971 - 1973	*M.S (Acoustics)*, Joint Institute of Acoustics and Flight Sciences, NASA Langley Research Centre (VA, USA), Department of George Washington University (Washington), Thesis: On Discrete Noise Radiation from Helicopters, 1973
1965 - 1970	*B. Tech (I Class) Civil Engineering*, Indian Institute of Technology, Madras, India

Teaching Experience

2000 - Pres.	*Faculty,* Ryerson University, Department of Architectural Science, Toronto
1984 - 2000	*Instructor,* Ryerson University, Department of Architectural Science, Toronto – Offered between one to two courses every winter term
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.

Professional Experience

1997 - 2000	*Senior Acoustician,* Aerodynamics Group, Aiolos Engineering Corporation
2000 - Pres.	*On Contract as Senior Acoustician, Aerodynamics Group, Aiolos Engineering Corporation, Toronto*
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

Recent Honours and Awards

2013	Dean's Teaching Award

Recent Publications

2014	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)
2014	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)
2016	Ramani Ramakrishnan and Romain Dumoulin, 2016. "Acoustics of a Music Venue/Bar – A Case Study." *Buildings* – Published March 2016. (Refereed Publication)
2014	Adam Barker and Ramani Ramakrishnan, 2014. "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.
2014	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.

Academic, Professional, and Public Service

2012 - Pres.	Advisory Board Member, *Canadian Acoustics Journal*
2017	Organized a special session on, "Acoustical Education in Canada," for the Acoustics Week in Canada Conference in Guelph, Ontario, October 2017
2014	Technical Chair - 2014 Acoustics week in Canada, Winnipeg, Manitoba, Canada
2009	Conference Chair – 2009 Acoustics week in Canada, Niagara-on-the-Lake, Ontario, Canada
2007 - 2012	Director, Subtle Technology served one term from 2007 until 2012
1998 - 2002	Editor-in-Chief of *Canadian Acoustics Journal*

Ramani Ramakrishnan

Russell Richman, Ph.D., M.A.SC., B.A.Sc., Peng
Associate Professor, Associate Chair, Graduate Studies, Building Science Program

Date of Appointment 2009
Area of Expertise Building Science in Architecture
Recent Teaching Assignments

2017-2018	BL 8101: Building Envelope Theory	BL 8213: Passive House Design & Construction
2016-2017	BL 8101: Building Envelope Theory	BL 8213: Passive House Design and Construction
	BSC 822: Advanced Envelopes/Components	
2015-2016	AR 8103: Studio in Collaborative Practice	ASC 520: Integration Studio I
	BL 8101: Building Envelope Theory	BSC 822: Advanced Envelopes/Components

Education

2008	*Ph.D.*, University of Toronto, Civil Engineering
2002	*M.A.Sc.*, University of Toronto, Civil Engineering
1999	*B.A.Sc.*, University of Toronto, Civil Engineering

Teaching Experience

2009 - Pres.	*Faculty,* Ryerson University Department of Architectural Science
2001 - 2008	*Instructor/Co-Instructor,* Department of Civil Engineering, University of Toronto.

Professional Experience

2005 - Pres.	*President,* Russell Richman Consulting Ltd.
1999-2005	*Project Manager*, Façade and Roofing, Yolles Partnership Inc.

Recent Publications

2017	Williams, B. and Richman, R., Coupling Field Measurement and Laboratory Frost Dilatometry to Assess Load Bearing Clay Brick Masonry for Long-Term Durability, *Journal of Building Physics*, Vol 40, Issue 5, 2017
2017	Hygrothermal performance of hempcrete for Ontario (Canada) buildings, *Journal of Cleaner Production*, Vol 142, Part 4, January 2017, Pp 3655-3664
2016	Denver Jermyn, Russell Richman, A process for developing deep energy retrofit strategies for single-family housing typologies: Three Toronto case studies, *Energy and Buildings*, Volume 116, 15 March 2016, Pages 522-534
2016	Matthew S. Tokarik, Russell C. Richman, Life cycle cost optimization of passive energy efficiency improvements in a Toronto house, *Energy and Buildings*, Volume 118, 15 April 2016, Pages 160-169
2015	Amanda Yip, Russell Richman. Reducing Ontario's new single-family residential heating energy consumption by 80% by 2035: economic analysis of a tiered framework of performance targets. *Canadian Journal of Civil Engineering*, 2015, 42(12): 1135-1145
2015	So, N. and Richman, R. (2015). A High Level Method to Disaggregate Electricity for Cluster-Metered Buildings, *Energy and Buidlings*

SRC Activities

(2014 - 2019) Grant-funded Research: Research and Development to Support an Ultra-Energy-Efficient Residential Building Stock in Ontario, Natural Sciences and Engineering Research Council of Canada (NSERC) discovery Grant, Total Funding - $100,000

(2015-2016) Grant-funded Research: Instrumenting the Use of Smart Meter Data and Building Typology to Reduce Peak Load Electricity Use for Targeted Customers in Toronto, Natural Sciences and Engineering Research Council of Canada (NSERC) Engage, Total Funding - $25,000

(2015) Grant-funded Research: Quantifying Hygrothermal Performance of a Super-Insulated Wall Assembly Using Mineral Wool Semi-Rigid Insulation, Natural Sciences and Engineering Research Council of Canada (NSERC) Engage, Total Funding - $25,000

(2013-2014) Grant-funded Research: Towards Establishing the Psychology of Energy Efficiency: Energy Literacy in the GTA, Ryerson University, Dean's Research Fund II Competition, Total Funding - $10,000

(2014) Grant-funded Research: Development of a Field Testing Standard for Residential Grey Water Recovery Systems, Natural Sciences and Engineering Research Council of Canada (NSERC) Engage Grants, Total Funding - $25,000

Academic, Professional, and Public Service

Practicing Engineering Consultant

Graduate Program Director (Building Science)

Russell Richman

Colin Ripley, M.Arch, B.Eng, MSc, McM, OAA, SAA
Professor

Date of Appointment 2003
Area of Expertise Architectural Design and Theory
Recent Teaching Assignments

2017-2018	AR 8106: Current Topics in Architectural Praxis	ARC 720 : Architecture Studio
	ASC 401: Design Studio III	
2016-2017	AR 8106: Current Topics in Architectural Praxis	ARC 720 : Architecture Studio
	ASC 401: Design Studio III	
2015-2016	Sabbatical	

Education

In Progress	*Ph.D.,* Philosophy Art and Critical Thought, European Graduate School, Switzerland.
1994	*M.Arch,* Architecture, Princeton University, Princeton, N.J.,
1991	(Finished five semesters of six semester program), University of Waterloo, Waterloo, Ontario,
1986	*M.Sc.*, Physics, University of Toronto, Toronto, Ontario,
1985	*B.Eng.*, Engineering, McMaster University, Hamilton, Ontario, (Graduated first in class and Summa Cum Laude)

Teaching Experience

2003-Pres.	*Faculty,* Department of Architectural Sciences, Ryerson University
2007	*Visiting Faculty*, University of Waterloo School of Architecture

Professional Experience

2007 - Pres.	*Director,* RVTR
2003 - Pres.	*Principal*, Colin Ripley Architects, Toronto.
1997 - 2003	*Principal*, Heavyweight Studio, Toronto.
1998 - 2003	*Project Coordinator / Project Architect*, Baird Sampson Neuert Architects, Toronto.
1997	*Designer*, Taylor Hariri Pontarini Architects, Toronto

Recent Honours and Awards

2012 - 2013	Journal of Architectural Education Best Design as Scholarship Article Award. (Ripley, C., Thün, G. & Velikov, K.)
2009	Canada Council for the Arts. Professional Prix de Rome in Architecture (RVTR)
2008	American Institute of Architects Honor Award: Thomas L. Wells Public School (Baird Sampson Neuert Architects; Colin Ripley and Geoffrey Thün: Project Architects)
2006	Governor-General's Medal in Architecture: Erindale Hall, University of Toronto at Mississauga (Baird Sampson Neuert Architects; Colin Ripley: Project Architect)

Recent Publications

2018	Ripley, C. (2018). Strategies for living in houses. In Gorny, R. & van den Heuvel, D. (Eds.), *Trans-Bodies / Queering Spaces* [Special issue]. *Footprint 21*
2017	Ripley, C. (2017). Strategies for living in houses. *Footprint 21*
2016	Ripley, C. (2016, November). New Resonances. Sonologia conference, Sao Paulo, Brazil
2015	Thün, G., Velikov, K., MacTavish, D. and Ripley, C. (RVTR) (2015). *Infra-|Eco-|Logi-|Urbanism: The Great Lakes Megaregion*. Zurich: Park Books.
2015	Ripley, C. (2015). Instrumental operations in the urban assemblage. *Journal of Sonic Studies 11 - Recomposing the City: New Directions in Urban Sound Art*
2014	Polo, M. and Ripley, C. (2014). *Architecture and National Identity: The Centennial Projects 50 Years On / Architecture et identité nationale : les projets du Centenaire, 50 ans plus tard*. Halifax: Dalhousie Architectural Press.
2013	Ripley, C. (2013). Digital distraction: Towards a technological criticism. Volume, Iss. 36: 38-40

Academic, Professional, and Public Service

2016	President, Canadian Architectural Certification Board

Colin Ripley

Kendra Schank Smith, B.A., M.Arch, Ph.D.
Professor

Date of Appointment 2007
Area of Expertise Architecture
Recent Teaching Assignments

2017-2018	ARC 720: Architecture Studio	ASC 201: Design Studio I
	ASC 306: Ideas, Techniques, and Precedents II	ASC 751/AR 8203: Architectural Writing
2016-2017	ARC 820: Architecture Studio	ASC 301: Design Studio
	ASC 306: Ideas, Techniques, and Precedents II	ASC 751/AR 8203: Architectural Writing
2015-2016	ASC 101: Communication Studio	ASC 751/AR 8203: Architectural Writing

Education

1992	*Doctor of Philosophy (Ph.D.) in Architecture*, Georgia Institute of Technology
1980	*Master of Architecture (M. Arch.) Professional Degree*, Virginia Polytechnic Institute and State University
1975	*Bachelor of Arts (B.A.) Art and Education,* Southern Illinois University

Teaching Experience

2007 - Pres.	*Faculty*, Department of Architectural Science, Ryerson University, Toronto
2005 - 2006	*Associate Professor, Chair of the Department of Architecture*, University of Hartford
2003 - 2004	*Associate Professor, with Tenure*, University of Utah
1996 - 2003	*Assistant Professor*, University of Utah
1995 - 1996	*Cass Gilbert Visiting Assistant Professor*, University of Minnesota
1993 - 1995	*Visiting Assistant Professor*, State University New York, Buffalo
1991 - 1993	*Assistant Professor*, Southern College of Technology
1987 - 1991	*Instructor* (Full -Time), Georgia Institute of Technology
1984-1987	*Instructor/Assistant Professor*, Texas A&M University

Professional Experience

1984 - Pres.	*Design Consultant*, Smith and Smith Design
1980 - 1984	*Architectural Designer*, Kevin Roche John Dinkeloo and Associates, Hamden, Connecticut

Recent Honours and Awards	2018	2018: Prix du XXe Siecle Jury
		Royal Architectural Institute of Canada, Fellow
		Living and Working in Tokyo International Competition, Honourable Mention; Student Supervision, Hrishikesh Tailor
		ACSA/AISC Steel Competition, First Prize; student supervision, Kyle Marren
Recent Publications	2017	Kendra Schank Smith and Albert C. Smith. 2017. "Building the Architect's Character; Explorations in Traits." Routledge Publishing.
	2014	Albert C. Smith and Kendra Schank Smith. 2014. "Developing Your Design Process; Six Key Concepts for Studio." Routledge Publishing.
	2018	Xuemei Li, Weiye Li, Kendra Schank Smith, Albert C. Smith, 2018. "Hidden from the Wind and Enjoying the Water: fengshui and the Dong Villages in Southwest of China." Journal of Landscape Research.
	2013	Kendra Schank Smith, Albert C. Smith, Jessica Stanford, 2013. "Sparking the Imagination; Exploring the Eureka Moment." International Journal of Architectural Research. (7:1. 2013).
	2011	Albert C. Smith and Kendra Schank Smith. 2011. "The Architect as Magician." The Journal of Architecture. (6:5, 2011)
SRC Activities	2017	(2017) Grant-funded Research: Banff Pavilion Research, Ryerson University, PI: Yew-Thong Leong; Dean's Funding Amount: $25,000, Chair's Funding Amount: $7,500
	2016	(2016) Grant-funded Research: Research, MITACS Accelerate Program, PI: Kendra Schank Smith, Amount: $15,000
	2015	(2015) Grant-funded Research: Research, Ryerson University, Chair's/Dean's Funding, PI: Kendra Schank Smith, Amount: $7,000
Academic, Professional, and Public Service	2010 - 2012	Royal Architectural Institute of Canada, Board Member
	2010 - 2012	Council of Canadian University Schools of Architecture, Chair
	2004 - 2007	Journal of Architectural Education, Board Member

Kendra Schank Smith

Albert Smith, BA, MArch, Ph.D.
Associate Professor

Date of Appointment 2007
Area of Expertise Architecture, Design, Communications
Recent Teaching Assignments

2017-2018	ARC 820: Architectural Studio	ASC 101: Communication Studio
	ASC 900/AR 8221: Architectural Representation	
2016-2017	ASC 101: Communications Studio	ASC 201: Design Studio I
	ASC 901/AR 8221: Architectural Representation	
2015-2016	Sabbatical	

Education

1995	*Doctor of Philosophy (Ph.D.) in Architecture,* Georgia Institute of Technology
1980	*Master of Architecture (M. Arch.) Professional Degree*, Virginia Polytechnic Institute and State University
1975	*Bachelor of Arts (B.A.) Art and Education*, Southern Illinois University

Teaching Experience

2007 - Pres.	*Faculty,* Department of Architectural Science, Ryerson University, Toronto
2004 - 2007	*G3 Full-Time*, Department of Architecture, University of Hartford
1996 - 2004	*Assistant Professor* (Lecturer), (Full Time and Multi-Year), University of Utah
1995 - 1996	*Visiting Assistant Professor*, (Cass Gilbert Visiting Professor), University of Minnesota
1993 - 1995	*Visiting Assistant Professor,* State University of New York
1992	*Instructor* (part-time), Southern College of Technology
1987 - 1992	*Doctoral Teaching Fellow* (full-time), Georgia Institute of Technology
1985 - 1986	*Assistant Professor* (tenure track), Texas A&M University
1984 - 1985	*Instructor* (full-time, tenure track), Texas A&M University

Professional Experience

1984 - Pres.	*Design Consultant,* Smith and Smith
1980 - 1984	*Architectural Designer,* Kevin Roche John Dinkeloo and Associates

Recent Publications

Kendra Schank Smith and Albert C. Smith, 2017. "Building the Architect's Character; Explorations in Traits" Routledge Publishing.

Albert C. Smith and Kendra Schank Smith, 2014. "Developing Your Design Process; Six Key Concepts for Studio." Routledge Publishing

Albert C. Smith and Kendra Schank Smith, "The Architect as Magician" The Journal of Architecture, London, UK, Volume 16, Number 5, October 2011

Kendra Schank Smith and Albert C. Smith, 2012. "Sparking the Imagination: Exploring the Eureka Moment." ArchNet.IJAR, International Journal of Architectural Research, March 2013

Kendra Schank Smith, Xuemei Li and Albert C. Smith, "A Human Measure; Structure, Meaning and Operation of the Lu Ban Foot-rule of the Dong Carpenters," Architectural Research Quarterly, March 2013

Academic, Professional, and Public Service

Member, Royal Architectural Institute of Canada

Vera Straka, M.Eng., MISTRUCTE, B.Sc., PEng, FCSCE
Professor

Date of Appointment 1992
Area of Expertise Structural Design, Building Science
Recent Teaching Assignments

2017-2018	ASC 203: Structures I	ASC 620: Integration Studio II
2016-2017	ASC 203: Structures I	ASC 704: Independent Study
	BL 8102: Ecological Resource Efficient Design	
2015-2016	ASC 203: Structures I	ASC 520: Integration Studio I
	ASC 855/AR8220: Sustainable Rating Systems	

Education

2004	*LEED®,* Leader in Energy and Environmental Design, certification exam
1989	*M.Eng.,* University of Toronto, Toronto, Department of Civil Engineering
1978	*MIStructE*, Institution of Structural Engineers (London) part 3 examination (for licensing and designation as a member)
1972	*B.Sc.* (1st class honour), Imperial College, University of London (England), Department of Civil Engineering

Teaching Experience

1992 - Pres.	*Faculty*, Department of Architectural Science, Ryerson University, Toronto
1979 - 1981	*Lecturer*, University of Witwatersrand, Johannesburg, South Africa, Department of Civil Engineering

Professional Experience

1991 - 2003	*Director,* VAS Engineering, Toronto, Ontario
1986 - 1991	*Senior Project Engineer,* NORR Engineering Limited, Toronto, Ontario

Recent Honours and Awards

	PEO Order of Honour
	Fellow of Canadian Society for Civil Engineering
	Service Award from the Institution of Structural Engineers London, UK
2017	Ryerson Teaching Award

Recent Publications

2017	Contributor to Chapter 3 - Agriculture Management of Guide to Rooftop Agriculture of "Rooftop Urban Agriculture". Springer. Dec. 2017
2014	Kevin Trinh, Alan S Fung, Vera Straka, "Effects of Real-Time Energy Feedback and Normative Comparisons: Results from a Multi-Year Field Study in s Multi-Unit Residential Building", Energy Efficiency Journal. Accepted for publication 2017
2018	Alistair MacKenzie, Vera Straka, "Civil engineering heritage: country profile – Canada", Proceedings of the Institution of Civil Engineers - Engineering History and Heritage, 170(1), pp. 31–37, February 2017
2013	Miles Roque, Vera Straka, Alan Fung, Occupant's Household Energy Behaviour and Conservation Strategies in a High-rise Residential Building in Toronto, Canada. SBE16 Conference, September 19-20, 2016, Toronto
2011	Sara Alsaadani, A Miles Roque, Kevin Trinh, Alan Fung, Vera Straka, An overview of research projects investigating energy consumption in Multi-Unit Residential Buildings in Toronto, external link, ACSEE 2016 – The Asian Conference on Sustainability, Energy and The Environment, June 9-12, 2016, Kobe, Japan. ISSN: 2186-2311.

Academic, Professional, and Public Service

Reviewer for Energies Journal

Reviewer for National Science Foundation (US) Proposals

Reviewer for International Journal of Environmental Research and Public Health

Reviewer for Peer review of abstracts and full papers for PLEA (Passive and Low Energy Architecture)

Reviewer for Canadian Conference on Building Science and Technology (CCBST)

Technical Review Committee for Canadian Masonry Symposium

Member of PEO, Co-Chair of Equity and Diversity Committee

Member of CSCE

Member of CaGBC

Member of IstructE, Ontario Regional Group Committee – Past Chair

Edward Wojs, B.Tech., B.Arch, OAA, MRAIC
Associate Professor

Date of Appointment 1999
Area of Expertise Architecture
Recent Teaching Assignments

2017-2018	ASC 202: The Building Project	ASC 520: Integration Studio I
	ASC 620: Integration Studio II	
2016-2017	ASC 520: Integration Studio I	
2015-2016	ASC 520: Integration Studio I	

Education

1984	*Bachelor of Architecture*, Pratt Institute, New York, NY
1978	*Bachelor of Technology (Architectural Science)*, Ryerson Polytechnical Institute

Teaching Experience

1999 - Pres.	*Faculty,* Ryerson University, Department of Architectural Science, Toronto, Ontario
1996 - 1999	*Instructor,* Ryerson Polytechnic University, Department of Architectural Science and Landscape Architecture,Toronto, Ontario

Professional Experience

1991 - Pres.	*Principal Architect,* Edward Wójs Architect, Toronto, Ontario
1988 - 1990	*Project Architect,* Brisbin Brook Beynon Architects, Toronto, Ontario
1987- 1988	*Associate,* PRAG Architect, Toronto, Ontario
1980 - 1987	*Project Architect,* Robbie Williams Kassum Architects/ Mathers and Haldenby Architects, Richard Williams Architect, Toronto, Ontario
1976 - 1979	*Designer/ Project Co-ordinator*, Proctor and Redfern Engineers, Architects and Urban Planners, Toronto, Ontario.

SRC Activities	2018	Installation: Architect - Proposal for Co-Housing Project. Ongoing design discussions. New Housing Prototype for Private Senior Residences
	2018	Installation: Architect - Proposal for Custom Residence, Lisbon Portugal
	2018	Installation: Architect - Proposal for Custom Residence, Madrid, Spain
	2017	Installation: Architect - Proposal for new Studio and Coach House, Halton Hills, ON
	2014 - 2018	Installation: Architect - 366 King Street East, Toronto, ON

Arthur Wrigglesworth, B.Tech (Architecture), MArch., OAA, NCA
Associate Professor

Date of Appointment 2002
Area of Expertise Architectural Design, Project Management
Recent Teaching Assignments

2017-2018	AR8101: Studio in Critical Practice ASC 621: Tectonics & Materiality	ASC 620: Integration Studio II
2016-2017	AR 8101: Studio in Critical Practice	ASC 621: Tectonics & Materiality
2015-2016	AR 8101: Studio in Critical Practice ASC 621: Tectonics & Materiality	ASC 620: Integration Studio II

Education

1989	*Master of Architecture,* Southern California Institute of Architecture
1986	*Bachelor of Technology in Architectural Science,* Ryerson Polytechnical Institute
1979	*Fine Arts Program,* Art Gallery of Ontario

Teaching Experience

2002 - Pres.	*Faculty,* Ryerson University, Department of Architectural Science, Toronto, Ontario
1999 - 2002	*Mentor,* Ryerson Polytechnic University, Toronto, Ontario
1997 - 1999	*Sessional Instructor*, Ryerson Polytechnic University, Toronto Ontario

Professional Experience

1998 -Pres.	*Principal,* Wrigglesworth Collaborative; Arthur Wrigglesworth Architect
1999 - 2002	*Project Architect,* Health Strategy Architects Ltd.
1997 - 1999	*Project Team Member,* Design Architect, Moriyama & Teshima Architects
1995 -1997	Project Architect, Simon Davis Architects
1991 - 1995	*Principal,* Wrigglesworth Collaborative
1989 - 1991	Project Manager, Coop Himmelblau

Recent Publications	2016	Project: Hybrid Globe, CODAmagazine Collaboration of Design + Art, September 2016, Wrigglesworth, A., Ghiyaei, M., Samimi, M. 485
Academic, Professional, and Public Service	2005-2008	Council Member, Canadian Design Research Network
	2004-2008	Member, Revitalization Committee, Regent Park Community
	2004-2006	Member, Lyall Avenue Heritage Conservation District Committee, Beaches Community
	2001-2008	Vice-Chair of the Board of Directors, Yonge Street Mission
	1997-2008	Member, Real Estate Development Committee, Yonge Street Mission

Baruch Zone, B.Arch
Associate Professor

Date of Appointment 1999
Area of Expertise Architectural Design
Recent Teaching Assignments

2017-2018	ASC 101: Communications Studio	ASC 201: Design Studio I
	ASC 622: Documentation: The Construction Project	ASC 856/AR 8219: The Small Building
2016-2017	ASC 101: Communications Studio	ASC 201: Design Studio I
	ASC 622: Documentation: The Construction Project	ASC 856/AR 8219: The Small Building
2015-2016	ASC 101: Communications Studio	ASC 401: Design Studio III
	ASC 622: Documentation: The Construction Project	ASC 856/AR 8219: The Small Building

Education	1974	*Bachelor of Architecture,* University of Waterloo
	1972	*Bachelor of Environmental Studies,* University of Waterloo
Teaching Experience	1999 - Pres.	*Faculty,* Department of Architectural Science, Ryerson University, Toronto, Ontario
	1985 - Pres.	*Instructor,* Continuing Education, Ryerson University, Toronto, Ontario
	1982 - 1999	*Sessional Instructor*, Department of Architectural Science, Ryerson University, Toronto, Ontario
Professional Experience	1980 - Pres.	*Principal, ZONE Architect*
Recent Honours and Awards		Stage II Finalist: Cumberland Street Park Competition, City of Toronto

Baruch Zone

Baruch Zone

4.5 Visiting Team Report from the Previous Visit

The appendix of the APR must include a copy of the report from the previous site visit in its entirety.

Attached is the VTR from our 2013 Accreditation Visit.

VTR from the 2013 Visit

2013 Visiting Team Report
Master of Architecture Program
Ryerson University

The Canadian Architectural Certification Board
1 Nicholas Street, Suite 710
Ottawa (Ontario) Canada K1N 7B7
Voice: (613) 241-8399
Fax: (613) 241-7991
E-mail: info@cacb.ca
Web Site: www.cacb-ccca.ca

Table of Contents

I. Introduction • CACB Accreditation

The CACB is a national independent non-profit corporation, whose Directors represent the Canadian Architectural Licensing Authorities (CALA), the Canadian Council of University Schools of Architecture (CCUSA) and the Canadian Architectural Students Association (CASA). The CACB is both a decision-making and policy-generating body. It is the sole organization recognized by the architectural profession in Canada to assess the educational qualifications of architecture graduates (*Certification program*) and to accredit professional degree programs in architecture offered by Canadian Universities (*Accreditation program*).

By agreement of the Registration Authorities and Councils of nine Provincial Institutes and Associations, the CACB was established in 1976 to assess and certify the academic qualifications of individuals holding a professional degree or diploma in architecture who intend to apply for registration. The Ordre des Architectes du Québec joined the CACB in 1991. In 1991, the CACB mandate to certify degree credentials was reaffirmed and its membership was revised to reflect its additional responsibility for accrediting professional degree programs in Canadian University Schools of Architecture.

