

ARCHITECTURE PROGRAM REPORT

UNIVERSITY OF WATERLOO SCHOOL OF ARCHITECTURE
FACULTY OF ENGINEERING

V1

VOLUME 1 of II

PRESENTED TO THE
CANADIAN ARCHITECTURAL CERTIFICATION BOARD

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This report has been prepared by the administration of the University of Waterloo School of Architecture for review by the Canadian Architectural Certification Board to initiate the process of accreditation by the Board of the architecture degree programme at the University of Waterloo during 2016

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*ON DISPLAY DURING ACCREDITATION VISIT ONLY

1 INTRODUCTION

TO THE PROGRAM



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1.1 PROGRAM IDENTITY AND MISSION

The following mission statement was adopted in 1997. It continues to underpin program direction and development at the University of Waterloo School of Architecture:

The University of Waterloo School of Architecture is dedicated to providing its students an excellent education which builds on the traditions of a profession rooted in the liberal arts and the art of construction, balances elements of theory and practice, incorporates new and emerging areas of influence and engages in discourse and design activity at a local, national and international level. The school is committed to maintain a fully supportive educational environment in which teaching, design and research form a common project in which faculty, staff and students act as much as possible as collaborators.

This statement predates the relocation of the School of Architecture to Cambridge, in its new 'stand-alone' situation in the heart of a city, 30km from the main campus. Since its move in 2004, the identity of Waterloo Architecture has also been characterized by the way it interacts with the community of Cambridge, by how it preserves its connections to the University of Waterloo and the Faculty of Engineering, and how it continues to engage international networks through research and co-operative education.

The relation between the school and the larger community is one of the core characteristics of the program. Other fundamental elements of the program are the co-operative education, the emphasis on cultural history and the Rome program, and the safeguarding of a nurturing school in which faculty, students and staff are all valued as equals in the project of architectural education.

Community: Cambridge, Engineering Faculty, Waterloo and beyond

The School's identity derives from the fact that it is a community in which all members regard each other as equals. It is a community that values its collective character and resources, but regards its main purpose to be the pursuit and development of individual goals and excellence. As a professional program,

the school makes design the focus of activity and commitment of its students. The school is absolutely part of the architectural profession in Ontario, Canada and the world. It sees itself as a global academy with roots firmly planted in a community. Indeed, the main aim of Waterloo Architecture is to act and to lead, not to set itself apart as an educational institution somehow separate from the rest of the world, but to be a vivid and motive force of ideas and actions that engage the world outside.

It is clear that the move to Cambridge has impacted the school. For one, it provided a new platform to engage both university and community (from collaborations with the university in the redefinition of its image and identity, involvement in the University's Water Institute as well as Civil Engineering. The relationship to the city of Cambridge and the region of Waterloo is also remarkable. Waterloo Architecture is the only school in Canada located outside a traditional metropolitan area. The wonderful complexity and separate identities of the three cities in Waterloo region are somehow at the root of the energy and innovation that resides here. The city of Cambridge invited the school to move to the banks of the Grand River and, hand in hand, the city and the school gained the support from governments and the community. The collaboration was based on shared goals and values and a common belief that the school could contribute to the quality of life of the citizens of Cambridge, while the city could assist by creating a unique facility whose main purpose was the education of architects, but which would also be a catalyst for the revival of the urban core and a force in the economic and cultural development of the city. This is a precious relationship that we are continuing to develop. Current collaborations involve, for example, an ongoing partnership with Design at Riverside Gallery, one of only two public galleries in Canada dedicated exclusively to architecture and design. Paid by the city, it is staffed and operated by IdeaExchange, and a curatorial committee made up of representatives of the school and IdeaExchange oversees the operation and sets the exhibition schedule. Both institutions have been served and elevated through the partnership.

There are many more points of contact and collaboration between the school and the city of Cambridge. The student presence in the downtown core (the majority of our students live within a 10 or 15-minute walk of the school) has changed the perception of the streets and spaces. The school was directly

involved in the new City Hall and Dunfield theatre. The gallery and café in the school building create a bridge to the community. The School attracts thousands of visitors each year: they come to see the work, use the library, see the projects on display or to attend the public lectures. Student projects hypothetically or actually transform public spaces. The students have produced projects, studies, design guidelines, heritage inventories, and, even a building in the Cambridge Galt core (Grand House, the ultra-green student residence hanging off the bluff at the entrance to the Galt core).

Students, faculty and staff serve on City committees and have assisted with the preparation of the Heritage master plan and the Arts and Culture master plan. We continue to nurture this relation between the school and the community. The students now have a space on main street, BRIDGE Centre for Architecture and Design, where they host events ranging from students' exhibitions to conferences or symposia. The School likewise hosts community events. Moreover, the presence of the school and the participation of students, faculty and staff in the cultural life of the city brings forth the importance of design in creating high-quality urban environments. Together with the local communities and government, with high-tech industry groups like Communtech or by exploring areas of collaborations with other university groups such as VELOCITY, the School is part of the city and plays a lead role as the very opposite of an 'ivory tower'.

The 'identity' of Waterloo Architecture has become a model for collaboration between city and university across the province and the country. Projects in Kitchener, Waterloo, Stratford, St. Catharines, Sudbury, Saskatoon have relocated professional schools, research centres and creative art departments to urban cores in mid-size cities as part of program of downtown revitalization. The role of design in all this is crucial. Waterloo Architecture directly participated in all these projects. Two of the projects involved the creation of new Schools of Architecture.

These achievements must be considered together with some of the challenges associated with the School's location in Cambridge, away from main campus. While new collaborations can be established locally, the physical distance between Cambridge and Waterloo makes it more difficult for the odd seren-

dipitous encounters, or even for the students who would want to join a student event on campus. These are aspects of the School's location in Cambridge that are very much on our mind as we work towards the creation of the new program in Design and the implementation of the Architectural Engineering Degree, as both these projects will bring more students, staff and faculty to the Cambridge location.

Cooperative education and the relation to the profession

Thanks to the cooperative system, the school offers a program in which there is no barrier between education and practice. Students admitted to the program are specifically welcomed to the profession. The first two years of instruction builds a foundation of conceptual and practical skills and judgment leading up to the first coop work term mid-way through second year. The regular alternation of school and work terms throughout the rest of the degree establishes the Waterloo undergraduate as a student/practitioner. Last year, nearly 45% of the coop work placements were outside Canada. This means that this practice is effectively global.

By the time a Waterloo student reaches the graduate program he or she will have on average 2 to 3 years of professional experience, some of it international. They will also have completed the comprehensive building design studio. This allows the graduate program to provide a level of independence normally associated with post-professional research degrees.

The breadth, depth and diversity of the Masters research and the quality of the theses are points of extraordinary pride and identity for the school. Unequivocally, the students in the graduate program do their own work and, as they do it, they often engage with parts of the world outside the university, seeking the provocation for and relevance of their architectural work. This also means the 'designs' they do are not conventional, sometimes they are actual buildings as in the cases of lift house, North House, grand house or an innovative brick shelter on a farmer's field. At other times, they take the form of documentation

and research, such as the survey of all the invisible architecture of the *eruv*, or Jewish ritual enclosures, around the world.

Practice intersects the school in other, more obvious ways. Practitioners teach and serve as critics. The school and the department of coop education organize Paths to Practice, a bi-annual event involving a keynote, panel discussions, workshops, and a career fair, all of which is intended to connect the educational experience to the world of practice. The full-time faculty includes many distinguished designers who are engaged in both education and experimental practice. They provide inspiration to the students and lead the architectural profession. The philosophy of outreach and engagement at Waterloo encourages faculty members to represent the school and Canadian architecture in conferences, symposia, design competitions, awards and exhibitions such as the Venice Biennale (the school was actively involved in four Biennale over the past decade).