The CACB awards accreditation only to professional degree programs in architecture. These are normally:

- Master of Architecture degree with a related pre-professional bachelor's degree; requirement, typically amounting to five or six years of study;
- Master of Architecture degree without a pre-professional requirement, consisting of an undergraduate degree plus a minimum of three years of professional studies;
- Bachelor of Architecture degree requiring a minimum of five years of study, except in Quebec, where four years of professional studies follows two years of CEGEP studies.

The process of accreditation begins at the school with the preparation of the Architecture Program Report (*APR*). The *APR* identifies and defines the program and its various contexts, responding to the *CACB Conditions and Procedures for Accreditation*. The *APR* is expected to be useful to the planning process of the school, as well as documentation for the purposes of accreditation.

Upon acceptance of the *APR* by the CACB Board, an accreditation visit is scheduled. The CACB's decision on accreditation is based upon the capability of the program to satisfy the Conditions and Procedures for Accreditation, including the ability of its graduating students to meet the requirements for learning as defined in the Student Performance Criteria. During the visit, the team reviews student work and evaluates it against these requirements. The team also assesses the effectiveness and degree of support available to the architectural program through meetings with the institution's administrators at various levels, architecture and other faculty, students, alumni, and local practitioners.

At the conclusion of the visit, the Visiting Team makes observations and expresses compliments and concerns about the program and its components. It also offers suggestions for program enrichment and makes recommendations, which, in the judgment of the team, are necessary for the program's improvement and continuing re-accreditation. Following the visit, the team writes the following VTR, which is forwarded with a confidential recommendation to the CACB. The CACB then makes a final decision regarding the term of accreditation.

II. Summary of Team Findings

1. Team's General Comments

The Department has been diligent in addressing deficiencies identified in the previous 2010 VTR (dated March 13-17, 2010), both in terms of the seven (7) Causes of Concern and the seven (7) Student Performance Criteria judged to be *Not Met*. Indeed, in this 2013 assessment, all criteria formerly *Not Met* were *Met*. In consideration of the restricted time available from 2010 VTR Acceptance by the CACB Board to the submission of the APR for the 2013 Visiting Team Visit, progress in addressing these concerns is commendable. The 2013 Visiting Team Visit notes the 'rapidly evolving transformation' of the Department in Strengths of the Program (.4). The commendation is in part dedicated to the high standard of responsiveness, and the willingness of the Department to be transparent in both its accomplishments and the work still to come. The Visiting Team recognizes the tremendous effort involved in shaping a new curriculum, a work possible only through the evident collaboration and shared vision of the Department leadership, faculty, students, staff, and Ryerson University.

2. Conditions for Accreditation "met" and "not met": a summary

	Met	Not Met
1. Program Response to the CACB Perspectives		
A. Architecture Education and the Academic Context	[X]	[ ]
B. Architecture Education and the Students	[X]	[ ]
C. Architecture Education and Registration	[X]	[ ]
D. Architecture Education and the Profession	[X]	[ ]
E. Architecture Education and Society	[X]	[ ]
2. Program Self-Assessment	[X]	[ ]
3. Public Information	[X]	[ ]
4. Social Equity	[X]	[ ]
5. Human Resources	[X]	[ ]
6. Human Resource Development	[X]	[ ]
7. Physical Resources	[X]	[ ]
8. Information Resources and Information Technology	[X]	[ ]
9. Financial Resources	[X]	[ ]
10. Administrative Structure	[X]	[ ]
11. Professional Degrees and Curriculum	[X]	[ ]
12. Student Performance Criteria (SPC)		
A1. Critical Thinking Skills	[X]	[ ]
A2. Research Skills	[X]	[ ]
A3. Graphic Skills	[X]	[ ]
A4. Verbal and Writing Skills	[X]	[ ]
A5. Collaborative Skills	[X]	[ ]
A6. Human Behavior	[X]	[ ]
A7. Cultural Diversity	[ ]	[X]
A8. History and Theory	[X]	[ ]
A9. Precedents	[X]	[ ]
B1. Design Skills	[X]	[ ]
B2. Program Preparation	[X]	[ ]

B3.	*Site Design*	[X]	[ ]
B4.	*Sustainable Design*	[ ]	[X]
B5.	*Accessibility*	[ ]	[X]
B6.	*Life Safety Systems, Building Codes and Standards*	[X]	[ ]
B7.	*Structural Systems*	[X]	[ ]
B8.	*Environmental Systems*	[X]	[ ]
B9.	*Building Envelopes*	[X]	[ ]
B10.	*Building Service Systems*	[X]	[ ]
B11.	*Building Materials and Assemblies*	[X]	[ ]
B12.	*Building Economics and Cost Control*	[X]	[ ]
C1.	*Detailed Design Development*	[X]	[ ]
C2.	*Building Systems Integration*	[X]	[ ]
C3.	*Technical Documentation*	[X]	[ ]
C4.	*Comprehensive Design*	[X]	[ ]
D1.	*Leadership and Advocacy*	[X]	[ ]
D2.	*Ethics and Professional Judgment*	[X]	[ ]
D3.	*Legal Responsibilities*	[X]	[ ]
D4.	*Project Delivery*	[X]	[ ]
D5.	*Practice Organization*	[X]	[ ]
D6.	*Professional Internship*	[X]	[ ]

3. Program's Progress since the previous site visit (from previous VTR)

1. Despite the long history of the Department producing highly employable graduates, there should be further efforts to develop a professional culture within the Department and this has ramifications for a series of courses and accreditation criteria. There is a lack of suitable courses and course content in professional practice, particularly in the areas of ethics, professional judgment and leadership. Ryerson is well placed to develop innovative coursework in professional practice. Notions of ethics and professional judgment are introduced, however understanding of professional responsibility within a self-regulated profession and subsequent responsibility regarding promotion of public interest should be strengthened, and are considered fundamental to practice in Canada.

The Department has addressed the concern directly through course work, as evidenced in the Team Room. An important planned initiative to launch a Co-op Program seems natural in consideration of the history of the Department, and will further strengthen ties to the Profession and to Professional Practice in all of its dimensions. Maintaining the existing balance of researchers and practitioners on the fulltime Faculty is important to insure a professional voice throughout the Departmental course and studio offerings.

D1. Leadership and Advocacy	Criteria is Met
D2. Ethics and Professional Judgment	Criteria is Met
D3. Legal Responsibilities	Criteria is Met

2. The team recognizes the valued tradition of Ryerson's technical program. However, the development of the professional degree requires a broader education and greater emphasis on the Liberal Arts. Numerous shortcomings within the professional curriculum may exist because of the shortcomings within the Liberal Arts.

The Department is still in transition on this matter, though it is not a Concern of the 2013 Visiting Team. Section 2, p. 13 of the APR describes the revision of ASC200 Sustainable Practices in the Winter Term of

2013 to "include critical perspectives on sustainability, in all its manifestations". The Department is encouraged to seek a unique and distinctive balance between the liberal and technical arts.

- Refer to 4.12 Program Strengths

3. Generally, writing, research, and critical thinking abilities evident throughout the curriculum do not meet the expectations for accredited architectural programs; this has impact on many other performance criteria.

The number of courses and assignments that emphasize writing, research, and critical thinking has increased, as has the GA support for improving feedback. In many cases, written comments by senior faculty were deemed to be exceptional. Visiting Team members reviewed this aspect in depth.

- Refer to A1. Critical Thinking Skills Criteria is Met
- Refer to A2. Research Skills Criteria is Met
- Refer to A4. Verbal and Writing Skills Criteria is Met

4. The undergraduate curriculum has an excessive course load, a very concentrated weekly timetable, and numerous assignments. Further, there is some concern about the length of the six-semester Masters program. The Department is encouraged to review the curriculum to address these concerns.

While the course load and weekly timetable remains the same, individual assignments have been reduced by 23% in the first three years of the program (APR Section 2, p. 14). The students did not raise excessive course loads as a concern.

- Refer to B. Architecture Education and the Students

5. The strength of the applied aspects of the curriculum, particularly in building science, does not appear in the graduate program in any depth. There is significant potential for developing excellence in this area, building on the unique history of the Department.

The Administrators of Department have confirmed their support for continued concentration on Technology and Building Science through the curriculum, and recognize these as distinct attributes of the program. Structures, in particular, is being taught at a level that exceeds accreditation requirements.

- Refer to 4.12 Program Strengths
- Refer also to the following SPC:
  - B.7 Structural Systems
  - B8. Environmental Systems
  - B9. Building Envelopes
  - B10. Building Service Systems
  - B11. Building Materials and Assemblies, and
  - C2. Building Systems Integration.

6. The workshop is not adequate in size to serve the current number of students.
The pressing need has to do with the inadequacy of training for students, better access to equipment, and a greater level of lab assistance and management. The floor areas devoted to both analogue and digital fabrication appear to be adequate.

- Refer to 5. 3 Causes of Concern and Team's Recommendations

7. It is important that the approved upgrades to the building's HVAC system be addressed immediately, particularly with respect to the area dedicated to digital fabrication.

With regards to the HVAC in the Digital Fabrication Lab, good progress has been made. As is noted in the APR, the Department has gone to significant lengths to address these issues already - it is the main building HVAC system that is still outstanding in terms of upgrades. Administrators at all levels – from the University President to the Department Chair – assured us that the much needed upgrade of the buildings' HVAC system will be implemented in the summer of 2013. This represents a $2 million dollar commitment.

- Refer to 5. 5 Causes of Concern and Team's Recommendations

12.1 Verbal and writing skills

Ability to speak and write effectively on subject matter contained in the professional curriculum.

Evidence throughout the curriculum shows the impact of this deficiency. Despite students taking required liberal arts and science electives, there was not adequate evidence of university level writing skills. While a few courses required and achieved adequate levels of writing the writing of properly researched and referenced term papers was not evident at a consistent level throughout the course work. Students demonstrated strong verbal skills.

- See response to Concern 3.2 Above
- Refer to A4. Verbal and Writing Skills Criteria is Met

12.3 Research skills

Ability to employ basic methods of data collection and analysis to inform all aspects of the programming and design process.

While limited data collection and analysis may occur within the curriculum, there is insufficient evidence that the research skills are developed enough to inform all aspects of the programming and design process. Research methods are minimally explored. Additionally, clarity of process and accepted norms for research documentation falls short of expectations. This shortcoming is related to SPC 12.4. As the graduate program develops, research abilities will be an essential element for success.

- See response to 2.3 Causes of Concern above.
- Refer to A2. Research Skills Criteria is Met

12.4 Critical thinking skills

Ability to make a comprehensive analysis and evaluation of a building, building complex, or urban space.

Evidence throughout the curriculum shows the impact of this deficiency. The visiting team noted a general ability to observe and describe existing conditions using text, drawings, physical/digital models or other means. However, the team also noted a lack of general ability to move beyond the descriptive, to identify the meaning and significance of what is observed or expressed. Further, regarding textual or visual argument, the team observed a weakness in determining whether there is adequate justification to accept a result or conclusion as valid.

- See response to 2.3 Causes of Concern above.
- Refer to A1. Critical Thinking Skills Criteria is Met

12.9 Use of precedents
Ability to provide a coherent rationale for the programmatic and formal precedents employed in the conceptualization and development of architecture and urban design projects.

While precedents are presented in various courses, there was insufficient evidence of the systematic analysis of precedents and their application to design.

While this aspect of the program continues to require concentrated efforts in increasing critical awareness, the study of precedent is clearly an area of dominating concentration in the curriculum.

- Refer to A9. Precedents Criteria is Met

12.12 National and regional traditions
Understanding of the national traditions and the local regional heritage in architecture, landscape, and urban design, including vernacular traditions.

While there is some content in the third history course, and many assignments dealing with Toronto in the curriculum, the teaching of this subject is not adequately presented. It is noted that there is an elective course on this subject.

- Criteria not included in the revised Student Performance Criteria

12.35 Architects' leadership roles
Awareness of architects' leadership roles from project inception, design, and design development to contract administration, including the selection and coordination of allied disciplines, post-occupancy evaluation, and facility management.

The leadership role of architects is not directly addressed in course materials or assignments, other than indirectly through the organizational model of the integrated studio.

- See response to Concern 3.1 Above
- Refer to D1. Leadership and Advocacy Criteria is Met

12.37 Ethics and professional judgment
Awareness of the ethical issues involved in the formation of professional judgments in architecture design and practice.

Not directly addressed in course work. No sense of procedures, transparency, self-governing processes, or critical/ethical thinking.

- See response to Concern 3.1 Above)
- Refer to D2. Ethics and Professional Judgment Criteria is Met

4. Program Strengths

The visiting team reviewed the Architecture Program and completed body of work representing the Bachelor of Architectural Science and Master of Architecture curricula. The findings of the team are summarized in the strengths and causes of concern of the program.

1. Program's Strengths

1. Students, faculty and administration have advanced and consolidated the strategic mission for both the Undergraduate Bachelor of Architectural Science and the newly forged Master of Architecture programs: developing a revised pedagogical framework; adopting new administrative structures; reorganizing financial models; and building research capacity;

2. The students are open and enthusiastic, active in the social life of the school, running a student publications program, active in public events, forging initiatives with industry, eager to adopt new technologies, and enthusiastic about the changes in the Department;

3. Faculty at all levels of appointment are committed to a high quality of teaching, firm in their support for Ryerson University and its Mission, and dedicated to students – many of them working beyond dedicated studio hours;

4. Building on the dedication of Kendra Shank-Smith, the Administrative leaders of the Department - Colin Ripley, Chair; Marco Polo, Program Director (Undergraduate); and John Cirka, Program Director (Graduate) - provide consistent, experienced, and dedicated leadership – guiding the rapidly evolving transformations of the Department, and liaising effectively with the faculty, students and staff in order to facilitate and manage the Departments diverse initiatives;

5. President Sheldon Levy values the Department highly, noting its contribution to the Ryerson University Master Plan, its conformance to the overall Mission of the University, and in particular Ryerson's demonstrated commitment to inspire people through design excellence. The profile of the Department is high within the University and the community, and the President is well aware of the program, its changes and is supportive of its development;

6. The Dean of the Faculty of Engineering and Architectural Science, Dr. Mohamed Lachemi is knowledgeable and supportive of the Department. He acknowledges design and creative works as research. He is working to sustain staffing levels in the Department. Securing funding for two replacement positions is a high priority. The Faculty's Development Director is working actively to secure funds for the Department that bodes well for the development of the Program. The Dean made reference to the Digital Media Zone model, and expressed support for common design projects between Architectural Science, Interior Design and Engineering;

7. In addition to external grants, the Department is receiving research funds from Ryerson University to create a vibrant research culture commensurate with a Master of Architecture program;

8. A distinguishing characteristic of the Department is its many external linkages – within Ryerson University, inclusive of the community, and ongoing work with developers and industry. The Department is demonstrating a strong commitment to public engagement at many levels. Examples of this innovative programming include participation in the Ryerson Master Plan and the Winter Term one-week Collaborative Exercise open to all students;

9. Enrichment opportunities include international travel to Tel Aviv, Las Vegas, Venice, China, Germany, Ghana and Greece. While some of these options reside outside of the curriculum, they are excellent means of introducing students to global culture and international building and design models;

10. The program is in high demand;

11. The Department is committed to high quality teaching throughout the program, and many faculty teach in both the undergraduate and graduate programs;

12. A distinguishing characteristic of the Department – and unique in Canada - is its firm commitment to the inclusive and integrated teaching of Architecture, Building Science and Project Management. While the roles and responsibilities of each area of specialization in delivering the undergraduate program is in flux as the new program evolves, the strong commitment to future continued integration and collaboration between building technology and design is highly commended;

5. Causes of Concern and Team's recommendations

1. The Team has concerns about the sustainability of the Library's Architectural resources in consideration of the expanding demands of the new Masters of Architecture program. (APR - Section 3.8, Page 85);

2. The assignment of inappropriately qualified faculty is a concern. The program is encouraged to ensure continuity in course curriculum and student assessment regardless of the instructor assigned to the course;

3. The Team supports a review of the lower level wood and digital fabrication workshop facilities practices and policies in consideration of staff workload and student access;

4. The support staff is working at or beyond capacity;

5. Air quality concerns continue to be raised. The Department is encouraged to communicate the proposed building upgrade schedule to students;

6. Students are concerned about non-departmental access to studio spaces;

III. Compliance with the Conditions for Accreditation

1. Program Response to the CACB Perspectives

Programs must respond to the relevant interests of the constituencies that make up the CACB: educators (CCUSA) and regulators (CALA), as well as members of the practicing profession, students and interns, and the general public.

General Team comments:

A. Architecture Education and the Academic Context

The program must demonstrate that it both benefits from and contributes to its institutional context.

Met	Not Met
[X]	[ ]

Team comments:
The development of the Masters program in architecture at Ryerson benefits from a strong institutional tradition of technical education, and the institution fully embraces studio-based education.

The introduction of this program has contributed to improving the research profile of the department while increasing opportunities for collaborative, interdisciplinary and interdepartmental pedagogical activities and research projects across the University.

According to the President and the Provost, the Department participates in the development of the University, not only as a technical institution but also as a center for innovation and creative endeavor. It is playing an important role in the reframing of the identity of the University and of its significance in the life of the city.

B. Architecture Education and the Students

The program must demonstrate that it provides support and encouragement for students to achieve their full potential during their school years and later in the profession, and that it provides an interpersonal milieu that embraces cultural differences.

Met	Not Met
[X]	[ ]

Team comments:
Ryerson has three mechanisms for surveying student opinion. Students of the Department feel they have effective channels through which to communicate concerns to faculty and also believe those concerns are heard and acted upon reasonably given staffing and financial realities. The students provide instructor feedback for every course. The main concern of the students is still the physical resources such as access to computer labs, workshops, printing capabilities, studio space and general air quality in the building.

C. Architecture Education and Registration

The program must demonstrate that it provides students with a sound preparation for the transition to professional life, including internship and licensure.

Met	Not Met
[X]	[ ]

Team comments:
Since the professional program at Ryerson received accreditation in 2010, over 60% of these graduates have become Intern Architects with an increasing number of students becoming student associates of the Ontario Association of Architects. As well, 25% of undergraduates from the program

have gone on to attain architectural registration by completing their professional degree in another institution.

D. Architecture Education and the Profession

The program must demonstrate how it prepares students to practice and assume new roles within a context of increasing cultural diversity, changing client and regulatory demands, and an expanding knowledge base.

Met	Not Met
[X]	[ ]

Team comments:
A number of full time faculty and most of the sessional instructors maintain active practices and are encouraged to do so by the University and the Department. (APR 3.5 Human Resources, p.54) There is ample evidence that the Department strongly encourages collaboration at all levels to prepare graduates to lead complex and multi-disciplinary teams and technology driven processes.

E. Architecture Education and Society

The program must demonstrate that it equips students with an informed understanding of social and environmental problems and that it also develops their capacity to help address these problems with sound architecture and urban design decisions.

Met	Not Met
[X]	[ ]

Team comments:
From the 1st year Urban Infill projects in Toronto, through the Design Build to the Master's program projects, the students are exposed to the Architect's requirement to analyze and understand the society in which they practice and the expectation society has of them. The program also makes very good use of being located within one of Canada's most culturally and economically diverse social environments as confirmed by University Administration.

2. Program Self-assessment

The program must provide an assessment of the degree to which it is fulfilling its mission and achieving its action plan.

Met	Not Met
[X]	[ ]

Team comments:
The self-assessment process is established and respected at Ryerson. Through University wide and Departmental survey instruments, students have numerous avenues through which to voice concerns. Through direct interviews, the Team found that the students were satisfied with the Department's responses to their concerns. In addition to the internal assessments, external reviews are carried out by a Program Advisory Council comprised of respected industry professionals. The team noted that the APR was both clear in terms of issues that have successfully been addressed in the brief period since the previous visit (including student workload and class sizes) as well as being forthcoming about current short falls. There is evidence that the Department is actively working to address these current concerns.

3. Public Information

The program must provide clear, complete, and accurate information to the public by including in its academic calendar and promotional literature the exact language found in the CACB 2010 Conditions (Appendix A-1), which explains the parameters of an accredited professional degree program.

Met	Not Met
[X]	[ ]

Team comments:
Information is clearly presented on the Department's web site with references to the CACB 2010 Guide.

4. Social Equity

The accredited degree program must provide a summary of provincial and institutional policies that augment and clarify the provisions of the Charter of Rights and Freedoms as they apply to social equity.

Met	Not Met
[X]	[ ]

Team comments:
Evidence was found in the APR (pgs 47-52).

5. Human Resources

The program must demonstrate that it provides adequate human resources for a professional degree program in architecture, including a sufficient faculty complement, an administrative head devoting not less than fifty percent of his/her time to program administration, administrative and technical support staff, and faculty support staff.

Met	Not Met
[X]	[ ]

Team comments:

Faculty

Faculty members at Ryerson University are members of the Ryerson Faculty Association, which operates within the Collective Agreement. As such, faculty working conditions, workload, HR policies, etc. are governed by the policies agreed upon in the Collective Agreement.

Faculty report an improvement to their workloads, as student/teaching ratios have decreased, coupled with a decrease in student numbers. Faculty research activity is financially supported through University-wide grants, in addition to external grants.

Since the last Accreditation Visit, two faculty members have resigned, and these positions remain unfilled. Discussions with the President, Provost, Dean, and Chair indicate that application has been made to the Faculty of Engineering to replace these two positions.

Administration

The program is administered by the Chair, the Undergraduate Program Director, the Graduate Program Director, and the Assistant Chair Student Affairs - adequate staffing for program administration at this level.

Staff

There are nine staff members in Program administration, including two workshop technicians and one IT support staff member. [NOTE: the APR lists 11 staff: pg. 60] Although support for the Program appears to be adequately staffed for daily operations, the staff is stretched beyond capacity when support is needed for special events and initiatives;

The Workshop technicians work closely with students on the construction of their models in addition to attending to the technical needs of the Building Science Laboratory Researchers. Students and staff report that these roles are working to (and beyond) capacity;

The IT staff member attends to all Program IT needs, including those of staff, faculty and students.

6. Human Resource Development

Programs must have a clear policy outlining both individual and collective opportunities for faculty and student growth within and outside the program.

Met	Not Met
[X]	[ ]

Team comments:
In general: the Department provides continuous and ample enrichment opportunities for faculty and students that include: guest lectures, visiting critics, seminars, and public exhibitions of student and faculty work.

Students

Through the Research Assistant Program, undergraduate students experiencing financial need at Ryerson University have access to employment opportunities on campus. There are additional University funding opportunities available to students.

Students in the Department have access to travel, both as optional enrichment opportunities, as well as organized studio offerings.

The student body has two primary student organizations that support governance and enrichment: the Architecture Course Union (ACU), and the only Canadian chapter of the American Institute of Architecture Students (AIAS). Both organizations provide Department students with opportunities to participate in Program governance, special initiatives/projects, and industry networking opportunities.

Faculty

Faculty members have access to several types of funding in support of research activities and projects, including: SSHRC Institutional Grants (SIG), SIG Travel grants, the Ryerson Creative Fund, the Ryerson International Research Fund (RIRF), the Dean's Fund to Assist SRC for new faculty, and other travel support from the Dean's and Chair's travel funds.

7. Physical Resources

The program must provide physical resources that are appropriate for a professional degree program in architecture, including design studio space for the exclusive use of each full-time student; lecture and seminar spaces that accommodate both didactic and interactive learning; office space for the exclusive use of each full-time faculty member; and related instructional support space.

Met	Not Met
[X]	[ ]

Team comments:

Overall Building:
The effect of a decade of deferred maintenance is evident on the building facade. Although most of the critical problems are being addressed at the moment and considerable amounts of money are being invested by the university to refurbish the HVAC system in the building, concerns over building envelope and glazing, air quality and heating should be resolved in the near future, and maintenance of the building should not be impeded any further as these conditions are not acceptable for a learning establishment.

According to the Department $2 million have been allocated to upgrade the HVAC system with work slated to begin in the summer of 2013. However no funds have been allocated to deal with building envelope issues and this remains both a concern and an opportunity given the Department`s expertise in the building science field.

Studio Space:
Most of the deficiencies are being addressed and ongoing studies regarding the possibilities of a future model for the workspace of the 21st Century is interesting. New furniture in the first year studios will certainly be necessary in the near future. Students and faculty have reported a significant shortfall of electrical capacity throughout the studio spaces.

Digital Technology Infrastructure:
The addition of electronic information infrastructures in review spaces and studios is fairly distributed throughout the studios and 'crit' rooms.

The absence of in-house plotting is a concern, creating inconvenience and unnecessary financial burden for students. This service is normally available in North American Architecture programs.

Office Space:
Full time faculty office space appears to be sufficient. However, the single office area allocated for sessional faculty is less than ideal – particularly when they need to meet with students - and should be reconsidered as noted in two previous VTR.

Workshop:
The expansion of the workshop facility may be seen as a major improvement specifically with regards to the digital fabrication areas, however there is a concern regarding the lack of student involvement and understanding of the machinery in the workshop. Students noted that this culture has resulted in model making that is more retroactive rather than process oriented and linked to the design exploration.

Computer Lab:
The room hosting the CAD Lab is surely not ideal and suffers from a major deficiency with regards to HVAC system, noise and heat conditions. It is well over capacity with regards to students needs. A substantial increase in space is required to support the further implementation of digital techniques within the program. Following the suggestions of the students, a more substantial server and more powerful individual computers would greatly benefit their abilities to carry out complex digital modeling and intensive rendering tasks afforded by available software.

Gallery Space:
The introduction of a proper gallery space – with a component designed by the students – will be an important addition to the Department – a place to promote the work of students, highlight leading edge projects, and draw in the public.

Faculty Research Space:
With the introduction of a new graduate program in Architecture and a focus on research at the graduate level an increase in dedicated space allocated to these endeavors should be explored.

Resource Center:
This room is clearly underutilized, but represents a significant floor area within the department. The reprogramming of this room could help address the space issue of the building.

8. Information Resources and information technology

The architecture librarian and, if appropriate, the staff member in charge of visual resource or other non-book collections must prepare a self-assessment demonstrating the adequacy of the architecture library. For Information Technology Resources, the program must also provide the information technology infrastructure and corresponding staff support in order to effectively contribute to the delivery of the curriculum, as well as supporting activities of staff and faculty.

Met	Not Met
[X]	[ ]

Team comments:

As per the university policy of consolidating all library resources, the Architectural Science library collection is housed in the central Ryerson University Library.

9. Financial Resources

Programs must have access to sufficient institutional support and financial resources.

Met	Not Met
[X]	[ ]

Team comments:

The program has the clear support of the University, as expressed to the Team by the President and Provost. Both University officials expressed strong appreciation for the Program, and the work of its faculty and students. This support includes access to sufficient financial resources for program operations, as well as one time funding such as $2million for the pending upgrade to the Architecture building's mechanical system. The University recognizes that studio-based programs, such as Architecture, have differential budget models and therefore, require differential financial support.

10. Administrative Structure (Academic Unit & Institution)

The program must be part of, or be, an institution accredited by a recognized accrediting agency for higher education. The program must have a degree of autonomy that is both comparable to that afforded to the other relevant professional programs in the institution and sufficient to assure conformance with all the conditions for accreditation.

Met	Not Met
[X]	[ ]

Team comments:

This condition is met. (Refer to 1.5, Human Resources)

11. Professional Degrees and Curriculum

The CACB awards accreditation only to first-professional degree programs in architecture. These include:

- *Master of Architecture degree with a related pre-professional bachelor's degree; requirement, typically amounting to five or six years of study;*
- *Master of Architecture degree without a pre-professional requirement, consisting of an undergraduate degree plus a minimum of three years of professional studies.*
- *Bachelor of Architecture degree requiring a minimum of five years of study, except in Quebec, where four years of professional studies follows two years of CEGEP studies;*

The curricular requirements for awarding these degrees must include three components: general studies, professional studies, and electives that respond to the needs of the institution, the architecture profession, and the students respectively.

Met	Not Met
[X]	[ ]

Team comments:
Both the Undergraduate and Graduate programs provide adequate evidence of an acceptable blend of general studies, professional studies and electives.

12. Student Performance Criteria (SPC)

Each architecture program must ensure that all its graduates possess the skills and knowledge defined by the performance criteria set out below, which constitute the minimum requirements for meeting the demands of an internship leading to registration for practice. (See CACB 2010 Conditions for further detail regarding the SPC categories and criteria).

Met	Not Met
[x]	[ ]

A1. Critical Thinking Skills

Ability to raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well reasoned conclusions, and test them against relevant criteria and standards.

Met	Not Met
[X]	[ ]

Team comments:
Evidence is found in AR8102 (Seminar in Critical Practice).

A2. Research Skills

Ability to employ basic methods of data collection and analysis to inform all aspects of the programming and design process.

Met	Not Met
[X]	[ ]

Team comments:
Addressed mainly in AR 8102.

A3. Graphic Skills

Ability to employ appropriate representational media to convey essential formal elements at each stage of the programming and design process.

Met	Not Met
[X]	[ ]

Team comments:
Met at all stages of programming and design process and through a variety of mediums, from analogical to numerical representation methods. The results are more convincing when the graphic exercises are integrated in a design project. Integration studio is a key moment in the demonstration of professional graphic skills.

A4. Verbal and Writing Skills

Ability to speak and write effectively on subject matter contained in the professional curriculum.

Met	Not Met
[X]	[ ]

Team comments:

The Team was impressed by the quality of thought and writing in the essays produced for the seminar course in Critical Practice (AR 8102). We encourage the department to integrate writing to the undergraduate history and theory courses. The contribution of writing to thought and research is not to be neglected.

A5. Collaborative Skills

Ability to identify and assume divergent roles that maximize individual talents, and to cooperate with others when working as members of a design team and in other settings.

Met	Not Met
[X]	[ ]

Team comments:

A variety of collaboration opportunities are exploited throughout the curriculum. Horizontal examples of collaborations are found in ASC 520 and the vertical opportunity offered by the annual Collaborative Exercise is well appreciated by the students and the University.

A6. Human Behavior

Understanding of the relationship between human behavior, the natural environment and the design of the built environment.

Met	Not Met
[X]	[ ]

Team comments:

This has been met.

A7. Cultural Diversity

Understanding of the diverse needs, values, behavioral norms, and social/spatial patterns that characterize different cultures and individuals, as well as the implications of this diversity on the societal roles and responsibilities of architects.

Met	Not Met
[ ]	[X]

Team comments:

Not met. The Program is focused on the study of Western thought and tradition. Design Studio 2 (ASC 301) and Seminar in Critical Practice (AR 8102) look at the challenges of housing in Nunavut and urbanity in contemporary cities around the world, an in-depth study of cultural diversity was not observed.

A8. History and Theory

Understanding of diverse global and local traditions in architecture, landscape, and urban design, as well as the factors that have shaped them.

Met	Not Met
[X]	[ ]

Team comments:
This criteria is well addressed through the seminar course in Critical Practice (AR8102) at the M.Arch level. The team notes weaknesses at the BArchSci level (Ideas, Technologies and Precedents 1 and 2), where the historical evolution of ideas are not dealt with in a critical way.

A9. Precedents
Ability to make a comprehensive analysis and evaluation of a building, building complex, or urban space.

Met	Not Met
[X]	[ ]

Team comments:
This is a dominant aspect of the program. They propose a precedent based education carried through case studies in various courses and studios. The approach is both descriptive and instrumental, relating to space organization and construction problems. References to past and existing architecture in the design process could be addressed from a more cultural and critical perspective.

B1. Design Skills
Ability to apply organizational, spatial, structural, and constructional principles to the conception and development of spaces, building elements, and tectonic components.

Met	Not Met
[X]	[ ]

Team comments:
Gradual integration of different parameters of the design process and the progression in the scale and complexity of the project is appreciated. However, some weakness in the statement of the architectural theoretical framework has been noted. Technical concepts could be more fully integrated in the design process.

B2. Program Preparation
Ability to prepare a comprehensive program for an architectural project that accounts for client and user needs, appropriate precedents, space and equipment requirements, the relevant laws and standards, and site selection and design assessment criteria.

Met	Not Met
[X]	[ ]

Team comments:
The preparation of a program does not appear to be a key theme in the undergraduate or masters programs. Despite a clear progression in terms of independent development of a program from Design Studio 2 (ASC 301) to Design Studio 3 (ASC 401) the work appears to be cursory and it is unclear how this has influenced the conception of ideas in the design work. Furthermore, while there is evidence shown in the final projects that a review of precedents has occurred however the analysis of these projects could be more comprehensive. There is sufficient evidence in the third year studio to demonstrate that this SPC has been met.

B3. Site Design
Ability to analyze and respond to context and site conditions in the development of a program and in the design of a project.

Met	Not Met
[X]	[ ]

Team comments:
Evidence of ability is present in the work at all levels, however the methods used to investigate site conditions appears to have migrated to purely digital methods in upper years of the program. There is concern that students are not utilizing some of the earlier methods to explore and document site conditions.

B4. Sustainable Design
Ability to apply the principles of sustainable design to produce projects that conserve natural and built resources, provide healthy environments for occupants/users, and reduce the impacts of building construction and operations on future generations.

Met	Not Met
[ ]	[X]

Team comments:
Not Met. While there are several courses (ASC 200, ASC 302, ASC 402) that provide an understanding with regards to building science principles, there is no evidence that supports a clear directive with regards to the understanding and application of sustainable design within the students own design work. Courses such as ASC 200 Sustainable Practice, and ASC 403, Site Development and Planning lay the groundwork for the application of sustainable design, but do not venture beyond this.

B5. Accessibility
Ability to design both site and building to accommodate individuals with varying physical and cognitive abilities.

Met	Not Met
[ ]	[X]

Team comments:
Not Met. Some evidence is found in ASC620 (Integration Studio II), and ASC622 (Documentation), and inconsistently demonstrated in ASC401 (Design Studio II). Evidence is minimal, and inconsistent across student work.

B6. Life Safety Systems, Building Codes and Standards
Understanding the principles that inform the design and selection of life-safety systems in buildings and their subsystems; the codes, regulations, and standards applicable to a given site and building design project, including occupancy classifications, allowable building heights and areas, allowable construction types, separation requirements, occupancy requirements, means of egress, fire protection, and structure.

Met	Not Met
[X]	[ ]

Team comments:
Evidence is found in ASC401 (Design Studio III), ASC520 (Integration Studio), ASC620 (Integration Studio), and ASC622 (Documentation).

B7. Structural Systems
Understanding of the principles of structural behavior in withstanding gravity and lateral forces, and the evolution, range and appropriate applications of structural systems.

Met	Not Met
[X]	[ ]

Team comments:
Evidence found in ASC 203 (Structures I), ASC 303 (Structures II), and ASC 407 (Structures III) to a level that exceeds the requirements for Accreditation. However, the Team found some redundancy of material across the three courses and an unclear progression of material that builds upon previous courses.

B8. Environmental Systems
Understanding of the basic principles that inform the design of environmental systems, including acoustics, illumination and climate modification systems, building envelopes, and energy use with awareness of the appropriate performance assessment tools.

Met	Not Met
[X]	[ ]

Team comments:
Evidence is found in ASC202 (Building Project), ASC521 (Light and Sound in Architecture), as well as in studios: ASC 202, 302 402.

B9. Building Envelopes
Understanding of the basic principles involved in the appropriate application of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources.

Met	Not Met
[X]	[ ]

Team comments:
Evidence found in ASC302 (Envelope Systems), ASC402 (Bodily Comfort Systems), ASC623 (Principles of Detailing), and across the studio work.

B10. Building Service Systems
Understanding of the basic principles that inform the design of building service systems, including plumbing, electrical, vertical transportation, communication, security, and fire protection systems.

Met	Not Met
[X]	[ ]

Team comments:
Evidence is found in ASC620 (Integrated Studio).

B11. Building Materials and Assemblies
Understanding of the basic principles utilized in the appropriate selection of construction materials, products, components, and assemblies, based on their inherent characteristics and performance.

Met	Not Met
[X]	[ ]

Team comments:
Well met. There is a high level of understanding with regards to principles of building materials and assemblies. In addition, there is significant evidence that students are applying these principles in the studio courses. ASC 621 Tectonics and Materiality offers students an opportunity to not only explore the basic principles but also consider them in a more theoretically challenging manner.

B12. Building Economics and Cost Control
Understanding of the fundamentals of development financing, building economics, construction cost control, and life-cycle cost accounting.

Met	Not Met
[X]	[ ]

Team comments:
Well met. There is evidence that the work being completed in Project Economics (ASC 522) is being understood and applied in the Integration Studio (ASC 520). In addition, in the Master's program, the

Studio in Collaborative Practice (AR 8103) provides further evidence of the development of this work, going beyond the SPC minimum competency.

C1. Detailed Design Development
Ability to assess and detail as an integral part of the design, appropriate combinations of building materials, components, and assemblies.

Met	Not Met
[X]	[ ]

Team comments:

Well met in ASC 620, 622, 623 and in the collaborative practice of ASC8103.

ASC 621 complements as an introduction of an integration of materials.

C2. Building Systems Integration
Ability to assess, select, and integrate structural systems, environmental systems, life safety systems, building envelopes, and building service systems into building design.

Met	Not Met
[X]	[ ]

Team comments:
Very strong in 620, 622 and especially in 623.

C3. Technical Documentation
Ability to make technically precise descriptions and documentation of a proposed design for purposes of review and construction.

Met	Not Met
[X]	[ ]

Team comments:
There is ample evidence in both first and second semester of third year.

C4. Comprehensive Design
Ability to project a comprehensive design based on an architectural idea, a building program and a site. The design or designs should integrate structural and environmental systems, building envelopes, building assemblies, life-safety provisions, and environmental stewardship.

Met	Not Met
[X]	[ ]

Team comments:
This ability is demonstrated in the studio dedicated to Collaborative Practice (AR8103). Students have also addressed many aspects of comprehensive design through courses such as Documentation and the Construction Contract (ASC622) and Principles of Detailing (ASC623). The contribution of experts and other teachers is important and continues to contribute to the scope of expertise students receive. This expertise confirms the importance given to technical knowhow on the Ryerson agenda.

D1. Leadership and Advocacy
Understanding of the techniques and skills for architects to work collaboratively with allied disciplines, clients, consultants, builders, and the public in the building design and construction process, and to advocate on environmental, social, and aesthetic issues in their communities.

Met	Not Met
[X]	[ ]

Team comments:
Understanding of integrated design process and broader implications to community provided.

D2. Ethics and Professional Judgment
Understanding of the ethical issues involved in the formation of professional judgment regarding social, political and cultural issues in architectural design and practice.

Met	Not Met
[X]	[ ]

Team comments:

D3. Legal Responsibilities
Understanding of the architect's responsibility to the client and the public under the laws, codes, regulations and contracts common to the practice of architecture in a given jurisdiction.

Met	Not Met
[X]	[ ]

Team comments:
Notions of ethics and professional judgment are introduced, however understanding of professional responsibility within a self-regulated profession and subsequent responsibility regarding promotion of public interest should be strengthened, and are considered fundamental to practice in Canada.

D4. Project Delivery
Understanding of the different methods of project delivery, the corresponding forms of service contracts, and the types of documentation required to render competent and responsible professional service.

Met	Not Met
[X]	[ ]

Team comments:
Understanding shown in assignments provided.

D5. Practice Organization
Understanding of the basic principles of practice organization, including financial management, business planning, marketing, negotiation, project management, risk mitigation and as well as an understanding of trends that affect practice.

Met	Not Met
[X]	[ ]

Team comments:
Understanding of notions provided; evidence regarding trends that affect practice not apparent.

D6. Professional Internship
Understanding of the role of internship in professional development, and the reciprocal rights and responsibilities of interns and employers.

Met	Not Met
[X]	[ ]

Team comments:
Further to comments provided for D3, role of intern architect within the realm of self-regulated profession not presented, however considered fundamental to practice in Canada.

IV. Appendices

Appendix A: Program Information

The following is condensed from the Program's Architecture Program Report

1. Brief History of the Ryerson University Department of Architectural Science

Ryerson's professional program in architecture has developed over the past decade out of a long history of technical education in Architectural Science. Both the program's strengths and its challenges can be understood, at least in part, as a result of that history.

The program is comprised of a four-year undergraduate (pre-professional) degree, the Bachelor of Archi- tectural Science (B.Arch.Sci.), followed by a two-year professional Master of Architecture (M.Arch.), both of which are housed within the Department of Architectural Science. The B.Arch.Sci. includes options for specialization in Architecture, Building Science or Project Management, with graduates from all three specializations eligible for entry into the M.Arch. The inclusion of these three specializations within the program expresses a core belief in the holistic nature of architecture and of architectural education. The B.Arch.Sci. and its predecessor program, the B.Tech. (Architectural Science) have been offered at Ryerson since the 1970s, and constitute in many ways the core identity of the Department; the current version was launched in 2007, simultaneously with the M.Arch.

2. Institutional Mission

In 2008, the University embarked on an ambitious five-year planning cycle, which included an Academic Plan for the University, academic plans for each of the University faculties, which elaborated on this plan, and Department/School academic plans. We are now near the end of this planning cycle, and work will begin in mid-2013 on the development of the next strategic plan. The following is a description of key components of each of the 2008-13 plans. The discussion of the Department of Architectural Science Strategic Plan includes a commentary on progress made to date in each area. The complete Academic Plans for the University, Faculty and Department can be found online.

Ryerson University Academic Plan 2008 2013: Shaping our Future

Shaping Our Future proposes directions for the University that are rooted in its history and present circumstances, and that imagine its future. Fortunately for us, Ryerson University's present circumstances are extraordinarily bright, even auspicious. And so is its future. Building on its proud origins as a polytechnic institute, when Ryerson began to transform itself into a comprehensive university in 1993, its first-ever academic plan, *Learning Together*, helped us imagine where we are today: very much up-and-coming, the first choice of record numbers of students, growing quickly in academic stature and overall reputation. Indeed the gist of Ryerson today is that the impressive growth since 1993 has strengthened the quality of our achievements in teaching and research—and has added significantly to the University's reputation.

Shaping Our Future aims to build on and expand our current strengths by largely preserving the University's current priorities as established in the Quality Agenda: student engagement and success,

growth in Scholarly, Research and Creative (SRC) activity, graduate growth, and reputation enhancement. These priorities serve us well. At the same time, *Shaping Our Future* also recognizes that no university can afford to stand still amid profound changes in the economy of knowledge, where students and researchers alike are constantly responding to the dynamics of change, especially technological change. So *Shaping Our Future* also proposes that Ryerson vigorously expand its response to dynamic change. Details appear in the section on strategies, but an example here would be to create new opportunities for cross-disciplinary inquiry by researchers, creative practitioners, and students. *Shaping Our Future* also proposes to explore other transformational changes in the University's academic structures, academic funding models, and services to the academic community, especially students.

Shaping Our Future proposes five principal priorities:

1. High Quality, Societally-Relevant Undergraduate and Graduate Programs
2. Student Engagement and Success
3. Learning and Teaching Excellence
4. SRC Intensity
5. Reputation

Faculty of Engineering, Architecture and Science Faculty Mission

The mission of the Faculty of Engineering, Architecture and Science (FEAS) is to create knowledge through advanced research in Engineering, Science and the Built Environment to address societal needs in these essential fields; and to disseminate relevant state-of-the-art information and knowledge in these fields through the provision of programs of study, which will provide a balance between theory and application, and prepare students for professional careers and lifelong learning capabilities in the Engineering, Natural Science, Computer Science and Architectural fields.

3. Program History

The Department has long prided itself on a close connection to the AEC (Architectural, Engineering and Construction) industry, and many of our graduates have gone on to significant careers in construction or development. As a result, our program has very strong ties to these industries. However, although many of our B.Arch.Sci. graduates have historically gone on to professional degrees (at other institutions) and licensure, the absence of a body of professional alumni in the local community has until recently made forging strong connections to the architecture profession a challenge. We are working hard to strengthen these ties.

Ryerson's long tradition of technological education continues to influence the program. We have a large number of building technology courses in our curriculum, especially at the undergraduate level, and studios tend to require - and achieve - a relatively high degree of technical resolution. Conversely, and as the past visiting team noted, instilling the traditional liberal arts values of architectural education has been more of a challenge for the program, especially in the area of critical thinking. We have tended in the past to focus strongly on course content, leading to a very full curriculum, resulting in a reduced emphasis on conceptualization or speculation in student work. Our challenge, at this point in our development, is to increase the latter, while maintaining the strength of the former.

Today, Ryerson's professional program in architecture, like the University as a whole, is rapidly developing and maturing. The program stresses engagement in emerging technologies, and seeks to become a leader in this area. The program values collaboration, inside and outside the walls of the Architecture Building. We are a place of immense energy, as much activity is driven, bottom-up, from student initiatives. Our faculty are pursuing a rapidly growing research agenda. We offer a robust public lecture series and an exhibition series that will be bolstered in 2013 by the construction of a new professional-level gallery space. As our first M.Arch. graduates move towards licensure, we realize that we need to continue our development, to reframe once again the Ryerson tradition for the 21st century.

4. Program Mission

The Mission Statement of the Department of Architectural Science was prepared with input from the program's constituents, the Program Advisory Council, students, alumni associations and faculty members. It was approved (on) November 30, 2006 by the Department Council. It is reproduced in the Student Handbook and on the department website, and follows below. There is no record of its official adoption by the University, but it is passed to appropriate university bodies by virtue of being approved by the Department Council.

The development and implementation of new programs in the department, particularly graduate and professional programs, as well as the increasing emphasis on research, require that this Mission Statement be continually revised and updated.

The Mission of the Department of Architectural Science is:

- To provide education for a wide range of professional roles in the design, construction and management of the built environment by developing, enhancing and maintaining undergraduate, graduate and certification programs of applied study, and research in the areas of design, building science, project management and landscape.
- To prepare professionals for leadership roles in the AEC (Architecture, Engineering and Construction) Industry in the Greater Toronto Area, in Canada, and internationally by focusing on the development of the fundamental skills, knowledge and critical judgment necessary for effective participation in a complex, collaborative, cross-disciplinary workplace.
- To foster a comprehensive vision of architecture as a social, technical, political and cultural practice in the context of sustainability and evolving environmental and societal needs, and to utilize our combined expertise for the benefit of the larger community.
- To cultivate an environment conducive to lifelong learning and the pursuit of scholarly, research and creative activity by faculty and students.

The Mission of the Master of Architecture Program:

Within the broad mission of the Department of Architectural Science, the specific mission of the Master of Architecture program is to prepare the next generation of architectural leaders to think critically, act collaboratively and respond with sustainable solutions to local opportunities and global challenges. To do so, the program focuses on the study of architectural *practice* as distinct from, but encompassing, architectural design and architectural culture. The program has identified three broad

overlapping areas of research interest: Sustainable Design, Emerging Technologies, and Global Communities.

5. Program Action Plan

Department of Architectural Science
Strategic Academic Plan 2008-2013

Objective 1
CACB Accreditation for the program in Architecture
Canadian Architectural Certification Board (CACB) Accreditation for the program in Architecture (4 year undergraduate + 2 year graduate) to be achieved by January 1, 2012.

Progress: this goal was achieved ahead of schedule in 2010.

Objective 2
Department of Architectural Science: Graduate Programs in Construction Project Management
Establish graduate programs in Construction Project Management, to admit first cohort of students in the Fall Semester 2010.

Progress: the Department prepared and submitted a Letter of Intent for the new program in 2009. However, the proposal is currently on hold pending the allocation of additional graduate positions by the provincial government. Alternative proposals are currently being explored.

Objective 3

Department of Architectural Science: Resources to meet the needs of high quality programs in the Department.

Resources fall into 4 areas:

1. Physical Resources - to acquire additional space for the department and/or improve the existing space in the Architecture building to meet the needs of accreditation, enrollment, new programs and expanded research;
2. Human Resources - to increase the complement of faculty members to sufficiently deliver quality programs (3 positions in architecture, 1 in Building Science and 1 for the new program in Construction Project Management), and support staff;
3. Increase awards and scholarships for students in the department;
4. Improve the quality and size of student engagement space within the Architecture building. The deadline to achieve the objective of Resources is 2013.

Progress: improvements to the Architecture building are ongoing. Since the plan was developed in 2008, we have since had a number of minor, but cumulatively significant, renovation projects take place in the building, as well as a significant increase in equipment (especially digital equipment). In 2012, $1.7 Million was allocated by the provost to upgrade the HVAC facilities in the building. In total, since 2010, $550,000 has been spent on renovations and digital equipment purchases. In addition,

first-year student intake has been decreased from 130 students in 2008 to 115 students in 2009 and ongoing, allowing the program to "fit" within the existing building.

Since 2008, three additional tenure-track faculty members have been hired in architecture, one in building science, and one in project management. However, during that same period we have lost one in each of three specializations; as a result, we remain three positions short of our 2008 goal.

Awards and scholarships have been significantly increased in the Department.

Some improvements were made to student engagement space by the renovation of several small enclosed classrooms into open crit spaces. In addition, the Resource Centre has been re-visioned as a space to promote architectural culture, including a small informal exhibition area, lounge seating, current journals and so on; this revisioning process is not yet complete and will require additional funding. Funds have been allocated for a new professional-level gallery space, to be constructed during the summer of 2013.

\Objective 4
Doctoral Program: Institute a Ph.D. program with one or more areas of focus, by September 2013.

The Department of Architectural Science will begin a series of departmental-level discussions intended to identify the focus or foci for doctoral programs in architectural science (combination of areas such as Building Science, Project Management and Architecture), and the feasibility of such programs, which will require approximately one year. Following this, the SGS has a well-established process for the implementation of new programs.

Progress: this objective is on hold pending Ontario government allocation of additional doctoral seats.

Objective 5
Increase the quality and quantity of SRC activities in the department.

Progress: since 2008, SRC activities in the Department have increased markedly. Faculty have been successful in grant competitions with SSHRC, NSERC and the Canada Council for the Arts, with external funding growing to approximately $475,000 per year. In 2012, a Communications and Digital Archive Specialist was hired whose duties include assisting in the preparation of grant proposals.

Objective 6
Improve Pedagogy/ Teaching Excellence
Expand the knowledge and practice of more effective and innovative pedagogy for our graduate and undergraduate programs. Achieve and implement new practices by 2013.

Progress: this objective is ongoing, and difficult to measure. Perhaps most telling is the UDLES discussion that happened in the Department in 2011-12, which has led to a desire for a more professionalized and innovative teaching culture. In the coming academic year we will be operating a number of collaborative studios, innovative for us, which will be available for the visiting team to view. We have also instituted mechanisms for collaborative course design. Professors Vincent Hui and

George Kapelos have both successfully obtained internal grants for innovative pedagogical projects, which will be offered in the coming academic year.

Objective 7
Architecture/Building/Construction Practicum (Co-op)

Initiate a program to open opportunities for industry and University collaboration for student research projects. This program would involve placing undergraduate students in architectural science into architectural firms, and consulting and construction firms in AEC industries, to complete a research project of a specified scope and time-line for credit in the Bachelor of Architectural Science program.

Progress: a preliminary report on a new Co-op option within our program has been written and presented to our Program Advisory Council, receiving unanimous support; it has also received the support of the Dean. We anticipate this will be passed by our Department Council, and submitted to Ryerson administration, within the coming academic year.

Objective 8

Department and Program Identity
Establish a positive and distinguishable identity that reflects the Department's unique qualities and mission (as specified in the Department Mission Statement) and one that establishes a distinctive reputation. The date to accomplish this objective is 2013.

Progress: the UDLES process carried out within the Department in 2011-12 has initiated a serious discussion about Departmental Identity. In April 2012, the Architectural Course Union brought a motion to Department Council to form a committee to investigate changing the status of the Department to that of a School; this committee will report back to DC, and some action taken, before the accreditation visit in March 2013.

In addition, in January 2012 a Communications and Digital Archive Specialist was added to our staff complement, to allow us to disseminate our identity in a professional manner.

Over the course of the summer, we have begun to re-think our communications strategies, especially in relation to our website, which we are slowly transforming from a text-based site to a multimedia site.