As alumni relations are largely handled via the Faculty of Engineering, we do have a challenge in establishing more direct contact in a way that appeals directly to our own graduates. This is something that will need special attention over the next few years, particularly as we grow the School along with two new programs, Integrated Design and Architectural Engineering, or look ahead to the project of establishing more graduate degrees, both post-professional Masters as well as PhD.

Curriculum, cultural history and the Rome program

Within the academic program, cultural history is the feature that is unique to Waterloo Architecture. The cultural history and theory stream rests on the idea that neither architecture nor architectural history are isolated disciplines, but rather forms of cultural praxis, humanistic study and fields of cultural speculation. Once again, architecture is not set apart, but rather seen as a cultural form to be considered and appreciated within the context of the other forms of human expression. This view informs the curriculum. It inspires an affection for a broad range of critical study and creative endeavor within the school. It ex-

plains why Waterloo Architecture has produced plays, has a wonderful library and a spectacular collection of rare books and has operated a program in Rome for more than 35 years.

These three facts in themselves are intrinsic to the identity of the school. The Musagetes architecture library is the treasure. It is both a library and a centre of the school's culture with its wonderful collections, including the graduate theses, films and rare books. The reading and working spaces are geared specifically to the architecture students, supporting group and individual work, reflection and relaxation. The 2B plays each spring make culture more than an object of study and speculation into group projects and a challenging praxis that must resolve ideas and intentions into performance. Finally, the Rome program makes history into context. From the poetry and passion of the archaeological site to the challenge of Zaha Hadid's MAXXI, Rome moves history and culture from the abstract to the material.

The provocation to go to Rome in 1979 came from a commitment to history and drawing, and it still does. Students draw by hand in first year, in Rome and again in the graduate program. The craft of architectural representation is given to students from the beginning, even before they draw on a machine. Students keep a sketchbook in Rome. Graduate students record the historic buildings of the region by hand. This commitment to manual representation by no means excludes contemporary or experimental forms of documentation, analysis or design, rather it provides the foundation and parallel structure. The school has been known for experimental drawing. "They drew like angels," said Dan Hoffman when he was with Waterloo in Rome in 1980.

Nevertheless, the field of representation has expanded dramatically. To reflect the need to master old as well as new ways of drawing and building, we have now integrated a fifth academic stream in the curriculum, adding visual and digital media to design, cultural history and theory, technology and environment, and urbanism and landscape. The School has invested in digital equipment and now teaches a series of courses in visual and digital media, including digital fabrication and advanced visualization. We want to be able to approach this expanded field of representation with the same critical foundations that are exemplified in the School's intense and well-established cultural history

stream. The School has been promoting architecture as a humanistic discipline and this is an aspect that is still very much at the heart of what Waterloo Architecture is.

Collegiality and the project of education

The society of the school in the BAS program is its most important identifying feature. The students are drawn from across the country and beyond its borders. Around 1200 applicants apply for 75 places. There is an active recruitment and information program focused on a pair of open houses in the fall and spring of each year. Between 450 to 500 students are invited for an interview, portfolio review and précis test. The selection process is committed and humane. The entire school community is involved in identifying students with artistic talent, capacity in abstract thought, critical ability, social imagination, maturity, self confidence, and interest in making. The school makes a major commitment each year to attracting and selecting the incoming undergraduate class. It is the basis of the institution and its community. Our pledge and mission is to support the students and provide an educational environment and curriculum that offers unique opportunities, emphasizes connections, builds community and treats everyone involved as partners in the operation of the institution.

The academic and technical support staff, including the Musagetes architecture library and the Design at Riverside Gallery, are all essential to the School's project of architectural education. The team gathered in the school shares the philosophy of education articulated above. We also rely on our remarkable staff who are part and parcel of the School's community. As for the faculty, the diversity of their research and their recognition at the international stage is growing, with faculty working in computation, responsive architecture, urban theory, Renaissance history, Waterloo region architecture, landscape infrastructure, Holocaust history, political installations, building and environmental sciences, artistic and architectural design, intersections between art and urbanism, psychology, contemporary theory, landscape, structural steel or building performance. Waterloo Architecture is, in this respect, characterized by the intensity

and diversity of a great group of faculty that think differently but believe in the project of education upon which they are collectively working together.

Finally, the School is identified with its facility, designed by Levitt Goodman architects, with the full involvement of the faculty, staff and students to produce a School that does the most straightforward things very well in producing a building for architectural education and community engagement. It has a magic that seems to be evident to virtually everyone who visits.

Within these unique strengths of our program there are also some challenges that we are continuing to address. The revision of our curriculum points to some of these challenges. For one, we are addressing the necessity to build new courses to strengthen our ability to engage in digital media and fabrication. The challenges lie in adequately supporting this stronger emphasis on visual and digital medium, together with what it involves in relation to the necessary reassessment of the balance of the other existing courses. A more important emphasis on urbanism and landscape likewise recognizes growing fields of interest. But there again, the desire to name these two areas directly adds a level of specificity in divisions that had until now purposefully been kept broad. Another slight change is that what used to be labeled culture is now addressed as “cultural history and theory”. This renaming may also constitute an opportunity to consider anew the focus of the cultural history stream and specifically its relation to the Rome program. While we believe in the enduring values and changing nature of the lessons of Rome, we concurrently find it increasingly important to recognize different origins and promote equally valuable destinations – whether in Asia, Africa or America. Ultimately, the challenge resides in the desire to remain contemporary in an accelerated and globalized world, while recognizing the importance of historical depth and cultural breadth.

The School of Architecture joined the Faculty of Engineering in 2005. There have been two planning processes since – Vision 2010 and Vision 2015. In both cases, the school has participated in establishing a set of goals in line with those set forth for the entire Faculty of Engineering. The Vision 2015 plan, entitled “building on excellence” has recently been extended to 2018. It is thus the plan currently governing our vision.

1.2 PROGRAM ACTION PLAN AND OBJECTIVES

Vision and Strategic Areas

The plan works with eight strategic areas, and thirty-six specific goals. Its main vision is “to become a truly world-class school of engineering”. The principle is to focus on improving the quality of a program already well-established. The strategic areas are (A) faculty and staff, (B) undergraduate studies, (C) graduate studies, (D) research, (E) teaching, (F) outreach, (G) internationalization and (H) entrepreneurship.

The goals were set for the entire Faculty of Engineering. Each department in the faculty then set its own set goals in each of the strategic areas. The specific goals established for architecture are listed below according to each strategic area.

Measuring success

Progress reports are produced annually from the dean, each associate dean, each department head, and the directors of advancement and communications. They include performance indicators that are calculated and reported annually, to help evaluate progress and to establish benchmarks and trend lines. Equally important as these quantitative data are the qualitative and anecdotal measures that the narrative sections of each annual progress report bring to bear on our understanding of the progress toward aspirations and goals.

The following represents a summary of the goals and provides comments on the performance of the School of Architecture in achieving them. Within each of these areas, architecture has been building a series of specific goals. The process of establishing the goals has been ongoing over the past five years through some of the changes that have marked the School under four different directors (three directors and one interim director). What we are including here are summaries of the goals insofar as they have emerged from our review of annual reports, the self-study consultations, ongoing curricular discussions and reports from undergraduate and graduate offices.

A: FACULTY AND STAFF

Goal A1: Increase faculty complement

The first goal was to grow the faculty complement, and to grow it in a way that could promote a better gender balance. Our plan projected a growth up to 19 faculty positions, which we reached in 2013. We do not plan any further growth by 2018.

Result: With respect to the first goal, we are pleased to report that the faculty complement went up from 17 in 2011 to 20 in 2016. Two of these positions were added as a result of an external search for the Director, and the exceptional hire of her spouse. In this process, we also significantly increased the proportion of female faculty members, which went from 6/17 (28%) to 9/20 (45%). One additional female faculty member joined the School in July 2016, bringing the total faculty complement to 21 and the percentage of women to 47,6%.

The numbers above represent the situation as of August 2016. We do expect two of our faculty members to be leaving by the end of 2016, as they have announced that they are pursuing options elsewhere. However, we are also finalizing the appointment process of a new faculty member who will be joining the School in December 2016. These upcoming changes will bring our faculty complement to one over our target at 20 (including 19 full-time faculty members, and 2 faculty at 0.5 FTE).

Goal A2: Support career-long development

The second goal has been to encourage current and new faculty to move through the tenure and promotion steps.

Result: The School has been making good progress with respect to the development of human resources. While only two professors were at the rank of full professor in 2011, there are now six full professors.

B: UNDERGRADUATE STUDIES

Goal B1: Maintain the strength of the undergraduate curriculum

One of the goals in the undergraduate study program was to update the curriculum to eliminate inefficiencies and create space for new courses in a digital tools and fabrication. The modifications of the curriculum aligned with the University's strategic plan to promote educational quality and student opportunities.

Result: While we continue to fine tune our curricular revisions, we have successfully eliminated some redundancies. We have also revisited the progression and course weighting through the cultural history stream. This has enabled the integration of additional courses in visual and digital media. We have also successfully moved some of the existing courses to create greater synergies between different courses in a given academic term.

Goal B2: Enhance undergraduate experience

One of our great ambitions was to enhance the quality and experience of the undergraduate program through the integration of electives, a better preparation for graduate studies in the upper years, as well as loosening what is a rather dense undergraduate curriculum.

Result: We have had some success in the improvement of undergraduate experience, but we are still refining our approach. We have been able to make space for elective courses starting in the second year, enabling our students to slightly tailor their education. Students also recognize that they are granted a lot of freedom in how they approach their design project and encouraged to explore their own interests within the bounds of the studio briefs.

The restructuring of the cultural history stream has also allowed for the integration of preparation courses for graduate studies in the upper undergraduate years. These include elective courses in different streams.

C: GRADUATE STUDIES

Goal C1: Increase graduate enrolment

Our first goal was to address decline in the retention of our BAS graduates into our Masters program as well as to attract external applicants from Canada.

Result: We have streamlined our application to fit with grant application deadlines. We now only take students for a fall start. Between this change, the addition of 'pre-Masters electives' in the last year of the undergraduate program, and the improved perception of the structure of the Masters degree, we have seen an increase of about 33% in student intake. Twenty percent of the students now come from external institutions, into our two-year program. Waterloo BAS students can enter directly in the second year of the Masters program. While we were falling below the graduate intake plan up to 2013, we are now above our intake target for the years 2014, 2015 and 2016.

Goal C2: Improve graduate operations to reduce time to completion

Another goal was to improve the degree structure to better support the students and enable them to complete their Masters in a timely manner. The target is to ensure that all students can complete the degree within a maximum of six terms.

Result: We have made great progress with regulating an appropriate time to completion. Students are supported to complete their thesis in 3 to 6 terms, and provided with the structure to do so. We have added a methodology course in the first term, and a structured studio in the second term to enhance the rigor and organization structure. We also have greater consistency and clearer guidelines for the structures and expected outcomes across graduate studios.

Goal C3: Enrich the graduate program and curriculum

An additional and related goal has been to enrich the graduate program by increasing the choice of elective courses, as well as their participation in symposia or exhibitions.

Result: We have successfully increased the graduate elective course offerings. Students are now offered between 3 and 4 different graduate electives per term. They also have the opportunity to take part in the Integrated Water Management program or pursue an optional structures certificate. In terms of dissemination, thesis work has also been better integrated in exhibitions at the school (Master Works at the Design at Riverside Gallery) as well as in conferences (Acadia) and events (drawing symposium, Paths to Practice, Re-Post/Translations). Students have been supported in their initiatives (Formlab, Makers Lab, Bridge). We are continuing to promote the dissemination of Masters' students work and creating more opportunities for them to share their work, both within and outside the School.

The Graduate Officers, the graduate committee, and the Coordinator of Graduate Studies and Research have vastly improved the conditions for graduate students. The school runs research seminars, 'in progress' thesis reviews, presentations from faculty members on their research and design work. Students organize peer review sessions and have begun to create explicit groupings around research interests. We likewise have ongoing events, such as Masters Open Studio, when students exhibit their work for their peers and faculty.

Goal C4: Enhance the Graduate Student Experience

An ongoing goal is to increase the financial support for the graduate students. The graduate program in architecture combines elements of professional and research Masters. Each graduate produces an independent thesis, yet there is no base of research funding available to fund graduate students.

Result: Given the uneven but continuous growth of the program over the past decade, it has been a challenge to maintain the levels of graduate funding. Nevertheless, we provide an entrance scholarship of \$1000 to all students who

enter the program with an average of 80% or higher. Every year, on average four graduate students are successful in obtaining full-funding (\$25,000 min) through government scholarships (3 OGS on average and 1-2 SSHRC). In addition to these sources of funding there are 1-3 students who are funded \$5000 through the RBC Water Scholarship program. The Urban Strategies Scholarship (\$2000) and the Barry Bell scholarship (\$1000) have been funded by private donations. The University provides an additional \$2000 from Senate Graduate Scholarship funds, and the School provides up to \$1500 for Graduate Studies Travel Assistantships. In addition, an average of three graduate students receive funding from MITACS each year, at a value ranging from \$5000 to \$15,000. We are in the process of adding another scholarship (\$750) to fund projects looking at aspects of architecture in Africa.

Teaching assistantships provide the largest source of support for graduate students. Over the past six years, there have been an average of 50 teaching assistantships per year (at an average salary of \$4,000 each). Not only do these assistantships help graduate students financially, they also give them valuable teaching experience while contributing to the quality of undergraduate instruction and the effectiveness of the design studio. Depending on faculty research and funding, an increasing number of research assistantships have also been available to graduate students. This is a culture the School intends to grow further.

Goal C5: Promote the dissemination of graduate work through publication and presentation

We continue to emphasize the importance for students to disseminate their work in the context of conferences, symposia, on-line or print publications. It is our goal to increase the visibility of our student work.

Result: Though there is still much that can be accomplished in this area, the dissemination of graduate theses has been very successful. The annual Master Works Exhibition at the Design at Riverside Gallery continues to provide an opportunity for graduate students to exhibit in a professional gallery context. This year, many students also took part in the 3MT (3 Minute Thesis) competition, a university-wide competition for research-based masters and doctoral students.

One student won the 2016 Arthur Erickson Travel Study Award, following a selection by the Royal Canadian Academy of Arts (RCA). A recent graduate won the C New Critics Competition from C Magazine, another won an award for a Spa project in the Student Project category of the 11th annual HD Awards, and an Honourable Mention in the 2015 Fairy Tales competition, an important ideas competition with over 1,200 participants from 65 countries around the world. A team of two graduate students also recently placed third in the International Architecture Competition: Rome Concrete Poetry Hall.