Appendix B: The Visiting Team *(names & contact information)*

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4.6 Annual Reports

The appendix of the APR must include copies of all ARs (including the Annual Statistics Report) that have been submitted to the CACB since the previous site visit. Only the most recent school academic calendar should be submitted.

Attached are the annual statistics reports and annual narrative reports submitted to CACB since the last accreditation visit in 2013.

This includes:

- CACB Annual Report 2012 - 2013 statistics
- CACB Annual Report 2013 - 2014 statistics
- CACB Annual Report 2014 - 2015 statistics
- CACB Annual Report 2014 - 2015 narrative
- CACB Annual Report 2015 - 2016 statistics
- CACB Annual Report 2015 - 2016 narrative
- CACB Annual Report 2016 - 2017 statistics
- CACB Annual Report 2016 - 2017 narrative
- CACB Annual Report 2017 - 2017 statistics

A-4• Human Resources Statistics Report • 2012 – 2013

School or Program : DEPARTMENT OF ARCHITECTURAL SCIENCE – RYERSON UNIVERSITY, TORONTO, CANADA

Professional Degree Accredited	Total nb of credits / degree	Total nb of terms / degree	Nb of credits / term	Nb of hours / credit	Total nb of hours / degree
• **Master of Architecture degree**	15	6	Varies	36	540 (note 1)
with a related pre-professional bachelor's degree	46	8	Varies	64	186
• **Master of Architecture degree**					
without a pre-professional requirement, and consisting of an undergraduate degree plus a minimum of three years of professional studies					
• **Bachelor of Architecture degree**					
minimum of five years of study, except in Quebec, where four years of professional studies follow two years of CEGEP studies					

Faculty Data	Faculty Credentials (highest degree only) Full-time (FT) + Part-Time (PT)													
	Ph.D or D.Arch		Post-Prof Ms		Prof. M.Arch		B.Arch		Other		Licensed architects		Studio teaching	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Regular Faculty	12		3		5		5		2		13		29	
Men	8		2		4		4		2		10		21	
Women	4		1		1		1				3		8	
Total FT Equivalent (FTE) Regular Faculty: Number of FT Regular Faculty + a figure equating PT Regular Faculty	27 fulltime faculty													
Typical FT teaching load / year	4 courses (2 lecture + 2 studio)													
Other Faculty		3		4		10		5		2		18		16
• Visiting														
• Adjunct • Sessional • Lecturer		3		4		10		5		2		18		16
• Ph.D Candidate														
Men		2		3		3		5		2		13		10
Women		1		1		7						5		6
Total FT Equivalent (FTE) Other Faculty: a figure equating other faculty on the basis of a typical FT teaching load	9.25 FTE Adjunct Faculty													
Total FTE Regular + Other Faculty	36.25 FTE Faculty													
Total Regular and Other Faculty who are licensed architects											31			
Total Regular and Other Faculty teaching in studio													45	
Nb of pre-professional studios taught by all Faculty for the year													54	
Nb of Masters studios taught by all Faculty for the year													6	

Student Data	Pre-professional degree				Master of Architecture degree or Bachelor of Architecture degree			
	Fall	Winter	Summer	Mean/yr	Fall	Winter	Summer	Mean/yr
Full-Time Students					62	61	53	59
Men (optional)	257	257	0	257				
Women (optional)	205	205	0	205				
Part-Time Students	0	0	0	0	0	0	0	0
Men (optional)	0	0	0	0				
Women (optional)	0	0	0	0				
Total Full-Time Equivalent (FTE) Students [1]	462	462	0	462	62	61	53	59
FTE Foreign Students [2] *(optional)*								
Students in Design Studio	376	375	0	375.5	32	30	29	30
Studio Ratio (Students in Design Studios / Nb studios taught for a year)	751 / 54 = 13.9 students (54 studios taught fall & winter, 29 studios in the fall and 25 in the winter)				2 faculty for 23 students 15-1 ratio			
	Fall	Winter	Summer	Total/yr	Fall	Winter	Summer	Total/yr
Number of applicants for a given term and total for a year				1433	169	0	0	169
Number of entering students for a given term and total for a year				118	32	0	0	32
With advanced standing (optional)								
Total Degrees Awarded-Expected for a given term and total for a year				118 (note 2)	9	0	7	16
Men (optional)								
Women (optional)								
Graduation Rate (%) [3]				100%	0	0	0	52%

Note 1. Including Thesis hours and Collaborative Exercise

Note 2. Includes students in the system who are out of sequence

1 Full-Time Equivalent Students (FTE): Number of full-time students reported above + number of full-time equivalent for part-time students calculated on the basis of a full course load required to complete the program in the normal number of terms.

2 FTE Foreign Students : Students included in Total FTE Students who are not Canadian citizens or landed immigrants.

3 No of degrees awarded or expected / No of entering students at the beginning of the degree.

A-4• Human Resources Statistics Report • 2013 – 2014

School or Program : DEPARTMENT OF ARCHITECTURAL SCIENCE – RYERSON UNIVERSITY, TORONTO, CANADA

Professional Degree Accredited	Total nb of credits / degree	Total nb of terms / degree	Nb of credits / term	Nb of hours / credit	Total nb of hours / degree
• **Master of Architecture degree**	17	6	Varies	36	540 (Note 1&2)
with a related pre-professional bachelor's degree	60	8	Varies	36	2016 (Note 3)
• **Master of Architecture degree**					
without a pre-professional requirement, and consisting of an undergraduate degree plus a minimum of three years of professional studies					
• **Bachelor of Architecture degree**					
minimum of five years of study, except in Quebec, where four years of professional studies follow two years of CEGEP studies					

Faculty Data	Faculty Credentials (highest degree only) Full-time (FT) + Part-Time (PT)													
	Ph.D or D.Arch		Post-Prof Ms		Prof. M.Arch		B.Arch		Other		Licensed architects		Studio teaching	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Regular Faculty	12		2		5		5		2		13		24	
Men	8		1		4		4		2		10		17	
Women	4		1		1		1				3		7	
Total FT Equivalent (FTE) Regular Faculty: Number of FT Regular Faculty + a figure equating PT Regular Faculty	26 fulltime faculty													
Typical FT teaching load / year	4 courses (2 lecture + 2 studio)													
Other Faculty		1		6		9		5		2		19		15
• Visiting														
• Adjunct • Sessional • Lecturer		1		6		9		5		2		19		15
• Ph.D Candidate														
Men				3		3		5		1		13		9
Women		1		3		6				1		6		6
Total FT Equivalent (FTE) Other Faculty: a figure equating other faculty on the basis of a typical FT teaching load	9.0 FTE Adjunct Faculty													
Total FTE Regular + Other Faculty	35 FTE Faculty													
Total Regular and Other Faculty who are licensed architects											32			
Total Regular and Other Faculty teaching in studio													39	
Nb of pre-professional studios taught by all Faculty for the year													60 studio sections	
Nb of Masters studios taught by all Faculty for the year													6 studio sections	

Student Data	Pre-professional degree				Master of Architecture degree or Bachelor of Architecture degree			
	Fall	Winter	Summer	Mean/yr	Fall	Winter	Summer	Mean/yr
Full-Time Students	436	437	125	333	59	58	46	54
Men (optional)	232	232	66	177	34	34	29	32
Women (optional)	204	205	59	156	25	24	19	23
Part-Time Students	0	0	0	0	0	0	0	0
Men (optional)	0	0	0	0	0	0	0	0
Women (optional)	0	0	0	0	0	0	0	0
Total Full-Time Equivalent (FTE) Students [1]	436	437	125	333	59	58	46	54
FTE Foreign Students [2] *(optional)*								
Students in Design Studio	404	408	0	406	27	25	24	25
Studio Ratio (Students in Design Studios / Nb studios taught for a year)	812 / 60 = 13.5 students (60 studios taught fall & winter, 30 studios in the fall and 30 in the winter)				6 faculty for 76 students 1-12.5 ratio			
	Fall	**Winter**	**Summer**	**Total/yr**	**Fall**	**Winter**	**Summer**	**Total/yr**
Number of applicants for a given term and total for a year				1332 (Note 4)	191	0	0	191
Number of entering students for a given term and total for a year				123	29	0	0	29
With advanced standing (optional)								
Total Degrees Awarded-Expected for a given term and total for a year	12		80	92 (Note 5)	20	0	7	27
Men (optional)								
Women (optional)								
Graduation Rate (%) [3]				80% (Note 6)	0	0	0	90% (Note 7)

Note 1. This total does not include two required collaborative exercise credits, as these do not have assigned class hours.

Note 2. M.Arch. Thesis | Project is in addition to these numbers (no credits granted for thesis).

Note 3. This total does not include four required collaborative exercise credits, as these do not have assigned class hours.

Note 4. Our program is a single entry in the fall-term only.

Note 5. This number includes students in the system who are out of sequence.

Note 6. In 2013-2014, 92 students graduated (68 from the 2010-2011 cohort and 24 from other cohorts dating back to 2002). The average number of student matriculated is during that time is 115 students (92/115 = 80%).

Note 7. In 2013-2014, 27 students graduated (6 from the 2012 cohort, 20 from the 2011 cohort, and 1 from the 2010 cohort). The average number of students matriculated in those three years is 30 students (27/30 = 90%).

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1 Full-Time Equivalent Students (FTE): Number of full-time students reported above + number of full-time equivalent for part-time students calculated on the basis of a full course load required to complete the program in the normal number of terms.

2 FTE Foreign Students : Students included in Total FTE Students who are not Canadian citizens or landed immigrants.

3 No of degrees awarded or expected / No of entering students at the beginning of the degree.

A-4• Human Resources Statistics Report • 2014 – 2015

School or Program : DEPARTMENT OF ARCHITECTURAL SCIENCE – RYERSON UNIVERSITY, TORONTO, CANADA

Professional Degree Accredited	Total nb of credits / degree	Total nb of terms / degree	Nb of credits / term	Nb of hours / credit	Total nb of hours / degree
• **Master of Architecture degree**	17	6	Varies	36	540 (Note 1&2)
with a related pre-professional bachelor's degree	60	8	Varies	36	2016 (Note 3)
• **Master of Architecture degree**					
without a pre-professional requirement, and consisting of an undergraduate degree plus a minimum of three years of professional studies					
• **Bachelor of Architecture degree**					
minimum of five years of study, except in Quebec, where four years of professional studies follow two years of CEGEP studies					

Faculty Data	Faculty Credentials (highest degree only) Full-time (FT) + Part-Time (PT)													
	Ph.D or D.Arch		Post-Prof Ms		Prof. M.Arch		B.Arch		Other		Licensed architects		Studio teaching	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Regular Faculty	13		2		5		5		3		13		23	
Men	9		1		4		4		2		10		16	
Women	4		1		1		1		1		3		7	
Total FT Equivalent (FTE) Regular Faculty: Number of FT Regular Faculty + a figure equating PT Regular Faculty	28 fulltime faculty													
Typical FT teaching load / year	4 courses (2 lecture + 2 studio)													
Other Faculty		1		6		9		4		4		18		15
• Visiting														
• Adjunct • Sessional • Lecturer		1		6		9		4		4		18		15
• Ph.D Candidate														
Men				3		6		4		3		12		9
Women		1		3		3				1		6		6
Total FT Equivalent (FTE) Other Faculty: a figure equating other faculty on the basis of a typical FT teaching load	9.075 FTE Adjunct Faculty													
Total FTE Regular + Other Faculty	37.075 FTE Faculty													
Total Regular and Other Faculty who are licensed architects											31			
Total Regular and Other Faculty teaching in studio													38	
Nb of pre-professional studios taught by all Faculty for the year													60 studio sections	
Nb of Masters studios taught by all Faculty for the year													6 studio sections	

Student Data	Pre-professional degree				Master of Architecture degree or Bachelor of Architecture degree			
	Fall	Winter	Summer	Mean/yr	Fall	Winter	Summer	Mean/yr
Full-Time Students	389	391	149	310	47	45	45	46
Men (optional)	193	196	68	152	25	24	22	24
Women (optional)	196	195	81	157	22	21	23	22
Part-Time Students	0	0	0	0	0	0	0	0
Men (optional)	0	0	0	0	0	0	0	0
Women (optional)	0	0	0	0	0	0	0	0
Total Full-Time Equivalent (FTE) Students [1]	389	391	149	310	47	45	45	46
FTE Foreign Students [2] *(optional)*								
Students in Design Studio	408	398	0	403	20	19	22	20
Studio Ratio (Students in Design Studios / Nb studios taught for a year)	60 faculty for 806 students 1 -13.4 ratio (60 studios taught fall & winter, 30 studios in the fall and 30 in the winter)				6 faculty for 61 students 1-11 ratio			
	Fall	**Winter**	**Summer**	**Total/yr**	**Fall**	**Winter**	**Summer**	**Total/yr**
Number of applicants for a given term and total for a year				1247 (Note 4)	159	0	0	159
Number of entering students for a given term and total for a year				125	20	0	0	20
With advanced standing (optional)								
Total Degrees Awarded-Expected for a given term and total for a year	8		65	73 (Note 5)	17	0	5	22
Men (optional)								
Women (optional)								
Graduation Rate (%) [3]				74% (Note 6)	0	0	0	73% (Note 7)

Note 1. This total does not include two required collaborative exercise credits, as these do not have assigned class hours.

Note 2. M.Arch. Thesis | Project is in addition to these numbers (no credits granted for thesis).

Note 3. This total does not include four required collaborative exercise credits, as these do not have assigned class hours.

Note 4. Our program is a single entry in the fall-term only.

Note 5. This number includes students in the system that are out of sequence. We should also note the number of students is lower as the first cohort of the Co-op option that would have graduated this year are now scheduled to gradate next year.

Note 6. In 2014-2015, 73 students graduated (from various cohorts). The average number of students matriculated during that time is 115 students; however, given that 16 students in the co-op option would normally graduate at this time – we have removed them from the calculation (73 / 99 = 74%).

Note 7. In 2014-2015, 22 students graduated (21 from the 2012 cohort, and 1 from the 2011 cohort). The average number of students matriculated in those two years is 30 students (22/30 = 73%).

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1 Full-Time Equivalent Students (FTE): Number of full-time students reported above + number of full-time equivalent for part-time students calculated on the basis of a full course load required to complete the program in the normal number of terms.

2 FTE Foreign Students : Students included in Total FTE Students who are not Canadian citizens or landed immigrants.

3 No of degrees awarded or expected / No of entering students at the beginning of the degree.

Ryerson University

Faculty of Engineering and Architectural Science

ANNUAL REPORT TO CACB-CCCA

Narrative Section

Program: BACHELOR OF ARCHITECTURAL SCIENCE (B.Arch. Sc.)
BACHELOR OF ARCHITECTURAL SCIENCE (CO-OP OPTION)
MASTER OF ARCHITECTURE (M. Arch)

Academic Year: 2014-2015

Head of the

Program (Name): Jurij Leshchyshyn, Interim Chair

Signature:

Date: June 30, 2015

1- INTRODUCTION

Ryerson University announced its new five-year academic plan, 'Our Time to Lead', in support of the university's vision to become Canada's leading comprehensive innovation university. The plan builds upon Ryerson's proud traditions and expands the university's strengths for relevant programs and SRC activities, its engaging and diverse learning and teaching environment that integrates theory with practice, and strong relationships with external communities.

Over the next five years, Ryerson will focus on four interconnected priorities:

- Enable greater student engagement and success through exceptional experiences;
- Increase SRC excellence, intensity and impact;
- Foster an innovation ecosystem; and
- Expand community engagement and city building.

The Faculty of Engineering and Architectural Science (FEAS) academic planning process was launched in the Fall 2014 semester with a series of Town Halls presented to faculty, undergraduate and graduate students, and to staff. Each department within FEAS then undertook a self-study assessing the state of each department including a SWOT analysis in which strengths, weaknesses, opportunities, and threats were identified. Also required in the self-study was the identification of key priorities for each department.

Key Priorities

The Department of Architectural Science's key priorities identified in the self-study are as follows:

1. 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.

2. Renovate and add **facilities** to support the above.

Further to the self-study, committees were formed to address five key areas of the Department's operations including:

- Resources and Structure;
- Undergraduate Programs;
- Graduate Programs;
- Scholarly Research and Creative Activities (SRC); and
- External (Studies abroad, exchanges etc.).

Through a series of faculty meetings and retreats each committee developed objectives, with supporting strategies and tactics, pertaining to their areas of concern.

Draft Academic Plan & External Review

Each department within the FEAS submitted a draft academic plan that was reviewed by two external guests of the Dean. On June 18th and 19th, the external review of our draft academic plan was conducted by:

- Branko Kolarevic, Architecture Faculty, University of Calgary; and
- Karen Van Lengen, William R. Kenan, Jr. Professor of Architecture, University of Virginia.

The external reviewers have submitted their report to the Dean and we are currently awaiting feedback.

Implementation of the Academic Plan

Building on the work of the current five committees (Resources and Structure, Undergraduate, Graduate, SRC, and External) and related faculty meetings and retreats, the following implementation was proposed.

Phase I

Phase I of the plan involves research and planning for the implementation of the Academic Plan. Phase I, with intermediate milestones, will be completed before the end of the Winter 2016 semester for implementation beginning immediately thereafter. This is a critical aspect of the Academic Plan as it is intended to establish a transparent, consultative, collegial, robust structure within which elements of the Academic Plan can be engaged with in an effective and, most importantly, a sustainable manner. Phase I will provide the Department with a comprehensive structure for use in implementing, developing, maintaining, and evaluating the Academic Plan into the future, as well determining resources needed to do so.

Phase I of the Department's Academic Plan will focus on the identification, clarification, and consolidation of all available resources as well as on administrative and academic policies, procedures, and practices so as to enhance and evolve its capacity to sustainably support its academic mission in all of its aspects.

Phase II

Phase II of the Academic Plan involves the implementation of the Plan as structured during Phase I.

2- STATEMENT OF CHANGES TO THE PROGRAM

There have been some recent administrative changes to the leadership of the program. Due to a medical leave of the previous Chair, Colin Ripley, an interim assignment was given to Jurij Leshchyshyn and extended to June 30, 2016. A search for a new chair will be announced by the Dean during the 2015 – 2016 academic year. The current Administrative Committee membership is as follows:

- Jurij Leshchyshyn, Interim Chair
- Paul Floerke, Associate Chair, External and Mobility Director
- Vincent Hui, Associate Chair and Experiential Learning Director
- John Cirka, Associate Chair, Graduate Studies Architecture
- Miljana Horvat, Associate Chair, Graduate Studies Building Science
- Edward Wójs, Interim Undergraduate Program Director

3- RESPONSE TO TEAM FINDINGS

3.1- CAUSES OF CONCERN

In the order listed in the Visiting Team Report (VTR)

1. *The Team has concerns about the sustainability of the Library's Architectural resources in consideration of the expanding demands of the new Masters of Architecture program. (APR - Section 3.8, Page 85);*

The collection analysis demonstrates there is a net growth in the subject areas relevant to Architecture. In terms of collection sustainability, the Ryerson Library continues to receive an influx of one-time only money that allows us to sustain current acquisition levels; this mitigates the effect of ongoing base budget reductions. *Note: See spreadsheet below.*

The collection continues to be dynamic; new content is added through library purchase, faculty requests, and selected donations. The collection far exceeds the minimum (5000+ items in call number "NA") accreditation standards.

The Ryerson Library and Archives continues to purchase content in print and digital format. When a desired item is not owned, the library endeavors to provide it via our interlibrary loan service, which continues to be free to the Ryerson community.

LC call no	2012 items	2015 items	Net Difference
HD1-100 - Management	13,498	14,330	832
N - Visual arts	4,624	4,852	228
NA - Architecture	**10,052**	**11,702**	**1,650**
NC - Illustration, Drawing	1,696	2,110	414
NK - Decorative and Applied Arts	4,353	4,836	483
SB - Landscape Architecture	2,672	2,769	97
TA - Civil Engineering	11,136	12,205	1,069
TH - Building Construction	3,728	4,083	335
TJ - Energy (includes solar)	5,090	5,000	-90
Totals	**56,849**	**61,887**	**5,038**

Electronic resource access through subscriptions to aggregators and publishers' collections and participation in national and provincial resource sharing consortia such as the Canadian Research Knowledge Network (CRKN) and the Ontario Council of University Libraries (OCUL) has resulted in an increase in journals and scholarly sources supporting the program.

A dedicated Architecture Liaison Librarian is available for Graduate student consultation in our *research help area*, online library research and in-class instruction. The librarian also assists faculty members with strengthening the critical thinking skills of students by creating and managing course specific *research guides* that supports students in their research. These online and interactive guides can be linked to Learning Management Systems. Through engagement with students, faculty, and the community, the Library collaborates in fostering successful critical thinkers and lifelong learners.

In addition to the research guides, the Library recently launched an online *RUSearch* platform, a step-by-step online learning platform that supports students when they are developing, organizing, researching and writing university level papers.

Ryerson University Digital Repository is an online library hosted repository intended for research and scholarly output produced by the individual university departments on campus. The repository provides the ideal means for sharing publications, graduate theses, and major research papers produced by faculty members, graduate students and researchers in the ongoing support of programs in the Department of Architectural Science.

Despite growth in the Architecture collection, sustained financial commitment from the university is necessary in order to continue to provide the current level of service to graduate students, and to allow for improvement, inflation (particularly in terms of subscription costs) and innovation. No less than 4% of the university budget dedicated to the library is ideal, and an incremental improvement in the Library's base share of the University's operating budget is recommended.

2. *The assignment of inappropriately qualified faculty is a concern. The program is encouraged to ensure continuity in course curriculum and student assessment regardless of the instructor assigned to the course;*

Currently the Department consists of 28 full-time faculty (tenured and tenure-track), with an average age of 53.7. Two new faculty hires joined the Department in 2014. At the time of writing, there is no knowledge of pending retirements or new hires.

Our annual Human Resources Statistics Report is appended reflecting the two additional faculty hired and appointed in August 2014, increasing the number of regular full-time male faculty with Ph.D.s or D.Archs. to nine and regular full-time female faculty with such degrees to three.

All faculty profiles (including contract lecturers and adjunct professors) can be viewed on the Department's website at http://www.arch.ryerson.ca/people/.

With regards to continuity in course curriculum and student assessment independent of instructor, we should note that all multi-section studios are coordinated by a Studio Master who is charged with the responsibility of ensuring consistency across all studio sections. Course outlines are available for reference by faculty teaching courses for the first time. The Department, as an aspect of its academic plan, will consider compiling additional materials from individual courses, including handouts, assignments, project outlines etc., to complement course outlines. Such a comprehensive resource could then be drawn upon at annual/year-end curriculum meetings to enhance the continuity in course curriculum and student assessments.

3. *The Team supports a review of the lower level wood and digital fabrication workshop facilities practices and policies in consideration of staff workload and student access;*

   The wood and digital fabrication workshop facilities are currently under construction and are scheduled to be completed in time for the beginning of the 2015-2016 academic year. Renovations include: new dust extraction equipment for all wood processing machinery, new HVAC controls for the Digital Fabrication Lab and a secured 24-hour card access assembly room which will have basic hand tools. The recently acquired KUKA KR6 R700 or KUKA KR 10 R1100 sixx Robotic Arm, robot controller, intelligent operator control unit and affiliated simulation software will also be installed.

   Increased pressures on the Fabrication and Computer Aided Design Labs have been previously identified, and appropriate resources are being sought to provide support for both areas. While the formal requests are pending approval, there is informal agreement for the allowance for new support staff in both the Workshop and in IT services.

4. *The support staff is working at or beyond capacity;*

   Further to additional staff identified in Item 3 above, a structural change has also been requested to create a layer of management for the staff. The intent is to recognize the significant contributions of individual members of the support staff, and to provide them with the authority to take enhanced ownership of their particular area. All of these measures are to provide clarity of direction for staff and active management of workloads. Additional resources would then be sought to support special projects and to address anticipated peak loads.

5. *Air quality concerns continue to be raised. The Department is encouraged to communicate the proposed building upgrade schedule to students;*

   A HVAC upgrade was completed last summer including heat-pump installations and a new chiller with the investment of $1.4M by Ryerson University. It should be noted that there are on-going deficiencies with the performance of the system that need to be resolved.

6. *Students are concerned about non-departmental access to studio spaces;*

   Studio spaces are now secured with 24-hour card access for registered students programmed according to their year and assigned space.

3.2- CONDITIONS AND SPC "NOT-MET"

In the order listed in the Visiting Team Report (VTR) as well as in the Focused Evaluation Report if it applies

A7. Cultural Diversity

Understanding of the diverse needs, values, behavioral norms, and social/spatial patterns that characterize different cultures and individuals, as well as the implications of this diversity on the societal roles and responsibilities of architects.

Team comments:

Not met. The Program is focused on the study of Western thought and tradition. Design Studio 2 (ASC 301) and Seminar in Critical Practice (AR 8102) look at the challenges of housing in Nunavut and urbanity in contemporary cities around the world, an in-depth study of cultural diversity was not observed.

The Department is striving to address Cultural Diversity through its curricula, lecture series, and co-curricular activities. The implementation of the Department's academic plan over the next year will include a review of curricular content providing an opportunity for a comprehensive response to this concern. *Please also see Other Relevant Information.*

Currently, the following courses include materials related to non-Western thought and tradition. Information is taken from the latest course outlines.

A. Ideas, Techniques and Precedents I (ASC 206) Winter 2015

Ideas, Technologies and Precedents I will cover the following topics:

- Introduction to the History of Architecture and the Built Environment
- Urban form
- The Dawn of Civilization
- Early European Civilizations
- Ancient Africa
- Ancient India
- Ancient Southeast Asia
- Traditional Architecture of China and Japan
- Islamic and African architecture
- The Americas before contact
- Medieval Civilizations

Each unit will include a section on science & technology, culture, and influences, to situate architecture within the larger context of ideas, society, trade, fine and applied art and other human activities.