Other theses received recognition through a Michael Evamy scholarship (DIALOG), a Student Award of Merit as well as the Ian Stantiall Juror Award from the American Society of Architectural Illustrators (ASAI), and a Canadian Architect Award of Merit. One architecture graduate was awarded the Innovative Electronic Theses and Dissertations Award from the The Networked Digital Library of Theses and Dissertations (NDLTD) international consortium, while another graduate student launched the [in]formal Pattern Language initiative and the website by hosting a Talk entitled "Towards an [in]formal Pattern Language" at the American University in Cairo (AUC).

Graduate students have been more actively encouraged to seek opportunities for the dissemination of their work, and many graduate students have found opportunities to present papers or published articles. Some 10 students have presented their work at different conferences, while as many have published articles and at least one is currently working on getting her thesis published as a book.

D: RESEARCH

Goal D1: Increase research funding

Our first goal was to increase research funding from a proposed target of \$250,000 to about \$360,000 per year in 2018. This would translate to an average of \$20,000 research dollars per faculty member.

Result: The ability to obtain research funding seems to be increasing. Faculty have been steadily applying and receiving internal awards. At the same time, success with the Tri-Agency appears to be rising, with an average hovering around \$250,000 (up from about \$150,000 in 2011). This figure does not include a number of new initiatives that faculty members have been able to benefit from, including MITACS Globalink Awards, Canada Council Grants, Toronto Arts Council, or the Ontario Arts Council. When taken into consideration, this amounts to an average of \$30,000 more per year, with \$170,000 in 2016 and \$95,000 in 2015. The figure of \$250 000 does not account either for private donations, which last year amounted to \$450,000 for an exhibition presented at the Venice Biennale alone. If we consider these unreported amounts, along with a recent grant of just under 2.5 million obtained in April 2016 for a six-year project, we can note a significant net increase in research funding.

While the average funding per faculty could be higher (it ranges from 10k to 20k when distributed over the full 21 faculty complement if only using the reported Tri-Agency amount), there has been a noticeable increase in the past 6 years. Since 2010-11, we have been more successful at obtaining funding from the Tri-Council, obtaining on average 50% to 100% more funding than in the previous years. Still, we need to continue to better foster faculty's ability to obtain funds either through the private or public sector. It is clear that the School must be able to support more robust research programs and continue to improve its ability to obtain funding.

Goal D2: Enable a culture of collaboration and cooperation;

Result: In relation to the establishment of a culture of collaboration and cooperation, there have been a number of successful ventures over the past 6 years.

Waterloo Architecture was, for example, present at the last two Venice Biennale, with Lola Sheppard and Lateral Office in 2014, and the Waterloo exhibition “The Evidence Room” in 2016. There have also been a number of successful partnerships. Some were supported internally by the UW International partnership grants (between Canada and Grymsdyke Farm/Bartlett), another application, considered worthy of funding but unfortunately not funded within the available SSHRC budget, was a SSHRC Partnership Development Grant, Research (\$198,309). Recently, another large partnership grant (\$2,476,738) was awarded to the Living Advanced Systems Group (LASG), led by Waterloo Architecture Professor Philip Beesley, a large collaboration with professors in other departments at Waterloo as well as from other institutions around the world.

Moreover, the School has reached out in collaboration with the Department of Civil and Environmental Engineering in development of a new program in Architectural Engineering, in graduate supervision and in joint research. We have also opened ourselves up to the entire University of Waterloo to share our experience in Rome, creating a research and teaching enterprise in which colleagues in the Faculty of Arts and Mathematics are fully engaged partners.

Goal D3: increase public awareness of research strengths and achievements

Result: In the last Five years the School has been more aggressive in making the university, the academic community and the public aware of the work of its faculty members and graduate students. Philip Beesley’s work has been profiled in local, national and international journals. It has appeared on the homepage of the University of Waterloo and the Social Sciences and Humanities Research Council of Canada. In 2014, *Artic Adaptions*, co-directed by Waterloo Professor Lola Sheppard, received a Special Mention Award for Canada’s national exhibition at the 14th International Architecture Venice Biennale. In 2016, *The Evidence Room*, an exhibition lead by Waterloo Professors Anne Bordeleau, Donald McKay, Robert Jan van Pelt and arts producer Sascha Hastings, was on display in the Central Pavilion of the 15th International Architecture Venice Biennale on invitation of the curator. It was praised as one amongst the 10 exhibits not to be missed at the Biennale. The exhibition was also featured in international press, including *The New York Times* and EuroNews.

In 2013, the School of Architecture hosted the 2013 international ACADIA conference entitled Adaptive Architecture. Co-curated by Philip Beesley (University of Waterloo), Omar Kahn (University at Buffalo SUNY) and Michael Stacey (University of Nottingham), the event covered a great spectrum of research and creative practice ongoing within the ACADIA community, bringing over 350 guests to the School.

Regionally, the School had great visibility through a series of exhibitions that took place as part of the Building Waterloo Region (BWR). Led by Waterloo professor Rick Haldenby and Esther Shipman, Curator of the Design at Riverside Gallery, BWR was an extraordinary architecture festival that explored and celebrated the past, present and future of progressive architecture and design through myriad events across Cambridge, Kitchener and Waterloo. It was conducted in collaboration with a stellar group of public galleries, museums, arts and educational institutions, provincial associations and private partners. It included activities that ranged from walking tours to hands on children's programs, taking place on multiple sites.

Over the past few years, we have also had more visibility within the University: Philip Beesley, Robert Jan van Pelt, Lola Sheppard, Elizabeth English, John McMinn and Maya Przybylski have been featured in the Faculty of Engineering Annual Report and Alumni Newsletter. Projects by Lola Sheppard, Philip Beesley as well as *The Evidence Room* (Anne Bordeleau, Robert Jan van Pelt and Donald McKay) were also praised on the University's website. Finally, the profile of the School has also been raised by the nomination of Alumni for Faculty of Engineering Alumni Achievement Awards. In 2011 an Award was given to Brigitte Shim and Howard Sutcliffe; in 2012 to Chris Pommer, Lisa Rapoport and Mary Tremaine (PLANT Architects). In 2016, a Waterloo Architecture graduate, Alison Brooks, received an Honorary Doctor of Engineering Degree. She also received The Waterloo Alumni Achievement Medal in 2015.

E: TEACHING

Goal E1: Recognize and reward excellence in teaching

The School of Architecture encourages a range of unique pedagogical models that could gain more visibility within the university and beyond. Teaching excellence, as well as innovative approaches to teaching, should be recognized and rewarded.

Result: Over the past six years, some of our professors' achievements in teaching have been rewarded. In 2012, Professor John Straube received the Lifetime Achievement Award in Building Science Education from the National Consortium of Housing Research Centers (NCHRC). In 2014, Professor Tracey Winton received the ACSA Creative Achievement Award, recognizing her specific creative achievement in teaching in a way that advances architectural education. We do need to continue promoting the excellence in teaching and work on the nominations of colleagues who should be rewarded for their continuous commitment to teaching.

F: OUTREACH

Goal F1: Continue to cultivate relationship with local community

While the School's location in Cambridge can be a challenge in relation to the university, the faculty, or with larger external academic and professional networks, it also can represent unique opportunities to engage with the community. At the heart of the School's relocation was the project to promote itself as a global academy that could be firmly planted in its community. This is a project that we continue to promote.