B. Ideas, Techniques and Precedents III (ASC 406) Winter 2015

Course Summary

In this course we are looking through the lens of the present day to reveal and analyze arts and culture, technology, war and peace, politics and power and the human condition as it relates to architecture and other built form. ***Although focusing on the modern period in the Western tradition, the course aims to step outside the canon (the general, accepted rules) of architecture history by examining building types, vernacular traditions as well as cultures, regions and people that are not usually part of a general survey course. Here we are looking at the world "after contact," which is to say that the influence back and forth between cultures across continents that helped to create the modern world is central to our study.***

C. Ideas, Techniques and Precedents II (ASC 306) Winter 2015

Excerpts from Course objectives and intended learning outcomes
Upon completion of this course students should be able to:

- Identify the major cultural, political, technological and aesthetic movements of the Renaissance and Baroque periods and be able to demonstrate the effects of these movements on architectural production.
- Draw comparisons between Western and non-Western traditions during this time period.

Topics to be covered
Week 7 – Eastern Comparisons

- Turkey
- China
- Japan

Week 8 – American Comparisons

- Brazil
- Caribbean
- Mexico
- North America

B4. Sustainable Design
Ability to apply the principles of sustainable design to produce projects that conserve natural and built resources, provide healthy environments for occupants/users, and reduce the impacts of building construction and operations on future generations.

Team comments:
Not Met. While there are several courses (ASC 200, ASC 302, ASC 402) that provide an understanding with regards to building science principles, there is no evidence that supports a clear directive with regards to the understanding and application of sustainable design within the students own design work. Courses such as ASC 200 Sustainable Practice, and ASC 403, Site Development and Planning lay the groundwork for the application of sustainable design, but do not venture beyond this.

The Department is striving to address Sustainable Design through its curricula, lecture series, and co-curricular activities. The implementation of the Department's academic plan over the next year will include a review of curricular content providing an opportunity for a comprehensive response to this concern. *Please also see Other Relevant Information.*

In addition to the courses mentioned in the Team comments, the following courses include materials related to sustainable design. Information is taken from the latest course outlines.

A. Integration Studio I (ASC 520) Fall 2014

Excerpt from "Texts and Reading Lists"
Sustainable Design Resources/ Systems Design
14. Daniels, K. The Technology of Ecological Building, Birkhäuser, Basel, 1997.
15. G.Z. Brown & Mark, Sun, Wind, & Light: Architectural Design Strategies - Dekay, Wiley, 2001
16. Schittich, C. Solar Architecture : Strategies, Visions, Concepts / (ed.), 2003
17. Herzog,T. ed. Solar Energy In Architecture And Urban Planning, 1998
18. http://www.wbdg.org/design/dd_archprogramming.php

19. Lechner,N.,Heating, cooling, lighting: design methods for architects. New York: J. Wiley, c2001[electronic resource available through Ryerson main library web site]
20. 2030 Pallet - http://2030palette.org/
21. The carbon neutral design project - http://tboake.com/carbon-aia/strategies1a.html
22. Advanced buildings pattern guide for daylighting http://patternguide.advancedbuildings.net/
23. Solar Decathlon - http://www.solardecathlon.gov/
24. PassiveHouse: http://www.passivehouse.com/
25. PV Watts calculator: version 2: http://rredc.nrel.gov/solar/calculators/PVWATTS.
Environmental Building News web site with lots of past articles etc (some of these are referenced below in the course schedule).http://www.buildinggreen.com - you can access the member only part of this web site by using the Ryerson Library web site and searching for Environmental Building News

Proj. 1 THINK_TANK: Kortright Centre,Vaughan ON (teams of 2 to 3) 25%
This project investigates sustainable design strategies within the context of a small building.

B. Integration Studio II (ASC 620) Winter 2015

Excerpt from "Course objectives and intended learning outcomes"

Recognize, organize and visualize the integration of sustainable structural and building technology systems in the design development for a building of moderate scale and complexity (A3, B4, B5, B6, C4).

Excerpt from "Texts and Reading Lists"

- Daniels, K. The Technology of Ecological Building, Birkhäuser, Basel, 1997.
- Kwok, Alison, Grondzik, Walter, The Green Studio Handbook: Environmental Strategies, for Schematic Design, London, New York, 2011

C. Design Studio III (ASC 401) Winter 2015

Project evaluations:

Projects are evaluated in light of the following overarching criteria (see also Section 11: CACB criteria):

- Research Skills
- Graphic Skills
- Use of Precedents
- Design Skills
- Program Preparation
- ***Sustainable Design***
- Accessibility
- Life Safety Systems, Building Codes and Standards

B5. Accessibility

Ability to design both site and building to accommodate individuals with varying physical and cognitive abilities.

Team comments:

Not Met. Some evidence is found in ASC620 (Integration Studio II), and ASC622 (Documentation), and inconsistently demonstrated in ASC401 (Design Studio II). Evidence is minimal, and inconsistent across student work.

The Department is striving to address Accessibility through its curricula, lecture series, and co-curricular activities. The implementation of the Department's academic plan over the next year will include a review of curricular content providing an opportunity for a comprehensive response to this concern. *Please also see Other Relevant Information.*

The following information is taken from the latest course outline.

Design Studio II (ASC 401) Winter 2015

Excerpts from Course objectives and intended learning outcomes

Upon completion of this course, students **should** be able to:

1) Design a building that demonstrates both an understanding of the internal complexities of a medium to high density, mid-rise residential design program and a critical sensitivity to the essential role played by a building in the urban fabric.

2) Design a building of a medium degree of complexity in accordance with general precepts of The Ontario Building Code (**especially as concerns exiting, fire separations, accessibility, and health requirements)** and zoning bylaws.

Project evaluations:

Projects are evaluated in light of the following overarching criteria (see also Section 11: CACB criteria):

- Research Skills
- Graphic Skills
- Use of Precedents
- Design Skills
- Program Preparation
- Sustainable Design
- ***Accessibility***
- Life Safety Systems, Building Codes and Standards

4- OTHER RELEVANT INFORMATION

LECTURES, EXHIBITIONS, AND COMPETITIONS BY THEME

Non-Western Theme	Sustainability	Accessibility
Zeuler Lima (Lecture) This lecture accompanying the exhibition below focuses on the work of Lina Bo Bardi in Brazil.	Christoph Meier (Lecture) The focus of this talk was on timber supporting structures in Zurich.	David Sisam (Lecture) Montgomery Sisam Architects' portfolio of work includes major healthcare facilities.
Built Works: Lina Bo Bardi (Exhibition) This exhibition showcases the visio of the Italian-Brazilian architect reflecting Bo Bardi's diverse work and immersion in Brazilian culture.	Louis Becker & Dorte Mandrup (Lecture) The firm's work includes restoration of existing architecture and adaptive re-use.	Nanne de Ru (Lecture) Winner of the Çanakkale Antenna Tower Competition, the public project is focused on comfort and emotional experience.
Alissa North (Lecture) Alissa's lecture focused on case studies from a variety of non-western countries.	Treasury of Deserted Backdrops (Lecture & Exhibition) This project investigates the potential reuse of abandoned buildings and forgotten landscapes in western Norway's Hordaland county.	Collaborative Exercise (Course & Exhibit) This past year's Collaborative Exercise worked on creating interventions in the existing library for social innovation including creating universally accessible spaces.
Dr. Kongjian Yu (Lecture) Dr. Yu's's firm, Turenscape, designs projects internationally with numerous projects in asia including Beijing and China.	D'Arcy Jones (Lecture) The firm's work focuses on small footprint projects with an ecological mandate.	Winter Stations Design Competition This competition involved the design of a public pavilion which required consideration of all types of access.
Nanne de Ru (Lecture) Powerhouse Company's portfolio includes work in Turkey and other non-western countries.	Tom Woolley (Lecture) Tom Woolley is an architect who specialises in sustainable architecture, and a pioneer of building with natural materials, particularly Hemp and Lime.	Winterlude Festival This competition too involved the design of a public pavilion.
Inundation 3: Jakarta Studio (Exhibition) This exhibition graduate studio work in Jakarta, was assembled through careful research with communities along the Ciliwung River and other relevant districts in the city producing proposals to address the megacity's unstable geography of water to promote more equitable urban development.	Public Space Rules (Exhibition) This exhibition features the mixed-use building that will house the Daphne Cockwell School of Nursing, the School of Nutrition, the School of Occupational & Public Health and the Midwifery Education Program from the Faculty of Community Services, as well as a student residence on the site located at 300 Dundas Street. It has both an accesssible and sustainable mandate.	2014 World Bamboo Design Competition Suk Jun Kim, a fourth-year DAS architecture student, was selected as a finalist in the 2014 World Bamboo Design Competition for his project "LIBERTY RAMP".

2014 Dalseong Citizen's Gymnasium Competition The mission of the competition was "to design a gymnasium that contributes to the improvement of the quality of life of Dalseong-gun's citizens by procuring a space for health promotion and sports activities, offering the foundations by which to enjoy the benefits of sports, culture and welfare."	Race to Zero Student Design Competition The Race to Zero encouraged students to work with builders, developers, community leaders, and other industry partners to meet stringent design requirements and create marketable, affordable concepts.	Public Space Rules (Exhibition) This exhibition features the mixed-use building that will house the Daphne Cockwell School of Nursing, the School of Nutrition, the School of Occupational & Public Health and the Midwifery Education Program from the Faculty of Community Services, as well as a student residence on the site located at 300 Dundas Street. It has both an accesssible and sustainable mandate.
ArchTriumph Competition This competition to design the Mexico City Design Museum.	Stratasys Extreme Redesign Competition Stratasys rewards tomorrow's engineers, artists and architects in designing a better future.	Pat Hanson (Lecture) The firm's work involved complex programs and extensive public consultation processes, as well as the realization of competition-winning designs.
	EnviroSCULPT Competition The EnviroSCULPT competition recognizes members of the Emerging Green Builder community to divert materials from the waste stream. This contest is designed to encourage the creative exploration of using re-purposed materials that would otherwise be waste and turn them into beautiful works of art!	Toronto Offsite Design Festival (Competition) TO DO is an annual festival that celebrates the unique diversity of Canada's energetic design scene. TO DO provides exposure for the country's most promising designers and introduces the public to the practice of design with events featuring great thinkers, practitioners and educators.
	Sustainable Design Awards 2014 (Competition) The Sustainable Design Awards (SDAs) is an annual initiative with the goal of inspiring post-secondary students to view their education through the lens of sustainability: ecological, social, cultural, economic, and beyond. The SDAs are organized by students for students, with the intention of evolving the dialogue around sustainability.	Sukkahville 2014 (Competition) Sukkahville helps create a conversation about affordable housing, raises public awareness through an interactive Sukkah exhibition and most importantly, it generates funds for its Rental Assistance Program that helps those who need a home
	2014 World Bamboo Design Competition The competition, organized by World Bamboo and Damyang-Gun, hopes to "discover fresh ideas related to domestic and foreign industrialization of bamboo."	

LECTURES AND EXHIBITIONS 2014 - 2015

LECTURES

Fall 2014

17 Sept: Louis Becker and Dorte Mandrup, HLA and Dorte Mandrup, Copenhagen
http://www.arch.ryerson.ca/all/lecture-darcy-jones/

25 Sep: D'Arcy Jones, D'Arcy Jones Architecture, Vancouver
Sponsored by the Toronto Society of Architects
http://www.arch.ryerson.ca/all/lecture-darcy-jones/

9 Oct: Andrew King, Cannon Design, Toronto
http://www.arch.ryerson.ca/all/lecture-andrew-king/

30 Oct: Tom Woolley, Queens University, Belfast
http://www.arch.ryerson.ca/all/lecture-tom-woolley/

6 Nov: Michael Speaks, Syracuse University, NY
http://www.arch.ryerson.ca/all/lecture-michael-speaks/

26 Nov: Christoph Meier, SJB.Kempter.Fitze AG, Frauenfeld
Sponsored by the Canadian Wood Council
http://www.arch.ryerson.ca/all/christoph-meier/

27 Nov: Conversation – "Architecture on Display"
Panelists – Aaron Levy, William Menking, Sascha Hastings
http://www.arch.ryerson.ca/all/conversation-architecture-on-display/

Winter 2015

15 Jan: Alissa North, University of Toronto, Toronto
http://www.arch.ryerson.ca/all/lecture-alissa-north/

5 Feb: Zeuler Lima, Washington University in St. Louis, St. Louis
http://www.arch.ryerson.ca/all/lecture-zeuler-lima/

12 Feb: Nanne de Ru, Powerhouse Company, Rotterdam
Sponsored by the Consulate of the Kingdom of the Netherlands
http://www.arch.ryerson.ca/all/lecture-nanne-de-ru/

26 Feb: Pat Hanson, gh3, Toronto
The Margery Winkler Lecture
http://www.arch.ryerson.ca/all/lecture-pat-hanson/

17 Mar: Raj Patel, Arup, New York
http://www.arch.ryerson.ca/all/lecture-raj-patel/

EXHIBITIONS

Fall 2014

2 Sept -10 Oct
TRANS ARCHITECTURE
Reception: 9 Sep
http://www.arch.ryerson.ca/all/trans-architecture/

20 Oct – 7 Nov
Inundation 3: Jakarta Studio
Reception: 23 Oct
http://www.arch.ryerson.ca/all/inundation-3-jakarta-studio/

12 Nov
Awards Night
http://www.arch.ryerson.ca/all/awards-night-2014/

1 Dec – 13 Dec
Final Studio Reviews
http://www.arch.ryerson.ca/all/reviews-fall-2014/

Winter 2015

9 Jan – 20 Jan
Collaborative Exercise 2015
Reception: 9 Jan
http://www.arch.ryerson.ca/all/collaborative-exercise-2015/

27 Jan –27 Feb
BUILT WORKS: Lina Bo Bardi
Curated by Zeuler Lima
Reception: 5 Feb
http://www.arch.ryerson.ca/all/built-works-lina-bo-bardi/

2 Mar - 13 Mar
Treasury of Deserted Backdrops: A Graduate Design Thesis
Reception: Mar 3
http://www.arch.ryerson.ca/all/treasury-of-deserted-backdrops-a-graduate-design-thesis-2/

16 Mar –10 Apr
Public Space Rules: Exploring Connected Hyper-density in the Church Street Development
Reception: 19 Mar
http://www.arch.ryerson.ca/all/public-space-rules/

13 Apr –22 Apr
Final Studio Reviews
http://www.arch.ryerson.ca/all/reviews-winter-2015/

27 Apr –15 May
End of Year Show
Reception: 27 Apr
http://www.arch.ryerson.ca/all/read-end-of-year-show/

2014-2015 STUDENT ACCOLADES

Ryerson DAS win 4 awards at the 2015 Race to Zero Student Design Competition
http://www.arch.ryerson.ca/all/ryerson-das-win-4-awards-at-the-2015-race-to-zero-student-design-competition/

DAS students excell at Stratasys Extreme Redesign Competition
http://www.arch.ryerson.ca/all/das-students-excell-at-stratasys-extreme-redesign-competition/

Rachel Law elected to the National Board of Directors of AIAS
http://www.arch.ryerson.ca/all/8613/

DAS students Diana Koncan and Lily Jeon awarded for their Snowcone design in the Toronto's first international Winter Stations design competition.
http://www.arch.ryerson.ca/all/winter-stations-featured-on-arch-daily/

Adrian Bica designed and built an installation for this years Winterlude Festival in Ottawa after submitting a winning proposal in December
http://www.arch.ryerson.ca/all/winterlude-pavilion/

Two projects from the Department of Architectural Science won People's Choice Awards from the Toronto Offsite Festival of Design (TO DO)
http://www.arch.ryerson.ca/all/das-installations-win-to-do-awards/

[R]ed[U]x Lab's Digital Tools Prototypes part of Toronto Offsite Design Festival
http://www.arch.ryerson.ca/all/redux-labs-digital-tools-prototypes-part-of-toronto-offsite-design-festival/

DAS Student selected as finalist in the 2014 World Bamboo Design Competition
http://www.arch.ryerson.ca/all/vote-das-student-selected-as-finalist-in-the-2014-world-bamboo-design-competition/

Kevin Pu and Fil Tisler presented their research at ICERI2014
http://www.arch.ryerson.ca/all/kevin-pu-and-fil-tisler-presented-at-iceri2014/

Angela Ng wins 2014 SSEF Award of Excellence
http://www.arch.ryerson.ca/all/angela-ng-wins-2014-ssef-award-of-excellence/

DAS student team places 3rd in the 2014 Dalseong Citizen's Gymnasium Competition
http://www.arch.ryerson.ca/all/das-student-team-places-3rd-in-the-2014-dalseong-citizens-gymnasium-competition/

A student team consisting of Kate Gonashvili, Ki Woon Oh and Lydon Whittle won first prize in the ArchTriumph Competition for their proposed design of the Mexico City Design Museum.

http://www.arch.ryerson.ca/all/students-win-archtriumph-competition/

DAS Students, Carol Nguyen & Yupin Li win 2nd place in the EnviroSCULPT Competition
http://www.arch.ryerson.ca/all/the-winning-continues-das-students-carol-nguyen-yupin-li-win-2nd-place-in-the-envirosculpt-competition/

M.Arch Student Kevin Pu was the Grand Winner of the Sustainable Design Awards 2014
http://www.arch.ryerson.ca/all/congratulations-to-m-arch-student-kevin-pu-grand-winner-of-the-sustainable-design-awards-2014/

DAS students win first place at Sukkahville 2014
http://www.arch.ryerson.ca/all/das-students-win-first-place-at-sukkahville-2014/

DAS students win 1st and 2nd position at the Real Estate Case Competition
http://www.arch.ryerson.ca/all/das-students-win-1st-and-2nd-position-at-the-real-estate-case-competition/

A-4• Human Resources Statistics Report • 2015– 2016

School or Program : DEPARTMENT OF ARCHITECTURAL SCIENCE – RYERSON UNIVERSITY, TORONTO, CANADA

Professional Degree Accredited	Total nb of credits / degree	Total nb of terms / degree	Nb of credits / term	Nb of hours / credit	Total nb of hours / degree
• **Master of Architecture degree**	17	6	Varies	36	540 (note 1 &2)
with a related pre-professional bachelor's degree	60	8	Varies	36	2016 (Note 3)
• **Master of Architecture degree**					
without a pre-professional requirement, and consisting of an undergraduate degree plus a minimum of three years of professional studies					
• **Bachelor of Architecture degree**					
minimum of five years of study, except in Quebec, where four years of professional studies follow two years of CEGEP studies					

Faculty Data	Faculty Credentials (highest degree only) Full-time (FT) + Part-Time (PT)													
	Ph.D or D.Arch		Post-Prof Ms		Prof. M.Arch		B.Arch		Other		Licensed architects		Studio teaching	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Regular Faculty	12		2		5		5		3		12		23	
Men	8		1		4		4		2		9		16	
Women	4		1		1		1		1		3		7	
Total FT Equivalent (FTE) Regular Faculty: Number of FT Regular Faculty + a figure equating PT Regular Faculty	27 full time faculty													
Typical FT teaching load / year	4 courses (2 lecture + 2 studio)													
Other Faculty		1		4		11		10		4		17		14
• Visiting														
• Adjunct • Sessional • Lecturer		1		4		11		10		4		17		14
• Ph.D Candidate														
Men				1		7		7		3		11		9
Women		1		3		4		3		1		6		5
Total FT Equivalent (FTE) Other Faculty: a figure equating other faculty on the basis of a typical FT teaching load	9.076 FTE Adjunct Faculty													
Total FTE Regular + Other Faculty	36.075 FTE Faculty													
Total Regular and Other Faculty who are licensed architects											29			
Total Regular and Other Faculty teaching in studio													37	
Nb of pre-professional studios taught by all Faculty for the year													59 studio sections	
Nb of Masters studios taught by all Faculty for the year													6 studio sections	

Student Data	Pre-professional degree				Master of Architecture degree or Bachelor of Architecture degree			
	Fall	Winter	Summer	Mean/yr	Fall	Winter	Summer	Mean/yr
Full-Time Students	400	382	130	304	60	51	49	53
Men (optional)	173	167	45	128	28	22	22	
Women (optional)	227	215	85	176	32	29	27	
Part-Time Students	0	0	0	0	0	0	0	0
Men (optional)	0	0	0	0	0	0	0	0
Women (optional)	0	0	0	0	0	0	0	0
Total Full-Time Equivalent (FTE) Students [1]	400	382	130	304	60	51	49	53
FTE Foreign Students [2] *(optional)*								
Students in Design Studio	400	380	0	390	30	32	28	30
Studio Ratio (Students in Design Studios / Nb studios taught for a year)	59 faculty for 780 students 1:13.2 ratio (59 studios taught fall & winter, 30 studios in the fall and 29 in the winter)				6 faculty for 90 students1 -15 ratio			
	Fall	**Winter**	**Summer**	**Total/yr**	**Fall**	**Winter**	**Summer**	**Total/yr**
Number of applicants for a given term and total for a year				1306 (Note 4)	175	0	0	175
Number of entering students for a given term and total for a year				124	29	0	0	29
With advanced standing (optional)								
Total Degrees Awarded-Expected for a given term and total for a year	12		85	97 (Note 5)	16		7	23
Men (optional)								
Women (optional)								
Graduation Rate (%) [3]				84% (Note 6)				77%*Note 7

Note 1. This total does not include two required collaborative exercise credits, as these do not have assigned class hours.

Note 2. M.Arch. Thesis | Project is in addition to these numbers (no credits granted for thesis).

Note 3. This total does not include four required collaborative exercise credits, as these do not have assigned class hours.

Note 4. Our program is a single entry in the fall-term only.

Note 5. This number includes students in the system who are out of sequence.

Note 6. In 2015-2016, 97 students graduated from various cohorts including co-op. The average number of students matriculated during that time is 115 students. (97 / 115 = 84%).

Note 7: In 2015-2016, 23 students graduated (22 from the 2013 cohort, and 1 from the 2012 cohort). The average number of students matriculated in those two years is 30 students (23/30 = 77%).

[1] Full-Time Equivalent Students (FTE): Number of full-time students reported above + number of full-time equivalent for part-time students calculated on the basis of a full course load required to complete the program in the normal number of terms.

[2] FTE Foreign Students : Students included in Total FTE Students who are not Canadian citizens or landed immigrants.

[3] No of degrees awarded or expected / No of entering students at the beginning of the degree.

Ryerson University

Faculty of Engineering and Architectural Science

ANNUAL REPORT TO CACB-CCCA

Narrative Section

Program: BACHELOR OF ARCHITECTURAL SCIENCE (B.Arch. Sc.)
BACHELOR OF ARCHITECTURAL SCIENCE (CO-OP OPTION)
MASTER OF ARCHITECTURE (M. Arch)

Academic Year: 2015-2016

Head of the Program (Name): Jurij Leshchyshyn, Interim Chair

Signature:

Date: June 30, 2016

1- INTRODUCTION

Within the parameters of Ryerson University's academic plan, 'Our Time to Lead', the Faculty of Engineering and Architectural Science has developed its own academic plan titled 'Striving for Excellence', in which is included our Department's academic plan. As reported last year, the key priorities of the our Department's academic plan include the following :

1. 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;
    - Nurture a critically creative, culturally, socially, and environmentally conscious atmosphere of innovation.
2. Renovate and add facilities to support the above.

The Department has undertaken several working retreats (with future such events being planned) at which individual aspects of the academic plan were addressed, including:

- a 3-day session in August 2015
- a visioning session in November, 2015
- a 3-day session "Curriculum Week" in May 2016

2- STATEMENT OF CHANGES TO THE PROGRAM

There have been some recent administrative changes to the leadership of the program.
The search for a new chair has been completed with the appointment of Dr. Mark Gorgolewski, a faculty member, being appointed to take on the Chair's position starting July 31, 2017. The postponement is a result of Dr. Gorgolewski's previously approved sabbatical leave. Professor Jurij Leshchyshyn has been reappointed as Interim Chair until the end of June 30, 2017. As well, Dr. Miljana Horvat has been appointed Associate Dean of Graduate Studies in FEAS, The current Administrative Team membership is as follows:

- Mark Gorgolewski, Chair (Appointment begins July 1, 2017)
- Jurij Leshchyshyn, Interim Chair (until June 30, 2017.)
- Paul Floerke, Associate Chair, External and Mobility Director
- Vincent Hui, Associate Chair and Experiential Learning Director
- John Cirka, Associate Chair, Graduate Studies Architecture
- Russell Richman, Associate Chair, Graduate Studies Building Science
- Vera Straka, Undergraduate Program Director

3- RESPONSE TO TEAM FINDINGS

3.1- CAUSES OF CONCERN

In the order listed in the Visiting Team Report (VTR)

1. *The Team has concerns about the sustainability of the Library's Architectural resources in consideration of the expanding demands of the new Masters of Architecture program. (APR - Section 3.8, Page 85);*

The collection analysis demonstrates there is a net growth in the subject areas relevant to Architecture. In terms of collection sustainability, the Ryerson Library continues to receive an influx of one-time only money that allows us to sustain current acquisition levels; this mitigates the effect of ongoing base budget reductions. *Note: See spreadsheet below.*

The collection continues to be dynamic; new content is added through library purchase, faculty requests, and selected donations. The collection far exceeds the minimum (5000+ items in call number "NA") accreditation standards.

The Ryerson Library and Archives continues to purchase content in print and digital format. When a desired item is not owned, the library endeavors to provide it via our interlibrary loan service, which continues to be free to the Ryerson community.

LC call no	2012 items	2016 items
HD1-100 - Management	13,498	14,096
N - Visual arts	4,624	4,978
NA - Architecture	**10,052**	**12,019**
NC - Illustration, Drawing	1,696	2,099
NK - Decorative and Applied Arts	4,353	4,969
SB - Landscape Architecture	2,672	2,863
TA - Civil Engineering	11,136	12,699
TH - Building Construction	3,728	4,259
TJ - Energy (includes solar)	5,090	5,606
Totals	**56,849**	**63,588**

Electronic resource access through subscriptions to aggregators and publishers' collections and participation in national and provincial resource sharing consortia such as the Canadian Research Knowledge Network (CRKN) and the Ontario Council of University Libraries

(OCUL) has resulted in an increase in journals and scholarly sources supporting the program.