Result: The School's relations to the community now take many different forms. The School's students have been involved in different city events (namely the Unsilent Night event and various exhibitions with Design at Riverside Galleries). Members of the School's community have also participated on projects within the region, including overseeing the reconstruction of the North House at RARE Charitable Research Reserve, opened in 2013. Originally built by Waterloo Architecture for the 2009 U.S. Department of Energy's solar decathlon, the North House now operates as a research facility and home for the "Eastern Comma Writer-in-Residence", a joint initiative of Musagetes and Rare Charitable Research Reserve. More broadly, the School has been involved in the City of Cambridge Planning Department's "Back to the River" plan for the revitalization of the downtown core, launched in 2014. These initiatives benefit the School as much as they do the city.

Two student initiatives have a presence that greatly contributed to enriching the School's connections to the Cambridge community. Founded in 2012 and led by a team of graduate and undergraduate students, *BRIDGE Waterloo Architecture* has become a hub for various initiatives that include outreach for local middle school students, exhibitions as well as being a venue for musical events, regional conferences or the local Film Festival. Likewise, *On Empathy* is a student group that is interested in the ways in which architects, and architectural students, inhabit their cities. Launched in 2014, the initiative has had local and international participants, architects and community members speak in venues at the School and throughout Cambridge.

G: INTERNATIONALIZATION

Goal G1: Increase international undergraduate enrolment:

As part of the Vision 2015 original document, the Faculty of Engineering set out to increase international enrolment, with an expected contribution from architecture.

Result: The target for architecture was to admit 6 international students in each new cohort of 75 students. This goal has not been achieved so far. We have had up to 5 international students (2013), but our median remains around 2 international students. While the challenge in meeting our target carries a financial impact on the program in its ability to fund itself partly on the international tuition rate, it affects but little the richness of our student population with students nevertheless coming from a great diversity of cultural backgrounds. Notwithstanding this reality, we are interested in reaching out to specific countries and schools to more actively promote the School to international students. We are currently working with Marketing and Undergraduate Recruitment (MUR) to this effect.

Goal G2: Enhance International Program

The Rome program has been one of the longest running international programs in Rome. It continues to be known as one of the most engaged with the architectural and academic communities in Italy. Up until 2014, the continuity of the program hinged on an agreement with Pratt University and was limited to Waterloo architecture's commitment to its presence in Rome. The Rome studio needed to expand and become more present in the academic experience of Waterloo students. Our goal was to expand the studio, improve the conditions and expand the use of the space.

Result: The University of Waterloo has now committed to consider Rome as one of its satellite campuses. Though it is still managed through the School of Architecture, the Rome studio is now open not only to architecture, but to other faculties, with privileged access to Architecture in the Fall terms. The physical facilities of the Rome studio have been further expanded and renovated. We

have acquired additional space by expanding to the floor above and improved the access to computers and wireless network. We are now able to receive the usual cohort of 75 students every Fall. Additionally, we can have access to the smaller studio in the Winter and Spring terms.

The Winter term Rome graduate studio, which operated for some years, has not been officially held since the implementation of a mandatory Fall start date in 2014 for students entering the MArch program. However, given the addition of a mandatory Thesis Research and Design Studio in the Winter term, we plan to reinstate the possibility of an international Winter studio in Rome to a group of graduate students, and to make it an ongoing and official part of our graduate studio course offering.

Goal G.3: Increase international experience opportunities for undergraduate and graduate students.

In addition to the Rome Program, we are interested in opening up other destinations for our undergraduate and graduate students. These opportunities can be offered in the context of courses, through research travel, as part of exchange programs, or through international work placements.

Result: Exchange opportunities for third year students have increased and the number of students coming to Cambridge on exchange remain steady. The implementation of option studios in the third year has created opportunities for faculty to build courses around specific destinations, and students in these studios have recently travelled, namely, to Greenland, Iceland and the Western Arctic. Additional opportunities also arise with graduate studios based in Rome, from which research trips have been done through France, Germany, Austria, Switzerland and England.

In addition, an increasing number of students are benefitting from international research travel opportunities and funding. This funding has come both internally (the David Johnson International Experience Award) through MITACS (Globalink Awards), or in relation to Tri-Agency funding (Michael Smith Foreign Studies Supplement Scholarship, as well as SSHRC Joseph-Armand Bombardier Scholarship). While our graduate students have traveled to Israel, South Africa,

Columbia or China with these awards, 35 to 45% of the work placements found by undergraduate students have also been outside of Canada.

Nevertheless, our goal is to continue to promote access to a greater diversity of destinations for study and research, and continue to seek ways for the School to assist with the funding of these activities (for example with global studios or through scholarships tied to different destinations). Our intention is to make progress in this within the next two years.

H: ENTREPRENEURSHIP

Goal H1: Expanding the professional opportunities of our students

Entrepreneurship has been one of the core values of the University of Waterloo from its inception. As part of the current strategic plan, the Engineering goals are to expand and enhance the co-op program, as well as to introduce new initiatives that foster entrepreneurial activity, concurrently to the development of new spaces and infrastructure to support these activities.

Result: A number of our students have chosen to participate in the Enterprise Co-op program (E-coop), run by the Faculty of Engineering's Conrad Centre for Business, Entrepreneurship and Technology. In 2014, a third-year architecture student won the Norman Esch Enterprise Co-op Award for their participation in the E-coop program, and architecture had three new recipients for the same award in 2016. Students are increasingly aware of the opportunities available to them through the University of Waterloo. These include the presence of VELOCITY, a startup incubator running programs on campus and in the broader Waterloo region that can provide funds, space and, more generally, networking opportunities to young entrepreneurs. Two architecture graduates have won \$25K for their online design tool startup DraftingSPACE with Velocity. We are currently seeking ways to build a more involved relationship between the School and the incubator which is still largely based on campus, in Waterloo and Kitchener, with no bases yet in Cambridge. However, within the School, we continue to organize a biannual event that opens students to the variety of paths they may take to practice, literally called "Paths to Practice".

Current Plan: Building on excellence

In 2013, the University of Waterloo published its strategic plan *A Distinguished Past - A Distinctive Future*. In order to align with the University's planning schedule, the Faculty of Engineering has recently extended its 2015 strategic plan to 2018. While they have stopped using the Vision 2015 title in the reports (now entitled *Building on Excellence*), the key priorities and baseline remain at the foundation of the plan until 2018. Likewise, in Architecture, goals continue

to be updated as needed through the production of the annual reports and within the School's graduate and undergraduate committees.

What follows is taken directly from the Waterloo Engineering Strategic Plan 2011-2018:

Aspiration

Waterloo Engineering aspires to be a truly world-class school of engineering. The programs we offer, the students we graduate, and the solutions we develop will be sought after by outstanding students, employers, employees and partners.

Waterloo Engineering will be:

- The top choice of outstanding high school students from Canada and abroad who are seeking a challenging academic program of the highest quality, fully integrated with real-world experience
- In demand by excellent undergraduate students, both domestic and international, seeking high-calibre advanced education and by working engineers [and architects] seeking professional upgrading opportunities
- The destination of choice among Canadian and global employers seeking co-op students or graduates at all levels for full-time employment
- Sought after by outstanding engineering [and architecture] faculty looking for a rewarding career that supports teaching and research excellence
- the top choice of industry, government and community partners seeking to connect with outstanding researchers, students, entrepreneurs and innovators to solve local, national and global challenges

Key priorities:

1. Attracting, engaging, and retaining outstanding people: undergraduate students, graduate students, faculty and staff;
2. Committing to excellence in academic programs and services;
3. Undertaking high-impact research, both within and across the disciplines and spanning the theoretical to the practical;
4. Building connections and promoting collaboration;
5. Fostering innovation and entrepreneurship;
6. Providing the world-class facilities required to support excellence in education and research.