A dedicated Architecture Liaison Librarian is available for Graduate student consultation in our *research help area*, online library research and in-class instruction. The librarian also assists faculty members with strengthening the critical thinking skills of students by creating and managing course specific *library research guides* that supports students in their research. These online and interactive guides can be linked to Learning Management Systems. Through engagement with students, faculty, and the community, the Library collaborates in fostering successful critical thinkers and lifelong learners.

In addition to the research guides, the Library recently launched an online *RUSearch* platform, a step-by-step online learning platform that supports students when they are developing, organizing, researching and writing university level papers.

Ryerson University Digital Repository is an online library hosted repository intended for research and scholarly output produced by the individual university departments on campus. The repository provides the ideal means for sharing publications, graduate theses, and major research papers produced by faculty members, graduate students and researchers in the ongoing support of programs in the Department of Architectural Science.

Despite growth in the Architecture collection, sustained financial commitment from the university is necessary in order to continue to provide the current level of service to graduate students, and to allow for improvement, inflation (particularly in terms of subscription costs) and innovation. No less than 4% of the university budget dedicated to the library is ideal, and an incremental improvement in the Library's base share of the University's operating budget is recommended.

2. The assignment of inappropriately qualified faculty is a concern. The program is encouraged to ensure continuity in course curriculum and student assessment regardless of the instructor assigned to the course;

Currently the Department consists of 27 full-time faculty (tenured and tenure-track), with an average age of 54.7. The Department lost one of its faculty members with the passing of Dr. Ian MacBurnie in the fall of last year. The University administration has been apprised of the importance of hiring a comparable new faculty member to replace Dr. MacBurnie, but has yet to provide a positive response. At the time of writing, there is no knowledge of pending retirements or new hires.

Our annual Human Resources Statistics Report is appended reflecting the loss of a faculty member. The number of regular full-time male faculty with Ph.D.s or D.Archs. is now eight, and regular full-time female faculty with such degrees is three.

All faculty profiles (including contract lecturers and adjunct professors) can be viewed on the Department's website at http://www.arch.ryerson.ca/people/.

As reported last year, and with regards to continuity in course curriculum and student assessment independent of instructor, we continue to have all multi-section studios coordinated by a Studio Master

who is charged with the responsibility of ensuring consistency across all studio sections. As well, course outlines are available for reference by faculty teaching courses for the first time. The Department, as an aspect of its academic plan, will move ahead in compiling additional materials from individual courses, including handouts, assignments, project outlines etc., to complement course outlines. Such a comprehensive resource would then be drawn upon at annual/year-end curriculum meetings to enhance the continuity in course curriculum and student assessments. A 3-day Curriculum Week retreat/workshop was initiated in May of this year to initiate this process.

3. The Team supports a review of the lower level wood and digital fabrication workshop facilities practices and policies in consideration of staff workload and student access;

The construction and upgrades to the wood and digital fabrication workshop facilities were completed in the Fall 2015 semester and included: new dust extraction equipment for all wood processing machinery, new HVAC controls for the Digital Fabrication Lab and a secured 24-hour card access assembly room which will have basic hand tools. The recently acquired KUKA KR6 R700 or KUKA KR 10 R1100 sixx Robotic Arm, robot controller, intelligent operator control unit and affiliated simulation software has yet to be installed.

Increased pressures on the Fabrication and Computer Aided Design Labs have been previously identified, and appropriate resources were sought to provide support for both areas. The requests for new support staff in both the Workshop and in IT services have been included in the Department's Academic Plan and formal approval for two positions is pending.

4. The support staff is working at or beyond capacity;

See item 3 above.

5. Air quality concerns continue to be raised.

A HVAC upgrade was completed in the summer of 2014 including heat-pump installations and a new chiller with the investment of $1.4M by Ryerson University. It should be noted that there are on-going deficiencies with the performance of the system that are being investigated. The heat pumps have recently been tested to determine their levels of performance. A report of the findings with recommendations for remedial actions is expected shortly.

6. Students are concerned about non-departmental access to studio spaces;

As noted in last year's report, studio spaces are now secured with 24-hour card access for registered students programmed according to their year and assigned space.

3.2- CONDITIONS AND SPC "NOT-MET"

In the order listed in the Visiting Team Report (VTR) as well as in the Focused Evaluation Report if it applies

A7. Cultural Diversity
Understanding of the diverse needs, values, behavioural norms, and social/spatial patterns that characterize different cultures and individuals, as well as the implications of this diversity on the societal roles and responsibilities of architects.

Team comments:
Not met. The Program is focused on the study of Western thought and tradition. Design Studio 2 (ASC 301) and Seminar in Critical Practice (AR 8102) look at the challenges of housing in Nunavut and urbanity in contemporary cities around the world, an in-depth study of cultural diversity was not observed.

The Department continues striving to address Cultural Diversity through its curricula, lecture series, and co-curricular activities. The implementation of the Department's academic plan over the next year will include a review of curricular content providing an opportunity for a comprehensive response to this concern. *Please also see Other Relevant Information.*

B4. Sustainable Design
Ability to apply the principles of sustainable design to produce projects that conserve natural and built resources, provide healthy environments for occupants/users, and reduce the impacts of building construction and operations on future generations.

Team comments:
Not Met. While there are several courses (ASC 200, ASC 302, ASC 402) that provide an understanding with regards to building science principles, there is no evidence that supports a clear directive with regards to the understanding and application of sustainable design within the students own design work. Courses such as ASC 200 Sustainable Practice, and ASC 403, Site Development and Planning lay the groundwork for the application of sustainable design, but do not venture beyond this.

The Department continues striving to address Sustainable Design through its curricula, lecture series, and co-curricular activities. The implementation of the Department's academic plan over the next year will include a review of curricular content providing an opportunity for a comprehensive response to this concern. *Please also see Other Relevant Information.*

B5. Accessibility
Ability to design both site and building to accommodate individuals with varying physical and cognitive abilities.

Team comments:
Not Met. Some evidence is found in ASC620 (Integration Studio II), and ASC622 (Documentation), and inconsistently demonstrated in ASC401 (Design Studio II). Evidence is minimal, and inconsistent across student work.

The Department continues striving to address Accessibility through its curricula, lecture series, and co-curricular activities. The implementation of the Department's academic plan over the next year will include a review of curricular content providing an opportunity for a comprehensive response to

this concern. *Please also see Other Relevant Information.*

4- OTHER RELEVANT INFORMATION

LECTURES AND EXHIBITIONS 2015 - 2016

LECTURES

Fall 2015

24 September 2015
Nasrine Seraji, Atelier Seraji Architectes & Associes, Paris

In partnership with the Consulate General of France in Toronto.
http://www.ryerson.ca/news/events/General_Public/20150924-das-lecture-series-nasrine-seraji.html

29 October 2015
Siamak Hariri, Hariri Pontarini Architects, Toronto
Lecture Title: Embodied Light: Physical and Digital Explorations of the Bahá'í Temple of South America
In conjunction with the Bahá'í Temple of South America exhibit opening.
http://www.ryerson.ca/news/events/General_Public/20151029-das-lecture-series-siamak-hariri.html

25 November 2015
Joan Tarragon, X-TU Architects, Paris
https://www.canadianarchitect.com/events/joan-tarragon-lecture/

Winter 2016

21 January 2016
Nathalie de Vries, MVRDV, Rotterdam
Elsa Lam, Canadian Architect, panel discussion Moderator
http://www.ryerson.ca/news/events/General_Public/20160121-nathalie-de-vries.html

11 February 2016
Chris Jofeh, ARUP, Cardiff, UK
Lecture Title: How to halve the energy consumption of every home in the UK
http://www.ryerson.ca/news/events/General_Public/20160211-chris-jofeh.html

25 February 2016
Alfonso Medina, T38 Studio, New York, Tijuana
Lecture Title: Architecture from the Ground Up
http://www.ryerson.ca/news/events/General_Public/20160225-alfonso-medina.html

10 March 2016

Susannah C. Drake, DLand Studio, Brooklyn, NY
http://urbantoronto.ca/news/2016/02/ryerson-das-announces-susannah-c-drake-lecture

EXHIBITIONS

Fall 2015

1 September – 9 October 2015
Shaping Canadian Modernity: Toronto's 1958 City Hall and Square Competition and its Legacy
George Thomas Kapelos and Christopher Armstrong
Opening Event: 17 September 2015
* This exhibition has an accompanying lecture on Thursday. 3 September 2015 at 7:00 p.m. in the Council Chamber at City Hall, 100 Queen Street West
http://www.ryerson.ca/news/media/General_Public/20150825_ma_shapingcanadianmodernity.html

19 October – 23 October 2015
PERFORMIGRATIONS: Transition in Progress
FCAD Ryerson, an EU International Culture Project
Opening Event: 22 October 2015
http://www.ryerson.ca/news/media/General_Public/20151006_ma_performigrations.html

26 October – 13 November 2015
Bahá'í Temple of South America
Hariri Pontarini Architects
Opening Event: 29 October 2015

19 November – 2 December
Awards Night & Student Showcase
Department of Architectural Science

Final Studio Reviews
http://www.arch.ryerson.ca/all/reviews-fall-2014/

Winter 2016

11 January – 22 January
Collaborative Exercise 2016
http://www.arch.ryerson.ca/?s=collaborative+exercise+2016&post_types=post,page#collaborative-exercise

25 January – 12 February 2016
2015 Graduate Thesis Work
Department of Architectural Science
Opening Event: 28 January 2016

http://www.arch.ryerson.ca/?s=2015+Graduate+Thesis+Work&post_types=post,page#2015-graduate-thesis-work

22 February – 15 April 2016
DESIGN MATTERS: Measuring Environments for Psychosocial Health
Cheryl Atkinson and Celeste Alvaro
http://www.arch.ryerson.ca/all/design-matters-measuring-environments-for-psychosocial-health/

18 April – 26 April 2016
Final Studio Reviews
Department of Architectural Science

29 April – 20 May 2016
Year End Show
Department of Architectural Science
http://www.arch.ryerson.ca/?s=year+end+show+2016&post_types=post,page#year-end-show

2015-2016 STUDENT ACCOLADES

2015 EnviroSCULPT competition by The Greater Toronto Chapter of the Emerging Green Builders CaGBC
Second Place: Froot - Kristel Fernandes & Jacqueline Galang
http://www.cagbctoronto.org/membership/egb/award

Ryerson DAS team, True North Design, wins First Place for Eastern Pine, in the Small Multifamily Housing Contest at the **2016 Race to Zero Student Design Competition** run by the US DOE.
http://www.ryerson.ca/graduate/buildingscience/student/2016_doe-rtz-easternpine.html

DAS students once more excel at **Stratasys Extreme Redesign Competition**
First place: HyperShot; Aris Peci and Remi Carreiro
http://blog.stratasys.com/2016/05/03/2016-extreme-redesign-winners/

Rachel Law elected 60th **National Vice President of the American Institute of Architecture Students** on January 1st, 2016.
http://www.arch.ryerson.ca/?s=rachel+law&post_types=post,page#60th-national-vice-president-of-the-american-institute-of-architecture-students

DAS students Calvin Fung and Victor Huynh one of four finalists in Toronto's second international **Winter Stations Design Competition,**
and
1st Place winners in the **Laka Competition Architektura 2015** – Fluid Architecture.

https://www.canadianarchitect.com/students-education/winners-unveiled-for-year-two-of-winter-stations-design-competition/1003730227/

http://www.arch.ryerson.ca/all/laka-architektura-2016-fluid-architecture-1st-place-winner-calvin-fung-research-with-victor-huynh/

DAS's "Vivarium" received an honorable mention among 250 entries for the **AWR NYC Sky Condo Competition**. The team consisted of Leila M. Farah (faculty), Michael Good (DAS Alumni), Mark Gorgolewski (faculty) and John Han (student).
http://www.arch.ryerson.ca/?s=VIVARIUM&post_types=post,page#das-team-receives-honourable-mention-in-the-awr-award

2016 Toronto Design Offsite
"People's Choice: Favourite Window Installation" for Flummox
"People's Choice: Favourite Event" for Digital Tools Prototypes 2016
http://todesignoffsite.com/2016-festival/to-do-awards/

2016 Extreme Redesign Award
1st Place: HyperShot by Remi Carreiro and Aris Peci
2nd Place: sketcHold by Arborz Razavitousi and Arman Ghafouri-Azar
http://www.stratasys.com/industries/education/extreme-redesign/winners

2016 Evolve Competition (yet to be updated on their website)
1st Place: Mark Melnichuk, Mike Fik, and Ramoncito Espino
2nd Place: Sandra Wojtecki
3rd Place: Sara Duffin

Night Market 2016
People's Choice Award: RUDAS team led by Arnel Espanol with teammates Karen Fang, Garbo Zhu and Erik Aquino

DAS student teams selected for **Bergen International Wood Festival Design Competition**. Wooden structures designed by two student teams – Erik Aquino, Katherine Krolak & Henry Mai as well as John Zhang, Thy Vo and David Luong – have been selected to be part of the Bergen International Wood Festival (BIWF) close to Store Lungegårdsvann lake in Bergen city centre.
http://www.arch.ryerson.ca/all/das-student-team-wins-bergen-international-wood-festival-design-competition/

Kristen Smith wins MAQ's Young Architectural Critic Competition. "Growing Pains," written by Kristen Smith of the Department of Architectural Science, has been selected as the winner of the Young Architectural Critic competition held by the Maison de l'architecture du Québec (MAQ).
http://www.arch.ryerson.ca/all/kristen-smith-wins-maqs-young-architectural-critic-competition/

CBC's miniseries "Disrupting Design" featured Robyn Thomson and Jessica Chen's project "Flux".
http://www.arch.ryerson.ca/all/cbcs-miniseries-disrupting-design-featuring-robyn-thomson-and-jessica-chens-project-flux/

Winterlude 2016
Finalist & Exhibited installation "Frozen Season" in Confederation Park led by Victor Huynh including Tim Melnichuk,Shiloh Luzar, Agnes Yeun, Casey Li, Yuri Shin, Rebecca Choi, and Ernest Wong
http://canada.pch.gc.ca/BalNeige-Winter/eng/1416604636034/1416604675713?id=113533

Anna Pavia and Matthew Gelowitz receive **2015 Newman Medals**, for assisting with the production of a book on Canadian Concert halls.
http://www.arch.ryerson.ca/all/pavia-and-gelowitz-receive-2015-newman-medals/

Sukkhaville 2015
4 teams from DAS, of 8 total, declared Finalists, including 1st and 2nd place winners, at **Sukkhaville 2015**, an international design-build competition.
1st Lulav Forest by Adryanne Quenneville and Tasneem Rahman
2nd Shelter for Four by Deena Jamokha & Kaya Kim
Honorable Mention for Frame by Daniel Rosati
Finalist: Guiding Light by Erik Aquino
http://www.sukkahville.com/sukkahville-2015-2/

TimberFever Competition winners - Three teams, each with Ryerson Engineering and Architecture Students, were declared winners of the Timberfever Design-Build Challenge 2015.
http://www.arch.ryerson.ca/all/timberfever-competition-winners-announced/

Two DAS student teams place in the Top 10 of the **2015 SSEF (Steel Structures Education Foundation) Architectural Design Competition**.
Helical Bridge Team – Yuri Shin, Mariam Ezein, Jason Glionna, Arnel Espanol
Nexus Team – John Benner, Erik Aquino, Adrian Chu.
http://www.ssef-ffca.ca/competitions/ssef/2015/topten/

2016 SSEF (Steel Structures Education Foundation) Architectural Design Competition.
(Yet to be updated on their website at time of writing.)
Award of Merit: Erik Aquino

A-4• Human Resources Statistics Report • 2016– 2017 FINAL

School or Program : DEPARTMENT OF ARCHITECTURAL SCIENCE – RYERSON UNIVERSITY, TORONTO, CANADA

Professional Degree Accredited	Total nb of credits / degree	Total nb of terms / degree	Nb of credits / term	Nb of hours / credit	Total nb of hours / degree
• **Master of Architecture degree**	17	6	Varies	36	540 (note 1 &2)
with a related pre-professional bachelor's degree	60	8	Varies	36	2016 (Note 3)
• **Master of Architecture degree**					
without a pre-professional requirement, and consisting of an undergraduate degree plus a minimum of three years of professional studies					
• **Bachelor of Architecture degree**					
minimum of five years of study, except in Quebec, where four years of professional studies follow two years of CEGEP studies					

Faculty Data	Faculty Credentials (highest degree only) Full-time (FT) + Part-Time (PT)													
	Ph.D or D.Arch		Post-Prof Ms		Prof. M.Arch		B.Arch		Other		Licensed architects		Studio teaching	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Regular Faculty	12		2		5		5		3		12		23	
Men	8		1		4		4		2		9		16	
Women	4		1		1		1		1		3		7	
Total FT Equivalent (FTE) Regular Faculty: Number of FT Regular Faculty + a figure equating PT Regular Faculty	27 full time faculty													
Typical FT teaching load / year	4 courses (2 lecture + 2 studio)													
Other Faculty		3		5		14		3		5		23		18
• Visiting														
• Adjunct • Sessional • Lecturer		3		5		14		3		5		23		18
• Ph.D Candidate														
Men		2		1		10		3		2		15		11
Women		1		4		4				3		8		7
Total FT Equivalent (FTE) Other Faculty: a figure equating other faculty on the basis of a typical FT teaching load	9.076 FTE Adjunct Faculty													
Total FTE Regular + Other Faculty	36.075 FTE Faculty													
Total Regular and Other Faculty who are licensed architects											35			
Total Regular and Other Faculty teaching in studio													41	
Nb of pre-professional studios taught by all Faculty for the year													61 studio sections	
Nb of Masters studios taught by all Faculty for the year													6 studio sections	

Student Data	Pre-professional degree				Master of Architecture degree or Bachelor of Architecture degree			
	Fall	Winter	Summer	Mean/yr	Fall	Winter	Summer	Mean/yr
Full-Time Students	492	488	0	490	55	54	50	53
Men (optional)	207	204	0	205.5	21	20	18	
Women (optional)	285	284	0	284.5	34	34	32	
Part-Time Students	0	0	0	0	0	0	0	0
Men (optional)	0	0	0	0	0	0	0	0
Women (optional)	0	0	0	0	0	0	0	0
Total Full-Time Equivalent (FTE) Students [1]	429	411	0	490	55	54	50	53
FTE Foreign Students [2] *(optional)*								
Students in Design Studio	429	411	0	420	22	21	21	21
Studio Ratio (Students in Design Studios / Nb studios taught for a year)	61 faculty for 840 students 1:13.8 ratio (61 studios taught fall & winter, 31 studios in the fall and 30 in the winter)				6 faculty for 64 students 1:10.7 ratio			
	Fall	**Winter**	**Summer**	**Total/yr**	**Fall**	**Winter**	**Summer**	**Total/yr**
Number of applicants for a given term and total for a year				1351 (Note 3)	188	0	0	188
Number of entering students for a given term and total for a year				142 (Note 8)	22	0	0	22
With advanced standing (optional)								
Total Degrees Awarded-Expected for a given term and total for a year	16		78	94 (Note 4)	15	0	5	20
Men (optional)								
Women (optional)								
Graduation Rate (%) [3]				82% (Note 5)				67% (Note 6)

Note 1. This total includes students who are out of phase and are not enrolled in studio courses.

Note 2. M.Arch. Thesis | Project is in addition to these numbers (no credits granted for thesis).

Note 3. Our program is a single entry in the fall-term only.

Note 4. This number includes students in the system who are out of sequence.

Note 5. In 2016-2017, 94 students graduated from various cohorts including co-op. The average number of students matriculated during that time is 115 students. (94/115 = 82%).

Note 6: In 2016-2017, 20 students graduated . The average number of students matriculated is 30 students (20/30 = 67%).

Note 7: The number of students entering the first year of the program in Fall 2016 exceeded the University's target. Two additional studio sections were formed to accommodate this unexpected increase.

[1] Full-Time Equivalent Students (FTE): Number of full-time students reported above + number of full-time equivalent for part-time students calculated on the basis of a full course load required to complete the program in the normal number of terms.

[2] FTE Foreign Students : Students included in Total FTE Students who are not Canadian citizens or landed immigrants.

[3] No of degrees awarded or expected / No of entering students at the beginning of the degree.

Ryerson University

Faculty of Engineering and Architectural Science

ANNUAL REPORT TO CACB-CCCA

Narrative Section

Program: BACHELOR OF ARCHITECTURAL SCIENCE (B.Arch. Sc.)
BACHELOR OF ARCHITECTURAL SCIENCE (CO-OP OPTION)
MASTER OF ARCHITECTURE (M. Arch)

Academic Year: 2016 - 2017

Head of the Program (Name): Jurij Leshchyshyn, Interim Chair

Signature:

Date: June 30, 2017

1- INTRODUCTION

Over the last year the Department has been active on several fronts involving physical changes to the Architecture Building, the reallocation of graduate studio spaces, the engagement in three Periodic Program Reviews, and the hiring of staff in support of our academic plan.

Physical Changes to the Architecture Building

September 2016 saw the opening of the renovated and updated first and second year studio spaces. This was a major $1.25M project jointly funded by industry and the University. The studios were named the David E. Handley Studio in honour of David Handley, an alumnus of our Department and a senior and long-time member of Cadillac Fairview Corporation. While the Department had previously identified the pressing need to upgrade its studio spaces, and a small portion of the studio was prototyped in the previous year, it was the subtle yet effective promotion of the idea by the late Harry Pellow architect, also an alumnus of our Department, that brought the project to fruition. An existing presentation space was also refurbished and renamed the Harry Pellow Presentation Space in recognition of his contribution to the Department.

The Pit, a tiered presentation and lecture space, also received much-needed refurbishment. This was primarily undertaken by the University (with supplementary work being done by our Shop staff) to accommodate the needs of the *Congress of the Humanities and Social Sciences*, Canada's largest academic gathering hosted this year by Ryerson.

What had previously been the Department's "Resource Centre", an open space used for study and presentations, has, for the last few years, been shared with Ryerson's Zone Learning Centre. As the Centre has acquired its own space elsewhere on campus, the Department has reclaimed the space and will be using it to accommodate the Master of Building Science students' studio. Until now, these students shared a studio space with the second year Master of Architecture students. With this relocation, the MArch students will expand into a more generous space meeting both their individual studio needs as well as accommodating presentations, reviews, collaborative work, and seminars.

Periodic Program Reviews

Periodic Program Reviews (PPRs) are periodic reviews of programs that require Quality Council approval at the undergraduate and graduate levels. Over the last year the Department has undertaken three PPRs including ones for the Master of Building Science Program, which was completed in early 2017, the Master of Architecture Program, which is currently underway with an expected completion in the Fall 2017 semester, and the Bachelor of Architectural Science Program, slated for completion in early 2018.

Included in the PPRs is a self-assessment of programs as well as detailed curriculum mapping exercises at the undergraduate level. The Department has initiated the curriculum mapping exercise by compiling Learning Outcomes based on previously established Program Goals. This was done in consultation with Ryerson's Curriculum Development Consultant over the Winter 2017 semester, culminating in a comprehensive compilation of Learning Outcomes at the Curriculum Week Retreat in May. The next phase will involve mapping individual courses against the Learning Outcomes to identify which courses address which outcomes, and at which of three levels including: introduction, reinforcement, and proficiency. (For the fourth year of the program, an "Enhanced Proficiency" level will be added.) The composite outcome of this exercise will provide the faculty with a comprehensive

"map" of the current curriculum identifying redundancies, gaps, strengths, and other areas of concern requiring attention. This also provides faculty with the opportunity to assess how the curriculum can both maintain and enhance the "Met" SPCs, while effectively addressing the "Not Met" SPCs as identified in the latest Visiting Team's Report. Further to the Learning Outcomes compiled during the Curriculum Week retreat held in May, curriculum mapping is scheduled for the Department's traditional, pre-semester August retreat.

Personnel

The tenure-track faculty position requested last year to replace the late Dr. Ian MacBurnie has been granted and the Department Hiring Committee will begin its search for an appropriate candidate in the Fall semester. Over the last year the Department has also hired several technical and office support staff in response to both concerns raised by the Visiting Team and in fulfillment of its academic plan. Our Dean, Dr. Tom Duever, has been most supportive in all aspects of this endeavour. Further details are provided in Item 3.1.4 below.

Exhibitions and Lectures

The exhibition and lecture series continued to provide our students and the broader community with engaging events and presentations; student teams were successful in design competitions; the co-op program grew sooner than planned due to the success of our students in previous placements and the needs of the industry; our exchange program has also expanded providing students with opportunities to study in five programs abroad, and the Year End Show, highlighting excellence in students' work in all programs, is growing in scope and significance.

2- STATEMENT OF CHANGES TO THE PROGRAM

As noted in last year's report, Dr. Mark Gorgolewski will be taking on the role of Chair starting July 1, 2017, in place of Jurij Leshchyshyn, Interim Chair. Otherwise, the Administrative Team will remain as noted below.

- Mark Gorgolewski, Chair (Appointment begins July 1, 2017)
- Jurij Leshchyshyn, Interim Chair (until June 30, 2017.)
- Paul Floerke, Associate Chair, External and Mobility Director
- Vincent Hui, Associate Chair and Experiential Learning Director
- John Cirka, Associate Chair, Graduate Studies Architecture
- Russell Richman, Associate Chair, Graduate Studies Building Science
- Vera Straka, Associate Chair, Undergraduate Program

There have been no curricular changes to either the pre-professional Bachelor of Architectural Science or Master of Architecture programs over the last year.

However, a report produced by the Chair's Fourth Year Committee, considering concerns about the overall structure of the fourth year of the BArchSc program, was presented and discussed at length during our Curriculum Week retreat in May.