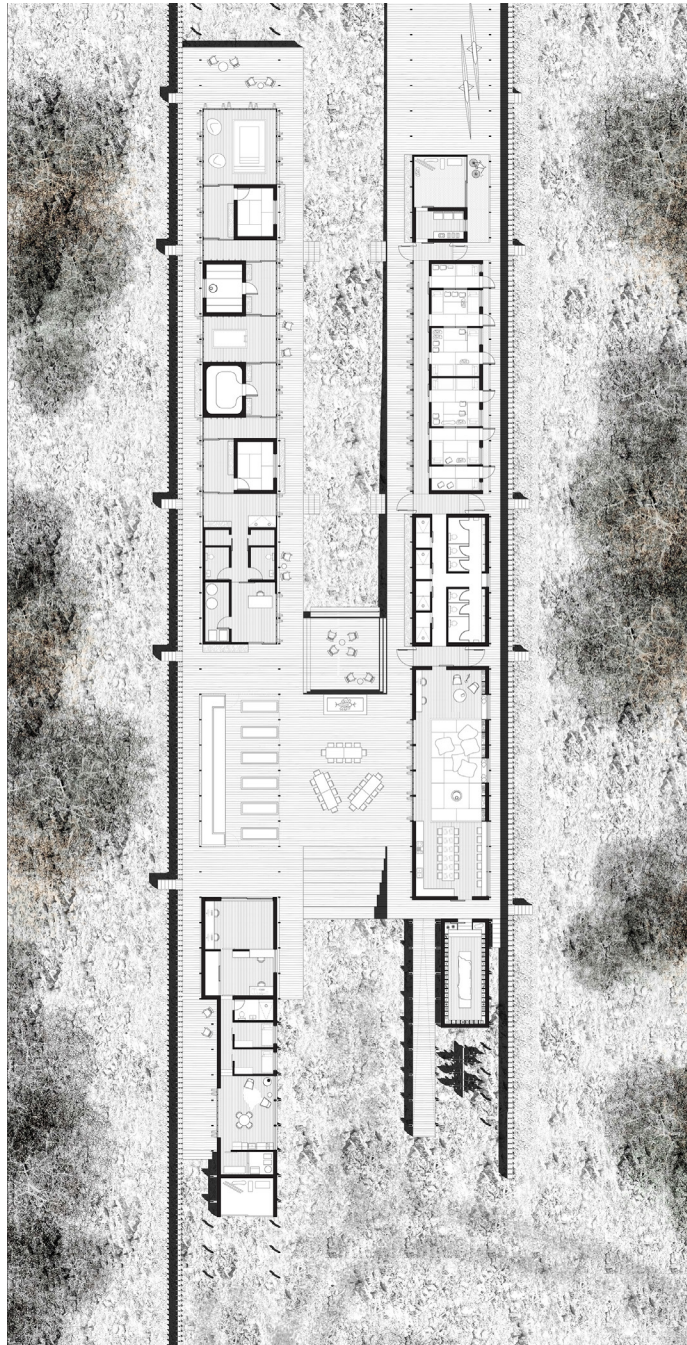
While the Strategic Plan Goals of Waterloo Engineering do not align perfectly with the categories and goals set out by the University of Waterloo Strategic Plan Goal, they do intersect to cover the eight main areas set out by the University: (1) Experiential education for all, (2) Uniquely entrepreneurial university, (3) Transformational research, (4) Outstanding academic programming, (5) Global prominence & internationalization, (6) Vibrant student experience, (7) Robust employer-employee relationship and (8) Sound value system.

In relation to these priorities, some of the School of Architecture's specific plans are:

1. To continue to fine tune our curricular revisions at the graduate and undergraduate levels to improve student experience;
2. To continue to develop a program in Integrated Design as it will benefit the Cambridge community, the School of Architecture, and relations to the University of Waterloo;
3. To continue to promote and foster research to strengthen the School's culture of research and move towards the creation of a doctoral program within the School.

2 PROGRESS

SINCE THE PREVIOUS VISIT



2.1 SUMMARY OF RESPONSES TO TEAM FINDINGS

PROGRAM RESPONSES TO CONCERNS
PROGRAM RESPONSES TO CACB (NOT MET)

2.1 SUMMARY OF RESPONSES TO TEAM FINDINGS

2.1.1 PROGRAM RESPONSES TO CONCERNS

The last accreditation visit to the University of Waterloo School of Architecture took place in March 2011. It was the second visit to the School in its new location in Cambridge and its return of the School to its original home in the Faculty of Engineering. The team commented positively on the quality and motivation of the students, the continued relevance of the co-op program as well as the Rome program, praising their integration to the undergraduate coursework. The team also remarked on the strengths that lied within the community of scholars that the school fosters, the quality of the Cambridge campus, as well as the continued focus on cultural history.

The team did identify 4 areas of concern that have since been addressed by the School.

Concern 1: Financial Resources

While the University has successfully managed the capital and operating funds for the move to the School of Cambridge, the Team recognizes that this process was not typical and is concerned that continued funding of the School at current levels may not be sustainable unless the University, Faculty and School soon resolve any outstanding financial issues and commit to a stable and reasonable ongoing budget for the School. This plan would reconcile the special requirements of a satellite campus and the aspirations of the School with the realities of budgeting for the University as a whole.

There has been great progress with respect to the financial resources made available to the School. The situation has much improved in a number of respects.

First, the longstanding deficit in the School's operating budget was substantially reduced in 2012–2013. This effectively means that the gap between the legitimate operating expenses of the School and its current income is now smaller. With this increase in the base budget, a more careful control and tighter budgeting can alleviate what was up to now an accumulating deficit.

Second, there has been some resolution over the funding of a number of staff positions that had become necessary since the move to Cambridge. In recognition of this situation, the Office of the Provost now provides an additional sum towards some unfunded staff positions. The School has also been granted additional funds towards the sessional hires. This is a great step in the University's recognition of the costs associated with teaching architecture in a way that is aligned with Accreditation requirements and with the understanding of the importance to support the minimum 1:15 faculty to student ratios in Studio Teaching. While the budget does not yet cover for all the required positions (particularly in years where more than one or two regular faculty are on research leave), it does mark an improvement from the situation as it stood six years ago.

Third, as a result of recent discussions, the University has now endorsed the Rome Program. Since the Spring of 2014, the Provost's office has committed to fully fund the administrative, operating and facilities costs in relation to the Rome studio. This results in an annual transfer of \$300,000 that enables us to cover costs associated with the facility (rent, utilities, etc.) as well as with the basic staffing (faculty at 50% FTE and staff at 60 FTE).

It is important to mention that the University will soon be implementing a new budget model. This New Resource Allocation Model (NRAM) might be implemented over the next two years. It is crucial for the School to retain some of the recent gains and establish how its position as a satellite campus affects the way it would be charged for University services under the new model. Equally, if not more, important will be to make a convincing case that some apparently costly aspects of the program (whether Rome, studio education, international opportunities, or small student cohort of no more than 75 to 80 students) are actually essential to the quality and identity of Waterloo Architecture.

Concern 2: Scholarship & Research

Despite the overall high quality of the MArch theses and some significant creative work by the faculty, the School's larger body of scholarly activity seems to be not widely known or is undervalued by the larger University community. There are important exceptions to this observation, but the faculty's history of progress through the ranks from Assistant to Associate and Full Professor risks being seen either as a lack of research or scholarly output or indifference to the research culture of the University. Neither is a good thing as the School seeks University support for its development plans for internationally respected research and PhD studies. At the time of the APR submission, only one faculty member held full Professor rank.