The fourth year of the BArchSc program is a vital and distinguishing aspect of the undergraduate program building on curricular content developed in the first three years of the program. It provides students with the opportunity to specialize in one of three options: Architecture, Building Science, and Project Management. The Committee's proposals ranged from maintaining the status quo with minor changes to address structural disparities between options, to proposing the creation of a fourth "open" option, one that would allow students to enrol in any combination of studio and professional elective courses to meet individual interests and goals.

Flexibility in selecting options in the fourth year was an objective of the undergraduate restructuring undertaken in consort with the design of the Master of Architecture program, in that SPC requirements met by the undergraduate, pre-professional program are embedded in the first three years of that program. Students completing the BArchSc program are thus eligible to apply to the MArch program regardless of which option they select in the fourth year.

Further consideration of the Fourth Year Committee's proposals will be undertaken in the coming year.

3- RESPONSE TO TEAM FINDINGS

3.1- CAUSES OF CONCERN

In the order listed in the Visiting Team Report (VTR)

1. *The Team has concerns about the sustainability of the Library's Architectural resources in consideration of the expanding demands of the new Masters of Architecture program. (APR - Section 3.8, Page 85);*

With regards to concerns about the adequacy of the library in its support of graduate studies in architecture, we would like to reassure the accreditation team that overarching budgetary pressures on the university library as a whole do not present any pointed threats to the architectural collection. Our monograph budget is supplemented with healthy infusions of one-time-only funds from the University administration on an annual basis.

Our approach to monograph acquisitions is intended to be a systemic and stable mode of acquisition to ensure we receive the latest and most relevant in architecture scholarship. The collection continues to be dynamic; new content is added through library purchase, faculty requests, and selected donations. The collection far exceeds the minimum (5000+ items in call number range "NA") accreditation standards, which is currently over 10000+ monographs total.

The statement regarding a 4% allotment of base funding reflects the need for stability in general funding of the library budget to accommodate growth in all programs, increasing FTE and the ongoing inflation of subscription costs to large journal packages used throughout the university.

2. The assignment of inappropriately qualified faculty is a concern. The program is encouraged to ensure continuity in course curriculum and student assessment regardless of the instructor assigned to the course;

Currently the Department consists of 27 full-time faculty (tenured and tenure-track), with an average age of 55.7. Last year's report noted the regrettable passing of one of its faculty members and the request to the University administration for a replacement position. A replacement position has been provided and the Department Hiring Committee will undertake the task of filling that position during the upcoming academic year.

Tenure-track faculty and part-time/contract lecturers are provided with teaching assessments as prescribed by their respective collective agreements. Teaching assignments for full-time faculty are determined by the Chair, in consultation with individual faculty members, and with the advise of Associate Chairs who comprise the Department's Administrative Team. Part-time instructors are hired and provided with teaching assignments by the Department's Contract Lecturers Appointment Committee (CLAC) that consists of three faculty members appointed by the Chair, along with the Chair or designate.

The PPR exercises described in the Introduction will provide the programs in the Department to effectively address continuity in course curriculum and student assessment.

All faculty, including part-time/contract lecturers, have been advised to update and to submit their CVs for inclusion online. Our annual Human Resources Statistics Report is appended.

3. The Team supports a review of the lower level wood and digital fabrication workshop facilities practices and policies in consideration of staff workload and student access;

While the construction and upgrades to the wood and digital fabrication Shop facilities were completed in the Fall 2015 semester, issues with the dust extraction equipment and the HVAC systems have been ongoing concerns since then. The Shop staff have compensated for these shortcomings by increasing maintenance, which resulted in down time for the Shop, and tolerating inadequate environmental conditions. Repeated requests for addressing these issues have received sporadic responses without solving the core problems. Most recently, another concerted effort to enumerate and to clarify the deficiencies was made to the University's facilities staff and has resulted in an evaluation of the dust extraction equipment in anticipation of directly addressing it's deficiencies. Concurrently, the facilities staff will be addressing a sustainable solution to the HVAC issue.

The KUKA Robotic Arm, robot controller, intelligent operator control unit and affiliated simulation software have yet to be installed though it is anticipated that this will be achieved in the very near future. Shop staff are arranging for the purchase of a portable platform for the arm which will provide the ability to operationalize it in an effective manner.

The material storage room used for the storage of all materials used by students was redesigned and reconstructed by the Shop staff. This was done in conjunction with changes to how students purchased materials for their projects and has proven to be successful in enhancing the display and accessibility of materials, expediting their sale and, with changes to an ancillary fee structure, significantly reducing the waste produced by students when building models.

4. The support staff is working at or beyond capacity;

Technical Support Staff

The requests for new support staff in both the Shop and in IT services, which had been included in the Department's Academic Plan, have been granted. In December of 2016 an additional Lab Technician was hired on a full-time basis for the Shop bringing the complement of Shop staff to three, including a senior Lead Hand and two Lab Technicians.

The Department has recently completed the process of interviewing for a new IT position with the result that hiring is imminent. This will bring the IT support staff to two, including a senior Lead Hand and a Lab Technician.

In addition, the Department has hired a Lab Technician in support of the Building Science Lab. This is a new position, that will be working in close collaboration with the Shop and IT staff, supporting curricular needs as well as faculty's SRC activities. (Scholarly Research and Creative activities.)

Office Support Staff

The Department hired an Administrative Coordinator in September of 2016 to fill a vacant position. This position supervises office staff as well as providing financial and administrative support to the Chair. However, as the successful candidate had previously held the position of Departmental Administrator in our Department this position became vacant. The Department is currently interviewing for the Departmental Administrator position and expects to fill it shortly. Concurrent to the Department augmenting its technical staff as noted above, the office staff hirings are intended to provide the Department with increased capacity to more robustly support is operations and aspirations.

5. Air quality concerns continue to be raised.

Further to a March 2016 meeting with several faculty members and the University's Physical Infrastructure Risk Manager, the HVAC units were tested in the summer of 2016 to determine their levels of performance and to investigate ongoing deficiencies, in particular noise levels. A report of the findings concluded that the units were operating as per design specifications. However, the report also noted that the noise levels were higher than recommended targets for similar spaces, especially in open studio settings, and that this is likely caused by limitations of the mechanical system design. Proposals for addressing the noise issue were provided in the report though any such work has yet to be initiated.

Indoor air quality was also discussed at the meeting and the following recommendations were made:

- That the Department purchase formaldehyde-free MDF and other materials
- That lab and workshop doors are closed at all times and local equipment exhaust units are functioning as needed

While the Shop staff endeavours to source formaldehyde-free materials, a variety of materials, including various plastics, are used for projects. As well, formaldehyde-free materials are not always available in the dimensions required and sell for a premium. The Department will continue to search for appropriate materials and evaluate the materials being used.

To implement the second recommendation would be difficult as there is, by necessity, constant traffic in and out of the Shop.

It must be noted that, while the Department is the sole occupant of the Architecture Building, it has no

jurisdiction over mechanical systems, nor is it involved in contributing to their design and installation. Since its opening in the early 1980's the Architecture Building has undergone numerous electrical and mechanical changes to meet increasingly demanding IT and fabrication needs. However, it is evident that the sum total of such work, in particular the HVAC and dust extraction equipment, does not adequately address environmental quality needs. This is one significant factor behind the Department's desire to undertake a comprehensive study aimed at guiding the refurbishment of the entire building, in conjunction with the construction of additional spaces, to decisively and address the issues presented in this report.

6. Students are concerned about non-departmental access to studio spaces;

While the Department has scheduling control over most spaces in the Architecture Building, University Scheduling alone controls access to room ARC 108, a lecture hall. Upon request, and provided that the Department's needs are not being compromised, spaces under the Department's control may be scheduled for non-departmental users. For example, the RAIC Syllabus studio courses use The Pit, a larger presentation space, for reviews. However, all studio spaces are accessible only by electronic access card programmed for individual studios, and are not accessible to anyone from outside the Department.

The Department's conjecture is that this concern arose from an incident involving a non-Departmental, Ryerson group using the building's greenhouse, which is only accessible through the studio, to germinate seedlings in support of Ryerson's rooftop urban farm. It is likely that students in the studio were not apprised of these activities and were further concerned when some of the greenhouse activity may have spilled out into a portion of the studio. This group has been advised that their access to, and use of the greenhouse is a privilege, and to be mindful of not disrupting students in the studio or using any part of the studio for their activities. The group has been most understanding and cooperative.

3.2- CONDITIONS AND SPC ''NOT-MET''

In the order listed in the Visiting Team Report (VTR) as well as in the Focused Evaluation Report if it applies

A7. Cultural Diversity
Understanding of the diverse needs, values, behavioural norms, and social/spatial patterns that characterize different cultures and individuals, as well as the implications of this diversity on the societal roles and responsibilities of architects.

Team comments:
Not met. The Program is focused on the study of Western thought and tradition. Design Studio 2 (ASC 301) and Seminar in Critical Practice (AR 8102) look at the challenges of housing in Nunavut and urbanity in contemporary cities around the world, an in-depth study of cultural diversity was not observed.

Further to the course outline excerpts contained in last year's report enumerating curricular references to non-western cultures, the curriculum mapping exercise discussed in the Introduction will provide an effective opportunity to identify where, in the curriculum, in-depth study of cultural diversity can most effectively be introduced and reinforced, leading to levels of proficiency. The specific Learning Outcome (LO 10a) addressing cultural diversity reads as follows:

LO 10a Human Cultures and Ecologies

By the end of this program, students should be able to analyze and interpret the diverse needs, values, behavioural norms and social/spatial patterns that characterize different global cultures and individuals, and the broader ecologies that inform the design of buildings; recognize and discuss the implications of this diversity on the discipline of architecture.

B4. Sustainable Design
Ability to apply the principles of sustainable design to produce projects that conserve natural and built resources, provide healthy environments for occupants/users, and reduce the impacts of building construction and operations on future generations.

Team comments:
Not Met. While there are several courses (ASC 200, ASC 302, ASC 402) that provide an understanding with regards to building science principles, there is no evidence that supports a clear directive with regards to the understanding and application of sustainable design within the students own design work. Courses such as ASC 200 Sustainable Practice, and ASC 403, Site Development and Planning lay the groundwork for the application of sustainable design, but do not venture beyond this.

A working group has been formed, comprised of building science and studio faculty, with the goal of developing an understanding of how to better and more consistently incorporate sustainability and issues of environmental impact into studio courses. The aim is to implement initiatives in the Winter 2018 semester.

B5. Accessibility
Ability to design both site and building to accommodate individuals with varying physical and cognitive abilities.

Team comments:
Not Met. Some evidence is found in ASC620 (Integration Studio II), and ASC622 (Documentation), and inconsistently demonstrated in ASC401 (Design Studio II). Evidence is minimal, and inconsistent across student work.

The curriculum mapping exercise discussed in the Introduction will provide an effective opportunity to both review current course content addressing accessibility, and to identify which courses would best introduce, reinforce, and lead to levels of proficiency in the ability to design for accessibility.

A required assignment addressing accessibility was included in ASC 401 Design Studio III in the Winter 2017 semester, an initiative that will be expanded in the coming year.

In an effort to increase consistency across student work the following Learning Outcome (LO 7a) will be used to explicitly embed accessibility requirements into appropriate studio and lecture courses.

LO 7a Regulatory Considerations

By the end of this program, students should be able to interpret and apply building codes, regulations

and standards, for a given building and site including universal design standards and the principles that inform the design and selection of life-safety systems.

Further, arrangements are being made to include presentations within studio courses by members of the *Accessibility for Ontarians with Disabilities Act Alliance*, focussing on the needs of people with disabilities to have full accessibility and universal design incorporated in the design of the built environment. This initiative will be launched in the Fall 2017 semester.

Discussion

The Visiting Team Chair reviewing the 2015-2016 Annual Report commented, in reference to 3.2 CONDITIONS AND SPC "NOT MET" contained therein, as follows: "A generic statement is included for each of the cases of Requirements Not Met. An academic plan is in development and intended to include a review of curricular content. *No rational for such a long-delayed response has been given."* The discussion below is intended to address the delayed response.

Towards the end of 2014, long-standing interpersonal interactions between certain faculty members in the Department led the Dean of the Faculty of Engineering and Architectural Science to task a two-person committee to "…conduct a review of the Department of Architectural Science in order to understand the root causes that were preventing the Department from functioning optimally." At that time as well, the Chair, Colin Ripley, went on a medical leave and Jurij Leshchyshyn was appointed Interim Chair. A review was undertaken between November and December of 2014 involving one-on-one interviews with faculty, staff, and student leaders, with findings and recommendations being presented to the Dean and shared with the Department in February 2015. In addition to a "lack of transparency and agreed to learning goals" and "the need for improved departmental governance", the report identified "the lack of collegiality" and "the overall negativity in the department" as being the major issues contributing to the tensions and conflicts being experienced by faculty and students. Recommendations for addressing the issues noted above were contained in the report, of which several were adopted.

While the Department has experienced a growing sense of stability over the last year and has been able to constructively move ahead with curricular and other matters, there is no doubt that the circumstances described above had a profound impact, for some time, on the faculty's ability to effectively address certain matters in a timely manner.

4- OTHER RELEVANT INFORMATION

LECTURES AND EXHIBITIONS 2016 - 2017

FALL 2016 Lectures

September 29, 2016
Don Schmitt - Diamond Schmitt Architects
Toronto, Canada
Sponsored by the Toronto Society of Architects

October 27, 2016
Pascal Rollet - Lipsky & Rollet

Paris, France
Sponsored by the Consulate General of France

November 3, 2016
Christopher Sharples - SHoP Architects
New York, USA

WINTER 2017 Lectures

January 26, 2017
Marc Ryan - Public Work
Toronto, Canada
*The 2017 Margery Winkler Lecture**

February 9, 2017
Thomas Rau - RAU
Amsterdam, Netherlands
Sponsored by the Consulate General of the Kingdom of the Netherlands
March 9, 2017

Alex Josephson - PARTISANS
Toronto, Canada
Sponsored by the Canadian Institute of Steel Construction

EXHIBITIONS
All exhibition receptions will be held at 6:30 PM in the The Pit (ARC 202), Ryerson University @ 325 Church Street, Toronto, Ontario.

FALL 2016 Exhibitions

12 September – 14 October, 2016
Carrot City Canada
Reception: September 22, 2016

20 October – 18 November, 2016
Detour: National Tourist Routes in Norway
Reception: 20 October, 2016
Sponsored by the Royal Norwegian Embassy

24 November – 16 December, 2016
DAS Awards Exhibition
Awards Night: 24 November, 2016

WINTER 2017 Exhibitions

13 January – 27 January, 2017
Collaborative Exercise
Reception: 13 January, 2017

02 February – 03 March, 2017
Graduate Thesis Work
Reception: 02 February, 2017

16 March – 21 April, 2017
Synagogues in Germany: A Virtual Reconstruction
Reception: 16 March, 2017
Sponsored by the Consul General of the Federal Republic of Germany

28 April – 26 May, 2017
Year End Show
Reception: 28 April, 2017

STUDENT ACHIEVEMENTS

AIAS Ryerson Chapter organized and hosted
Mosaic – AIAS Northeast Quad Conference 2017 in March 2017
The AIAS Quad conference brings together some of the best architecture students to attend a 3-day conference packed with engaging workshops, seminars, and tours of the host city of the year. This year, Ryerson University, the only chapter in Canada, was selected to host the conference in Toronto. With this opportunity, our vision is to inspire and educate students on new perspectives of architecture introduced through diversity and globalization.

ECOstudio is an interdisciplinary group of faculty and students from Ryerson University, the University of Toronto and Seneca College who came together to design a state-of-the-art, net-zero urban home. Upon completion of construction, solarBLOCK will be transported to the Toronto Regional Conservation Authority's Kortright Centre. There it will be part of The Living City Campus, a centre of excellence for urban sustainability.

Race to Zero Student Design Competition

Students from the Department of Architectural Science partnered with U of T to form the **Future Cities Collective** in designing zero-energy homes and were deemed the grand winner. The team also placed first in the Attached Housing category.

The Construction Institute of Canada's National Student Bid Competition

The 4th year Project Management class from Ryerson University won in 3 of the 4 categories and won 2 First and 2 Third prizes, sweeping 4 of the 12 available prizes.

2016 EnviroSCULPT competition by The Greater Toronto Chapter of the Emerging Green Builders CaGBC
First Place: Security Blanket - Jacqueline Galang & Hugo Lim Second Place: Apple of My Eye – Carleen Lawson http://www.cagbctoronto.org/membership/egb/award

Ryerson DAS team, Future Cities Collective, are Grand Winners and First Place for LaneZero, in the Attached Housing Contest at the **2017 Race to Zero Student Design Competition** run by the US DOE.

https://energy.gov/eere/buildings/us-department-energy-race-zero-student-design-competition

DAS students once more excel at **Stratasys Extreme Redesign Competition**
Finalist: Sowquick; Arpy Karjian and Modum; Ryan Fernandes & John Han
http://blog.grabcad.com/blog/2017/06/28/announcing-winners-2017-stratasys-extreme-redesign-challenge/

Sukkhaville 2016
Finalists, **Sukkhaville 2016**, an international design-build competition.
Finalist: Oculus by Shengyu Cai, Marissa Liu, Keegan Toscano, Garbo Zhu
http://www.sukkahville.com/sukkahville-2014-2/sukkahville-2016-finalists/

TimberFever Competition winners - Three teams, each with Ryerson Engineering and Architecture Students, were declared winners of the Timberfever Design-Build Challenge 2016.
https://www.timberfever.com/

1A-4• Human Resources Statistics Report • 2017– 2018

School or Program: Ryerson Department of Architectural Science

Professional Degree Accredited	Total nb of credits / degree	Total nb of terms / degree	Nb of credits / term	Nb of hours / credit	Total nb of hours / degree
• **Master of Architecture degree**	17	6	Varies	36	540 (note 1 & 2)
with a related pre-professional bachelor's degree	60	8	Varies	36	2016
• **Master of Architecture degree**					
without a pre-professional requirement, and consisting of an undergraduate degree plus a minimum of three years of professional studies					
• **Bachelor of Architecture degree**					
minimum of five years of study, except in Quebec, where four years of professional studies follow two years of CEGEP studies					

Faculty Data	Faculty Credentials (highest degree only) Full-time (FT) + Part-Time (PT)													
	Ph.D or D.Arch		Post-Prof Ms		Prof. M.Arch		B.Arch		Other		Licensed architects		Studio teaching	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Regular Faculty	13		2		5		4		3		12		24	
Men	9		1		4		3		1		9		16	
Women	4		1		1		1		2		3		8	
Total FT Equivalent (FTE) Regular Faculty: Number of FT Regular Faculty + a figure equating PT Regular Faculty	27 full time faculty members													
Typical FT teaching load / year	2 studios and 2 courses													
Other Faculty		2				16		5		4		16		21
• Visiting														
• Adjunct • Sessional • Lecturer		2				16		5		4		16		21
• Ph.D Candidate														
Men		1				10		5		4		12		15
Women		1				6						4		6
Total FT Equivalent (FTE) Other Faculty: a figure equating other faculty on the basis of a typical FT teaching load	Equivalent to 12.05 FTE Adjunct Faculty													
Total FTE Regular + Other Faculty	Equivalent to 39 FTE Faculty													
Total Regular and Other Faculty who are licensed architects											28			
Total Regular and Other Faculty teaching in studio													45	
Nb of pre-professional studios taught by all Faculty for the year													64 studio sections	
Nb of Masters studios taught by all Faculty for the year													6 studio sections	

Student Data	Pre-professional degree				Master of Architecture degree or Bachelor of Architecture degree			
	Fall	Winter	Summer	Mean/yr	Fall	Winter	Summer	Mean/yr
Full-Time Students	503	502	187	397	43	38	36	40
Men (optional)	198	199	67	155	32	28	28	30
Women (optional)	302	300	120	241	11	10	8	10
Part-Time Students	0	0	0	0	0	0	0	0
Men (optional)								
Women (optional)								
Total Full-Time Equivalent (FTE) Students [1]	503	502	187	397	43	38	36	40
FTE Foreign Students (optional)								
Students in Design Studio	435	434	0	290	15	16	15	15
Studio Ratio (Students in Design Studios / Nb studios taught for a year)	64 faculty for 869 students = 13.57:1				5.5 faculty for 46 students = 8.5:1			
	Fall	**Winter**	**Summer**	**Total/yr**	**Fall**	**Winter**	**Summer**	**Total/yr**
Number of applicants for a given term and total for a year	1274[1]			1274	238	1	0	239
Number of entering students for a given term and total for a year	129	0	0	1274	15	1	0	16
With advanced standing (optional)								
Total Degrees Awarded-Expected for a given term and total for a year	10[2]	95/100[3]		105	20	6	1	27
Men (optional)	4	50/50		50	8	5		13
Women (optional)	6	45/50		45	12	1	1	14
Graduation Rate (%)		95%						

[1]: Total number of applicants for the fall 2017 first-year cohort

[2]: Total expected degrees is not calculated for fall or summer graduation terms

[3]: Number of students that graduated/number of students with anticipated graduation term of winter 2018

Studio targets for CACB not met SPCs

Studio	Accessibility	Sustainable design	Cultural diversity
ASC101 - Communications	Students consider the design of an accessibility ramp		
ASC201 – Program and site	Studio should collaboration with disability studies department to raise awareness	Students should explain how orientation, siting, form, fenestration, materials, landscape impact the passive design strategies of their design	
ASC301 – Intention and expression		Students should consider the sustainability impacts of building form, materiality, light quality, spatial characteristics, envelope systems. How does the tectonic expression relate to sustainability targets.	Choose a Toronto community project that engages with diverse community issues.
ASC401 – Technical and regulatory issues	Students should explore the regulatory requirements related to accessibility for the studio project and identify key issues to be addressed in their design.	Students should show: how their project addresses urban sustainable contexts, how building code issues impact building energy use, suitable envelope approach for meeting energy targets.	
ASC520 – Integration: complex building feasibility	This studio should have an appropriate project for students to consider accessibility in the conceptualisation of the design	Students should set clear sustainability targets for their project. They should be able to consider ecological systems, regulatory requirements, urban sustainable design strategies, and potential for renewable energy generation.	
ASC620 – Complex building design development	Students should consider how their building expresses itself to a person with accessibility issues	Students should consider the efficient use of resources, including energy strategies, renewable energy potential, integration of systems, envelope strategies, materials selection, and	

		explain how the technical and design features of the building address the sustainability targets of the building	
AR8101-Critical Practice		Students should address global sustainability issues and Integration of SD with social/cultural issues	Projects are expected to address global issues related to diversity
AR8103 – Collaborative practice		Students are expected to integrate sustainable strategies with local contexts as appropriate for the project	
ASC205/405/605/805-Collaborative exercise			Choose a Toronto community issue that engages with diversity.

Library Report, Architecture (M.Arch.)
Graduate Program Review, November 2017

Prepared by Sonny Banerjee, Subject Librarian

Approved by Carol Shepstone, Chief Librarian

Contents

Summary Statement and Recommendations

The Ryerson University Library and Archives remains committed to supporting all programs of study at Ryerson and is well-positioned to continue to support the graduate program in Architecture. Despite some financial challenges and changes in the world of academic publishing, the Library continues to support the Program through the acquisition of relevant databases and indexing tools, the acquisition of monographs in both print and electronic formats, and the delivery of services such as in-class instruction to students, individual drop-by or scheduled research assistance, interlibrary loan services, and ongoing communication with faculty.

Graduate students have excellent access to electronic databases through subscriptions to aggregators and publishers' collections, and participation in national and provincial resource sharing consortia. Avery Index to Architectural Periodicals, Art Full Text, JSTOR, DAAI: Design and Applied Arts Index, GreenFILE are a few examples of these databases. "Search Everything" (our default discovery service introduced in 2011) provides students with an efficient way to search the majority of our resources in ways consistent with Google and other one-box interfaces. This interface has increased access to the wide scope and depth of our licensed, purchased, and free online content.

Graduate Students and faculty benefit from specialized in-class and one-on-one instruction in the use of Library's resources. The Library and subject librarian welcomes the promotion of instruction, scholarly research assistance, and Interlibrary Loan Services to faculty and researchers. Incoming Architectural 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.

When evaluated alongside peer institutions, the Library has a strong journal collection as compared to our peer institutions and offers an essential Interlibrary Loan (ILL) delivery service which provides access to resources that Ryerson does not own at no additional cost to faculty and students. Demand driven acquisitions process for print and eBooks allows for quick purchase of monographs outside of our current collection where needed. Conference proceedings continue to pose a challenge to acquisitions (cost, availability, etc.) and Interlibrary Loan services is a key resource in helping researchers access conference publications.

While our current collection and services are keeping up with the need of the program, budget cuts and the monetary pressure imposed upon our budget by the US to Canadian dollar exchange rate and inflation, are putting resources at risk. Sustained financial commitment from

the University is necessary to maintain the current quality of Library resources and services. According to the most recent available data from the Canadian Association of Research Libraries (CARL), the Library receives 2.99% of the University budget annually, a ranking that places it at the lowest among its peers provincially. (See Table 1 and Appendix A.) According to higher education benchmarks, 4% of a University's budget dedicated to Library operations is considered to be a minimum healthy level of support for academic libraries. Incremental increases in the Library's share of the University's operating budget is recommended to address inflationary costs and ongoing program needs for resources and collections.

Table 1 - Budget Comparison (Ryerson vs. Provincial Average)

Budget Comparison, 2015/2016	**Total Library expenditure**	**% of University budget**	**% of library budget spent on acquisitions**
Ryerson University	$16,167,362	2.99%	32.38%
Provincial Average	$27,620,232	4.22%	41.96%
Provincial Average excluding Toronto (highest % university budget) and Ryerson (lowest %)	$21,753,278	4.15%	45.57%
Provincial Median	$22,264,114	4.03%	43.28%

Source: CARL Statistics 2015/16

Despite budgetary pressures on the Library as a whole, these do not present any pointed threats to the Architectural Science collection. Our monograph budget has been supplemented with healthy infusions of one-time-only funds from the university administration on an annual basis.