This concern was addressed in the focused evaluation.

Between 2011 and 2013, of eighteen regular faculty members, five had been promoted. Three young female faculty members were granted tenure, and two senior members had been promoted to Full Professors. Since 2013, two additional candidates have successfully gone forward for Full Professorship, while a supplementary faculty member was hired as a Full Professor. All in all, these changes bring the proportion of Full Professors from 1/17 (6%) to 6/20 (30%). All faculty members of professorial ranks are aware of the promotion process. Anyone who has been an Associate Professor for five years or more is asked to go forward. One professor is currently seeking promotion to Full Professor. We expect that two younger faculty members will also apply for tenure in the next two years.

In the 2013 report for the Focused Review the School provided an account of the accomplishments of Architecture faculty members since March 2011. The list was substantial: national and international awards, design work, scholarly papers and articles and books from major international publishers. It should also be noted that research income almost doubled from \$199,000 in 2011-12 to \$391,087 in 2012-13. More faculty members are applying for grants. More are successful in attracting research support.

As of January 2014, the School of Architecture was administering \$725,244 in grant funding, which is augmented by funds not administered by the University's Office of Research. These include Canada Council and Ontario Arts Council grants as well as other forms of governmental, institutional and organizational funding in addition to industry sponsorship for research. According to our Strategic Plan Report Card, our total research funding increased by 35% while our tri-council awards increased by 24% from 2011 to 2016. At the same time, federal funding and industry funding increased by 24% and 63% respectively. Considering that these numbers do not include some private donations, which in 2015 alone amounted to over \$400,000, we can positively report improvement.

In short, faculty research and production as well as the scale and recognition of awards have increased. In the past years, national and international awards of the faculty on projects and collaborations included an Azure AZ Award for Epiphyte Chamber, an Architizer A+ Award for the Hylozoic Series, a National Urban Design Award and a Governor General's Medal in Architecture, a CSLA National Awards of Excellence, a Special Mention Award for Arctic Adaptations, Canada's national exhibition at the 14th International Architecture Venice Biennale, a Lifetime Achievement Award from CCUSA, a Creative Achievement Award for Architectural Education from ACSA, and American Institute of Steel Construction Educator Special Achievement Award, a Building Technology Educators' Society Book Award, a Waterloo Regional Heritage Foundation Award of Excellence, winners in National Design Competition (Welland Canal Fallen Workers), a RAIC Urban Design Award, and a first place in Luminotherapie Competition in Montreal. In short, the awards have ranged from recognizing design work, professional leadership, approaches to education, international representation, publications, both regionally, nationally and internationally.

Concern 3: Curriculum Planning & Development

The School is currently reviewing the structure of the MArch program and considering the development of a PhD program. The Team has some concerns about the operation of the MArch program arising from its structure as a predominantly research degree. The MArch seems largely independent from the culture of the undergraduate program, and issues such as the length of time it takes to complete what is in fact the accredited portion of the professional degree sequence needs to be considered in upcoming reviews. We also observed that a larger number of BAS graduates than we would have expected are planning to complete an accredited Masters elsewhere. This is of concern to the School, which has a significant investment in each BAS graduate. The Team is also concerned by the contrast between the density and demands of the BAS curriculum and the self-directed nature of the MArch sequence, and of its effect on the way students work. It recommends that the review of the MArch and PhD programs include the BAS sequence so as to encourage a smoother transition between degree programs and assure that human and financial resources are sufficient and appropriately assigned.

Over the past 3 years, the School has been reassessing the structure and content of the curriculum to address the concerns stated above. It was the Schools' priority to address the gap between the density and structure of the undergraduate degree and the looseness and freedom of the graduate Masters degree. We have made a number of adjustments that strengthen the undergraduate program and enable a better transition to a now more structured graduate program.

Consolidation, update and expansion of the BAS curriculum

Within the undergraduate program specifically, we have worked to create better alignment between courses so that work done in one or more academic courses can either contribute directly to design studio (typically in the first two terms of the program), or be in direct relation to the scope of the project done in studio (e.g. realignment of theory of landscape course to align with landscape studio, or of a building sciences course to be in parallel to a tall building

studio). These changes have enabled us to supplement the existing curriculum in areas that could be better developed – namely digital design technologies, urbanism, landscape and ecology, as well as architectural analysis and research methodologies. The adjustments have on the whole been successful, though we are still working to ensure that the student course load does not increase as a result of the changes.

Introduction of additional elective courses in the BAS

The recent curriculum revisions have also lead to the introduction of additional upper level electives in the final years. This is important both for the quality of the undergraduate degree, as well as in the ability to offer a better transition from the undergraduate to the graduate degree. These are seminar courses that start to appeal to the diversity of questions that upper-year students may choose to explore. To that same end of easing the transition from the undergraduate to the graduate degree, we have re-structured the cultural history stream to make space for more contemporary history.

Improve the structure of the MArch and reduce time to completion

There were also changes in the graduate curriculum. One concern we were addressing was the time to completion of our graduate students. We have taken a number of measures to address this. Some of these measures have been implemented in the undergraduate degrees as discussed above, others at the graduate level.

Within the MArch degree, we have added two courses to structure and better monitor the progress of our students through their thesis:

1. *Architectural Analysis and Research*: This course takes place in the first term for those students in thesis year to support the Thesis Research + Design and provide fundamentals of research methodology.
2. *Thesis Research and Design 2*: In the second term of the thesis year, we have tightened the structure through the introduction of a second compulsory graduate studio in the Winter term. This has improved access to

human resources for graduate students, ensuring ongoing and regular supervision on a weekly basis by a graduate studio faculty instructor.

The implementation of these two courses along with a mandatory Fall start date encourage the continuation of a cohort at the graduate level. The cohort is made up of advanced standing students (mostly continuing students) and select incoming students (those who have not completed their comprehensive design studio requirements prior to coming to Waterloo Architecture). In addition, the Professional Practice course covering the ethical, legal and administrative dimensions of professional practice has been restructured and is now offered as a block course to improve its integration into the program.

Re-calibrate assignment of human resources

Still at the graduate level, we also revisited the thesis committee structure. Originally, the committee was formed by a supervisor, and two committee members who were expected to contribute throughout the development of the thesis. In light of the introduction of a new studio, and with the intention to reduce the delays that were at time caused by the difficulty to coordinate between three committee members, we have proposed a new committee structure that still includes three members but with slightly different roles and different time commitments. The supervisor still ensures the ongoing by-weekly supervision of the students beyond the first two terms. A first committee member is also present throughout the process but meets less regularly, at minimum once or twice a term. The final member acts as an internal reviewer that comes in at the last stages of the thesis to offer a one-time review before the thesis is submitted to the final examining committee. All three faculty members are part of the final Thesis Examining Committee, along with a fourth member, the external reader who reads the final thesis and attends the defense. This change was made to clarify the structure of the committee and ensure adequate access to human resources, in different capacities. The School agrees that this is a more appropriate assignment of human resources.

Create new opportunities

Along with these changes, we are creating new opportunities – offering co-op

opportunities for students entering from other institutions, a Rome term, international research travels or collaboration across faculties on campus (Water Institute and Structure Certificate).