Our approach to monograph acquisitions is intended to be a systematic and stable mode of acquisition to ensure we receive the latest and most relevant in architecture scholarship. The collection continues to be dynamic; new content is added through Library purchase, faculty requests, and selected donations. The collection far exceeds the minimum (5000+ items in call number range "NA") Canadian Architectural Certification Board (CACB) accreditation standards, which currently stands at 10000+ monographs total [See Table 2].

Table 2 - 2017 Items by LC Call Number

LC call no	2017 items
BH - Aesthetics	400
HD1-100 - Management	14332
N - Visual arts	5093
NA - Architecture	**12559**
NC - Illustration, Drawing	2125
NK - Decorative and Applied Arts	5179
SB - Landscape Architecture	2827
TA - Civil Engineering	12680
TH - Building Construction	4195
TJ - Energy (includes solar)	5445
Totals	**64835**

Infrastructure: Contributing to Student Success

The Ryerson University Library and Archives is accessible 24 hours a day and 7 days a week at *www.library.ryerson.ca*. Alternately, students have access to the Library directly via the *My Library* tab that is universal to all D2L course management logins. For off-campus access to licensed resources the Library has a single sign-on system via the my.ryerson.ca login.

The Ronald D. Besse Information and Learning Commons, located on the main floor, provides access to a wide range of information resources with advanced technology and provides the expertise necessary to allow students and faculty to successfully integrate information with technology in their academic pursuits.

Selected Learning spaces in the Ronald D. Besse Learning Commons include:

- Technology Support (in collaboration with Computing and Communication Services)
- Reference/Research Support (Reference service available at the Research Help Desk and is also provided through the live chat service *Ask a Librarian* (both open 7 days a week.)
- The Geospatial Map and Data Centre

Ryerson's *Student Learning Centre* (SLC) is connected to the existing Library and is home to a wide range of academic support services that foster learning success. The SLC provides the entire Ryerson community with a facility in which to study and collaborate. The facility accommodates 2,300 students and provides space for individual and group study. 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's Digital Media Experience Lab is an area for experiential learning where students in any program can learn and development their digital skill set. Students can take workshops and book appointments to learn new software and hardware to supplement their coursework and research.

The Student Learning Support department in the SLC is comprised of a group of services and programs aimed at helping students engage more effectively in their academic studies including academic accommodation support, English language support, math support, study skills and transition support, writing support and the Test Centre. The Library works closely with the SLS in a number of areas, particularly the Writing Centre, in collaborating on projects and events including the production of a series of online research and writing tutorials, writing and research clinics, and the Long Night Against Procrastination, an all-night event held at universities internationally that provides support for students in all areas, including research help.

The Library welcomes user feedback and endeavours to respond to the stated needs of the community via several channels including an online suggestion box and live Twitter feeds, and a Facebook page. It also provides real time information on the availability of computers, laptops and study rooms.

Collections Support for Teaching and Learning

The complete collection development policy, which outlines our mission, values, collection development process, and library materials, can be found at:
http://library.ryerson.ca/info/policies/colldev/

An approval plan is utilized to ensure the latest and most relevant material is available in a timely manner. Our current plan prefers electronic publications whenever possible, and all relevant print and eBooks are automatically purchased. Recently, the Library introduced a demand-driven acquisitions model for monograph acquisitions. Under this plan, available electronic publications identified as being of academic interest to our community are automatically added into our catalogue and discovery service (*Search Everything*). A purchase is triggered when a prescribed level of use has been incurred for the title. Under this purchasing

method, many more titles can be made available to our faculty and students without the upfront investment in monographs. The demand-driven acquisitions model is a useful adjunct to the established practice of faculty and student purchase recommendations submitted to the architecture subject librarian.

Discovery of architecture articles is best accomplished with a variety of library databases, with the premier resources being Avery Index to Architectural Periodicals, Art Full Text and JSTOR. Some key publishers in our electronic journal collection are Springer, Wiley, and Elsevier (made available via our participation in consortia).

In circumstances where the Library does not have a desired item available, or we cannot purchase the title, we endeavor to provide access to materials via our Interlibrary Loan Service [See Table 3]. Suggestions for purchases from faculty and students are welcomed and we strive to accommodate these within reason. Where possible, many ILL requests for monographs are being purchased for our collection.

Table 3 - Interlibrary Loan Statistics (Architectural Science), June 2017

	2016/2017	2015/2016	2014/2015	2013/2014
Monographs	52	13	37	35
Articles	75	129	80	73

The Electronic Resources and Serials Review Committee monitors and manages all electronic acquisition activity, with a preference to purchase content in digital format. Ryerson is a member of two major consortia: the Canadian Research Knowledge Network (CRKN) and the Ontario Council of University Libraries (OCUL). The combined purchasing power of these consortia allows us to negotiate the licenses for content from most major academic publishers including many architectural science serials.

A larger list of research databases available to the Ryerson community is available here: http://library.ryerson.ca/articles/indexes_title/. (Please see the Appendix B: Highlighted Electronic Resources Supporting Architectural Science for a list of select databases supporting the program under review).

Table 4 presents Library expenditures in support of architectural science for the past four fiscal years. The following figures do not fully capture the enormous cost of maintaining our suite of electronic resources. The table contains only those costs directly related to architectural

science. Many electronic resources used by architecture students are also allocated to general Library expenditures. Our recommendation for the entire Library budget as 4% of the university budget will help us offset increasing cost of existing resources and continue to improve and expand the collection for all programs.

Table 4 - Library Expenditure in Architectural Science

Fiscal year 16/17				
LC range	Description	Books	Electronic Resources	Subscriptions
HD-HD100	Project Management	$20,570.03		$4,833.43
HD4801-HD8943	Minimal Housing	$8,228.53	$1,320.80	$2,457.71
NA-NA9428	Architecture	$ 21,187.19	$ 4,300.22	$ 10,661.10
TH-TH9999.999	Building Construction	$ 4,565.10		$ 1,325.50
Totals		**$ 54,550.85**	**$ 5,621.02**	**$ 19,277.74**
Fiscal year 15/16				
LC range	Description	Books	Electronic Resources	Subscriptions
HD-HD100	Project Management	$29,238.67		$4,674.37
HD4801-HD8943	Housing	$11,647.32	$1,270.00	$2,403.62
NA-NA9428	Architecture	$ 21,340.75	$ 4,094.48	$ 9,355.06

TH-TH9999.999	Building Construction	$ 7,153.72		$ 1,649.93
Totals		**$ 69,380.46**	**$ 5,364.48**	**$ 18,082.98**
Fiscal Year 12/13				
LC range	**Description**	**Books**	**Electronic Resources**	**Subscriptions**
HD-HD100	Project Management	$ 22,802.40		$ 3,975.45
HD4801-HD8943	Housing	$ 8,572.35	$ 1,482.00	$ 3,145.81
NA-NA9428	Architecture	$ 9,068.88	$ 3,077.10	$ 7,455.84
TH-TH9999.999	Building Construction	$ 3,230.31		$ 1,456.19
Totals		**$ 43,673.94**	**$ 4,559.10**	**$ 16,033.29**
Fiscal Year 11/12				
LC range	**Description**	**Books**	**Electronic Resources**	**Subscriptions**
HD-HD100	Project Management	$ 23,587.45	$ 3,574.85	$ 3,666.20
HD4801-HD8943	Housing	$ 9,624.21	$ 1,464.00	$ 2,815.20
NA-NA9428	Architecture	$ 13,337.07	$ 2,952.56	$ 9,331.33
TH-TH9999.999	Building Construction	$ 6,438.75	$ -	$ 1,460.06

Totals		**$ 52,987.48**	**$ 7,991.41**	**$ 17,272.79**

For a bigger picture of the total budget including consortial purchases (See table 5). Please see http://library.ryerson.ca/info/collections/budget/ for current and historical budget expenditures.

Table 5 - Library Expenditure on Collections, 2009 - 2017

Ryerson Library's Expenditure on Collections, 2009/2010 to 2016/2017				
Fiscal Year	**Monographs (Print & ebooks)**	**Serials (Print Journals and eJournals)**	**Electronic Resources (Databases)**	**Total**
2016/2017	$920,130.00	$379,239.00	$3,794,859.00	$5,094,228.00
2015/2016	$1,009,060.00	$471,503.00	$3,708,034.00	$5,188,597.00
2014/2015	$849,859.74	$467,211.37	$3,261,958.28	$4,579,029.39
2013/2014	$718,356.61	$264,098.52	$2,710,178.44	$3,692,633.57
2012/2013	$526,221.65	$246,321.45	$3,362,703.54	$4,135,246.64
2011/2012	$580,974.30	$274,534.90	$2,933,539.00	$3,789,048.20
2010/2011	$693,308.23	$298,193.94	$2,812,880.36	$3,804,382.53
2009/2010	$973,087.80	$295,780.30	$2,448,686.10	$3,717,554.20

In Table 6 the Library's academic and scholarly print and online periodicals relevant to the Architectural Science are compared by subject area to those of a peer group of academic libraries with an FTE range of 10,000-19,999. Ulrich's Serials Analysis System is the benchmarking and reporting tool used in collection analysis.

Table 6 - Ulrich's Peer Comparison against Ryerson Periodical Collection, November 2017

Ulrich's Subject Areas (Academic and Scholarly Print and Online Full-text Serials)	Ryerson Library Count	Ryerson Library Titles Matching Peer Group	All Peer Group Titles for this Subject	Ryerson Matching Titles as a % of Peer Group	Titles Unique to Ryerson Library	Peer Group Titles that Ryerson Does Not Hold
ARCHITECTURE	329	175	247	70.9%	154	72
BUILDING AND CONSTRUCTION	331	230	298	77.2%	101	68

Instructional Support for Teaching and Learning

Student success and the fostering of essential information literacy and research skills are the drivers behind the Library's extensive program of workshops and tutorials. Programs available to graduate students in Architectural Science includes the following:

- Faculty-initiated classes that focus on research skill development for assignments.
- Research skills workshops for students to attend at their convenience.
- Workshops currently include: "Navigating the Library's Electronic Resources", "Cite-it-Right" and "Advanced Research Methods." (New sessions are added each fall and winter term.)
- Online tutorials and research guides that address the needs of students studying at a distance. New tutorials are added frequently. A current list can be viewed at: ryerson.ca/library/tutorials/index.html
- A Research Help Desk open seven days a week for students requiring immediate assistance.
- A research appointment service where students may book an appointment online with a member of the reference staff or their subject librarian for more comprehensive help with their papers.

A list of current workshops can be found at: http://library.ryerson.ca/info/whats-new/workshops-and-events

Library Research Seminars & Orientation to the Library:

The liaison librarian supporting Architectural Science provides instruction related to library research. Custom orientation or workshops are also available by request (both in-class/studio and in the Library). Each fall term graduate students receive orientations to the Library and resources available. This approach has been successful in past years; however, it is recommended that faculty continue to work with the library liaison to improve student engagement with the Library.

One-to-One Research Help:

The book a librarian service enables graduate students to schedule an appointment with their liaison librarian for in-depth, one-on-one assistance. Students and researchers can also make use of our research help desk and virtual chat. More details can be located at: http://library.ryerson.ca/guides/.

One-stop Course Readings Service

One-stop Course Readings Service ensures that high-demand course readings are available to the maximum number of students over the duration of the courses, while also ensuring copyright-compliance and cost-containment for students through the use of existing resources, where possible.

Ryerson Library and Archive's Digital Repository

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, dissertations, and major research papers produced by graduate students, faculty members, and researchers in Architectural Science.

Library Accessibility Services

The Ryerson University Library and Archives is committed to providing equal access to services and collections to all students, faculty and staff of the University and employs an Accessibility Services Librarian to coordinate resources and services. These services include:

- **Research Help Services:** The Accessibility Services Librarian is available for in-depth research assistance by appointment.
- **Accessible Formats Services:** This service is intended for students with a perceptual disability. The following items are available in accessible format: Text books and class readings, library books and articles (upon request), classroom handouts, online readings in D2L and web pages that are inaccessible with screen readers, etc. An online OCR tool is also available in which inaccessible documents can be uploaded to the tool to produce documents with machine-readable or selectable text.
- **Media Captioning Services:** Provides closed captions to videos.
- **Retrieval of Items, Book Renewals, Extended Loans and Photocopying.**
- **Adaptive Software:** The following software is available on all computers in the Library and in private study rooms in the Student Learning Centre (SLC): *JAWS, Kurzweil 3000, Read & Write Gold, ZoomText Reader/Magnifier, Inspiration, Kurzweil 1000,* and *Dragon Naturally Speaking* (SLC only.)

For more info. on Library Accessibility Services please visit
library.ryerson.ca/services/disabilities/

Indigenous Knowledge and Culture

The Library has an important role to advance to the University's response to the Truth and Reconciliation Commission *Calls to Action*. The Library is responding to these and working with the Canadian Federation of Library Associations' *CFLA Truth and Reconciliation Committee Report Recommendations*, https://librarianship.ca/news/cfla-trc-report/ Together these outline a pathways forward for respecting Indigenous culture and increasing access to traditional Indigenous knowledge. The Library is committed to enhancing experiences and opportunities for Indigenous students and faculty on campus and to decolonizing library and archival practices.

Appendix A: Library Learning Environment (Inputs/Outcomes) shows the latest data on the overall Ryerson University Library and Archives performance and other measures from the Canadian Association of Research Libraries (CARL), The Canadian Association of University Business Officers (CAUBO) and Common University Data Ontario (CUDO). Note that the data varies by year depending on the organization providing it.

Collections Snapshot
Source: CARL statistics – 2015-2016 data
Local Collections

Titles held – all formats	1,047,432

Expenditures

One time only expenditure	$1,486,756.00
Base expenditure	$3,721,044.00
Collections support	$26,968.00
Total	$5,234,768.00

Teaching and Learning Snapshot

# professional librarians	28
# class sessions	322
# students participating in total	12,971
# courses with e-reserve readings	1208
# support staff	59

External Rankings
Source: Maclean's University Rankings - 2018

Libraries	Rank	Measure
% library budget spend on holdings	12 / 15	33.8%
% of university budget spent on library	*14 / 15	3.1 %

*tie

Source: CARL Statistics 15/16 (NB: most recent available)
University expenditure on library support

	Total library Expenditure	% university budget
Ryerson	$16,167,362	2.99%
Provincial average	$27,620,232	4.22%

Library Services and Spaces

Spaces for learning and research

# Study spaces	3,850
# Accessible workstations	12
# Study room capacity	830
# Graduate study spaces	66
Writing Support	√
Math Assistance Centre	√
Archives & Special Collections	√
Geospatial Map and Data Centre	√
Digital Media Experience	√

Enrolment FTE Activity (all counts per FTE)
Source: CARL – 2015/2016 data (NB: *most recent available*)
FTE as reported to CARL: 32,579

Ratio students / librarian	1,163.5
Ratio students / library personnel	332.4
Total Library budget/FTE	$16,167,362 / $496.25
Total acquisitions budget/FTE	$5,234,768 / $160.68
Total staffing budget/FTE	$6,939,818 / $213.02
# study spaces/FTE *	3850 / .11

Outputs

# participants in library instruction/FTE	12,971/ .40
# reserve loans/FTE	83,223 / 2.6
# interlibrary loans borrowing/FTE	4,832 / .15
# interlibrary loan lending/FTE	3,047 / .1
# books circulated annually/FTE	70, 968 / 2.2
# e-serials titles	95, 795

Technology Services

Scanners	7
Photocopiers	8
Computers / laptops for loan	465
Viewing / borrowing equipment	Laptops, headphones, calculators, emerging technology equipment, closed captioning upon request
Specialized software available in Geospatial Map and Data Centre	ArcGIS (ESRI), ArcMap, AutoDesk, MapInfo Professional 11.5, SPSS, Beyond 20/20

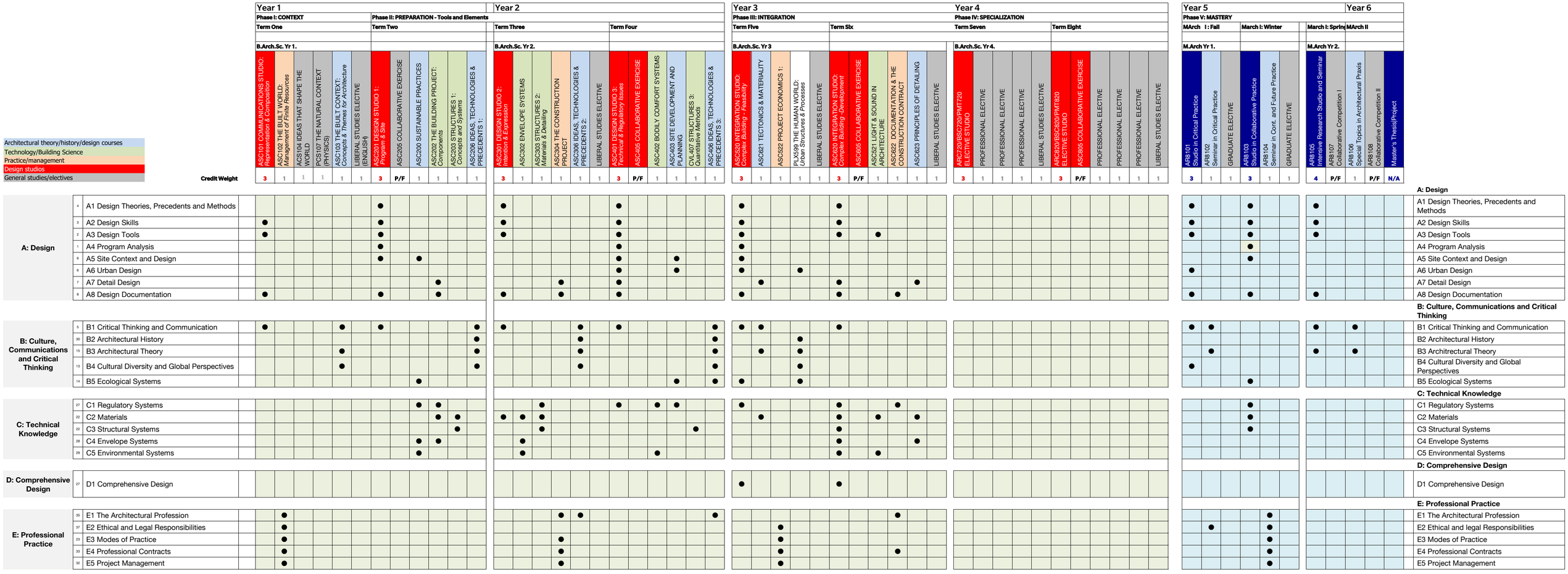
Convenient & Accessible Services

Hours of service	7am-1am (M-F); 10am-1am (Sat/Sun)
Wireless	√
24/7 access via proxy	√
Single sign on	√
Mobile Web APPs	√
Research Help (including virtual)	√
Online communication via Chat, Blogs, facebook, twitter	
E-Reserves	√
Self-check-out	√
AODA compliant	√
Integrated one-card	√

Appendix B: Highlighted Electronic Resources Supporting Architectural Science

Avery Index to Architectural Periodicals	The Avery Index to Architectural Periodicals indexes periodicals published worldwide on archeology, city planning, interior design, and historic preservation, as well as architecture. Coverage reaches from the 1930s (with selective coverage dating back to the 1860s) to the present.
BASIC's Architecture Ebooks (De Gruyter Birkhauser eBooks)	De Gruyter Basics Online publisher consists of 32 electronic books on the subjects of architectural design, presentation, construction, building technology, professional practice, landscape architecture and urbanism.
Art Full Text	Art Full Text provides comprehensive abstracting and indexing for periodicals published throughout the world. Full-text coverage for selected periodicals is also included.
ARTstor	ARTstor includes images covering artistic traditions across many times and cultures and embraces architecture, painting, sculpture, photography, decorative arts, and design as well as many other forms of visual culture. The Image Gallery also embraces an Art History Survey Collection of images selected on the basis of 13 standard art history survey texts.
Building Green	BuildingGreen.com includes articles, news, reviews, product listings, and case studies and is organized into a hierarchy of topics related to green design and construction. These topics include Policy and Context, Process, Land Use and Community, Site and Water, Energy, Resources and Materials, Indoor Environmental Quality. The database includes Environmental Building News, a monthly newsletter published since 1992 featuring comprehensive, practical information on a range of topics related to sustainable design in the built environment.

JSTOR	JSTOR has created a full text digital archive of core scholarly journals with complete back runs of many titles. As part of JSTOR's agreement with publishers, current issues (usually the last 3 – 5 years) are not digitized by JSTOR and may be obtained elsewhere. The Ryerson University Library has access to the entire content of JSTOR's archival journal collections.
Material ConneXion	Material ConneXion offers a knowledge base with an eclectic collection of innovative materials and processes. It is a resource for all disciplines of design development, including: Architecture, Interior Design, Packaging Design, Retail Design, Industrial Design, Fashion, Apparel & Footwear, Exhibition Design, Textile Design, Landscape Architecture, and Transportation Design and includes the largest selection of sustainable materials and the only Cradle to Cradle materials library in the world: Polymers, Ceramics, Glass, Metals, Cement-based materials, Natural Materials, Carbon-based materials, and Processes.
OnArchitecture	OnArchitecture is an online audiovisual service providing a synthetic, deep and detailed panorama of the world's main authors, works, experiences and problematics related to the field of architecture. OnArchitecture's collection features original videos, such as interviews, buildings and installations, all of this enriched with a selection of complementary material -documents and audiovisuals- about the main authors and figures of contemporary architecture.
TechStreet	Access to select ASHRAE, CSA and ISO Standards. Use the platform to search for standards outside of our collection and make request for purchase with your subject librarian.


Architectural theory/history/design courses
Technology/Building Science
Practice/management
Design studios
General studies/electives
Year 1
Year 2
Year 3
Year 4
Year 5
Year 6
Phase I: CONTEXT
Phase II: PREPARATION - Tools and Elements
Phase III: INTEGRATION
Phase IV: SPECIALIZATION
Phase V: MASTERY
Term One
Term Two
Term Three
Term Four
Term Five
Term Six
Term Seven
Term Eight
MArch I : Fall
March I: Winter
March I: Spring
MArch II
B.Arch.Sc. Yr 1.
B.Arch.Sc. Yr 2.
B.Arch.Sc. Yr 3
B.Arch.Sc. Yr 4.
M.Arch Yr 1.
M.Arch Yr 2.
ASC101 COMMUNICATIONS STUDIO: Representation & Composition
ASC102 THE BUILT WORLD: Management of Finite Resources
ACS104 IDEAS THAT SHAPE THE WORLD
PCS107 THE NATURAL CONTEXT (PHYSICS)
ASC103 THE BUILT CONTEXT: Concepts & Themes for Architecture
LIBERAL STUDIES ELECTIVE (ENGLISH)
ASC201 DESIGN STUDIO 1: Program & Site
ASC205 COLLABORATIVE EXERCISE
ASC200 SUSTAINABLE PRACTICES
ASC202 THE BUILDING PROJECT: Components
ASC203 STRUCTURES 1: Concepts and Systems
ASC206 IDEAS, TECHNOLOGIES & PRECEDENTS 1:
ASC201 DESIGN STUDIO 2: Intention & Expression
ASC302 ENVELOPE SYSTEMS
ASC303 STRUCTURES 2: Materials & Detailing
ASC304 THE CONSTRUCTION PROJECT
ASC306 IDEAS, TECHNOLOGIES & PRECEDENTS 2:
LIBERAL STUDIES ELECTIVE
ASC401 DESIGN STUDIO 3: Technical & Regulatory Issues
ASC405 COLLABORATIVE EXERCISE
ASC402 BODILY COMFORT SYSTEMS
ASC403 SITE DEVELOPMENT AND PLANNING
CVL407 STRUCTURES 3: Quantitative Methods
ASC406 IDEAS, TECHNOLOGIES & PRECEDENTS 3:
ASC520 INTEGRATION STUDIO: Complex Building - Feasibility
ASC621 TECTONICS & MATERIALITY
ASC522 PROJECT ECONOMICS 1:
PLX599 THE HUMAN WORLD: Urban Structures & Processes
LIBERAL STUDIES ELECTIVE
ASC620 INTEGRATION STUDIO: Complex Building - Development
ASC605 COLLABORATIVE EXERCISE
ASC521 LIGHT & SOUND IN ARCHITECTURE
ASC622 DOCUMENTATION & THE CONSTRUCTION CONTRACT
ASC623 PRINCIPLES OF DETAILING
LIBERAL STUDIES ELECTIVE
ARC720/BSC720/PMT720 ELECTIVE STUDIO
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
LIBERAL STUDIES ELECTIVE
ARC820/BSC820/PMT820 ELECTIVE STUDIO
ASC805 COLLABORATIVE EXERCISE
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
PROFESSIONAL ELECTIVE
LIBERAL STUDIES ELECTIVE
AR8101 Studio in Critical Practice
AR8102 Seminar in Critical Practice
GRADUATE ELECTIVE
AR8103 Studio in Collaborative Practice
AR8104 Seminar in Cont. and Future Practice
GRADUATE ELECTIVE
AR8105 Intensive Research Studio and Seminar
AR8107 Collaborative Competition I
AR8106 Special Topics in Architectural Praxis
AR8109 Collaborative Competition II
Master's Thesis|Project
Credit Weight
A: Design
A1 Design Theories, Precedents and Methods
A2 Design Skills
A3 Design Tools
A4 Program Analysis
A5 Site Context and Design
A6 Urban Design
A7 Detail Design
A8 Design Documentation
B: Culture, Communications and Critical Thinking
B1 Critical Thinking and Communication
B2 Architectural History
B3 Architrectural Theory
B4 Cultural Diversity and Global Perspectives
B5 Ecological Systems
C: Technical Knowledge
C1 Regulatory Systems
C2 Materials
C3 Structural Systems
C4 Envelope Systems
C5 Environmental Systems
D: Comprehensive Design
D1 Comprehensive Design
E: Professional Practice
E1 The Architectural Profession
E2 Ethical and legal Responsibilities
E3 Modes of Practice
E4 Professional Contracts
E5 Project Management