The graduate committee, working in conjunction with the Co-ordinator of Graduate Studies and Research, and the Faculty Graduate Officers (currently a shared task between two faculty members), supports graduate students and ongoing curriculum developments. This office has been working very well in the past years, seeking and collecting feedback from the graduate students as we move through the adjusted curriculum and fine tune the ways in which the new courses (Architectural Research and Analysis, Thesis Research and Design 2, as well as the consolidated 1.0 credit Professional Practice course) work with the graduate curriculum and thesis committee structure. While we are still working on adjustments and expectations for the time to completion, space, facilities and funding, there is a shared feeling that we are progressing in the right direction and that all involved – students, staff and faculty – are part of the process. Our intake has been high, with 60 new Masters students in each of the past two years, and the number of students going beyond the maximum time of completion (2 years) has significantly decreased.

Concern 4: Isolation

The Team expressed concern that some of the isolating effects of the relocation of the School away from the University campus are still present and unresolved. Both the School and the University are working to assure that student services are maintained and to encourage faculty and students to continue social connections with the Waterloo campus. Hopefully the earlier vision of other appropriate University units establishing a more supportive academic cluster in Cambridge is still being considered. This issue is further compounded by the fact that most faculty live and practice elsewhere (eg. Toronto), while students live in Cambridge.

There does seem to be some tension between discussions about the School as integrated into the Faculty of Engineering as the Cambridge campus situation will allow, and the desire to become an internationally recognized centre of design excellence on a par with the likes of the Cranbrook Academy, which is one of the more singular and independent models. These two visions may not be mutually exclusive, but the Team encourages the current planning initiative to address this question in both principle and detail so both the University and the School can move forward with common expectations.

It is still true that the distance between the School of Architecture and the main Campus does represent some challenges. As we work to alleviate some of the isolating effects of operating out of a satellite campus, we continue to build upon the opportunity that it provides for relations between the School and the community.

With regards to the challenges, we have made strides to ensure that students have access to services that they would typically be provided on campus. As of Fall 2016, students will have access to a second counsellor that will travel to Cambridge, doubling the number of appointments possible at the School on a weekly basis. As for fitness, though the Waterloo facilities are some way away, the students still benefit from the ongoing presence of a Student Life Co-ordinator. First instituted in 2009, this arrangement continues to serve the Cambridge student population well. In collaboration with the Student Life Co-

ordinator, students have built a network of sites and resources, getting groups and instructors organized for yoga, relaxation, running clubs, soccer tournament or swimming trips to the YMCA. Through the student organizations, WASA (undergraduate) and SWAG (graduate), the students continue to build relationships with appropriate organizations on campus. Recently, they have been more successful in connecting with the Federation of Students (FEDS), who have organized some activities locally, in Cambridge. Nevertheless, there are still some frustrations felt in relation to the access to some of the services that are not seen to be commensurate to each students' contributions. In any case, the situation is continuing to improve and the services the University has agreed to are functioning smoothly.

While this speaks to the financial equations between fees and services – yet to be completely resolved – we are also building stronger academic connections between Architecture and Engineering. Together with the Department of Civil and Environmental Engineering, the School of Architecture worked on developing a new degree program in Architectural Engineering. The program, yet to be fully approved but which should welcome its first student cohort in 2018, will bring Engineering students to the Cambridge campus for two of their eight academic terms. Likewise, the program is to bring the studio experience to the Waterloo campus, as a dimension of their curriculum was based on lessons learned in architecture. There is no doubt that the program will increase the connection between Architecture and Engineering. It will also increase and diversify the student population in Cambridge. This, in turn, will contribute to grow the critical mass of student that can eventually make new and improved services available.

Another important project is the new program in Integrated Design. It is important for the city as it will focus the need for design in the contemporary digital industry, while effectively creating a stronger footprint for Waterloo in Cambridge. Expected to launch both at the undergraduate and graduate levels, the program would bring together studies in digital urban cultures, promote making, fabrication and design, as well as more generally introducing culture of communication. This program would double the student population in Cambridge, enrich the student experience, open new electives for architecture students, and also bring new equipment and resources. It would certainly enhance

the connections with local, regional and national high technology industries and provide channels for the emergent entrepreneurial energies of architecture students. The current plan is to move through the different stages of approval over the next year to work towards a 2018 start date for both the Architectural Engineering and Design programs.

Over the past six years, our students have also been more visible on Campus – winning awards for Enterprise Co-op through the Waterloo Conrad Centre for Business, Entrepreneurship and Technology, or receiving funds from VELOCITY, the Waterloo based start-up incubator. Others have joined students across disciplines in the Water Institute, a multidisciplinary Waterloo program. Likewise, we enable some connections with Engineering by facilitating a Structures Certificate. While this is outside of the program, we are pleased to note that many professors now either live full-time or have the possibility to live part-time in Cambridge or Kitchener, with 8 faculty members now owning or sharing a place in the vicinity of the School.

Most importantly, graduate students have recently been engaged by various bodies on campus to carry out high-profile design projects which include the award winning Waterloo booth at the Ontario Universities Recruitment Fair, the University of Waterloo Visitors' Centre, a real-time data gathering project on campus space and services, the signage and way-finding project for the main campus, Electrical and Computer Engineering undergraduate student commons and, most recently, the proposition of a complete overhaul of the design of the Convocation ceremony. These are critical contributions to the design of the student experience on campus. They reflect the level of respect and engagement that exists between main campus and the School of Architecture.

In relation to the opportunity arising out of the School's location, anchored in the community, the School's connections to Cambridge have been cultivated and strengthened. In addition to taking part in city events such as *Unsilent Night*, students have founded a student outreach community and exhibition space that promotes architecture and design: BRIDGE Center for Architecture and Design. Located on Main Street in downtown Cambridge, the space has been a venue for conferences, students' defenses, joint exhibitions, exhibition of students' work (including the Rome Show) as well as outreach events for middle school students. These collaborations have helped to bridge the gap be-

tween graduates and undergraduates, to promote the idea and the fact of the school as a community and to connect the students with the local, academic and professional communities.

In short, while we would never claim to have addressed all the issues that can arise from being away from campus, we are constantly seeking ways to create new connections and strengthen existing ones – whether between faculty members across disciplines, between the school and the faculty of engineering, the school and the university, the school and the local Community of Cambridge, or between the school and the professional and Academic communities beyond.

6. Human Resources Development

2.1.2

PROGRAM RESPONSES TO
CACB (NOT MET)

Team Comments: The nature and intensity of scholarly and creative activity has increased significantly since the previous Visit. The general faculty profile with respect to the University's expectation and measure of scholarship has, however, changed little over this period. One member has recently been advanced to the rank of Full Professor, becoming one of only two in the School. Most faculty members, by choice or circumstance, do not seek advancement. Several seem to be unaware of the support available to them through the University and the Faculty of Engineering for research program development and funding. The Team was surprised that there are no clearly written governance policies and procedures or a visible culture for faculty development at the School level. Clear policies would outline workloads, administrative responsibilities, and School expectations with regard to advancement within the University beyond tenure. As a result, scholarly effort and outcomes are somewhat uneven. Faculty members are engaged in creative and critical exploration, and the School should seek equally creative ways of making this work available, understood, and valued by the broader University community.

This is important for at least two reasons. As new faculty members move to develop their research, scholarship or creative work they will require the encouragement and support not only of their colleagues in the School but also of those in the broader University community, whose own research, including continued development of the MArch thesis work and the intention to create a PhD program, serious support from the University will likely be contingent upon the demonstrated presence in the School of a research and scholarly culture that, while perhaps not the same, is at least compatible with that of the larger University community. The Team sees this as an important and achievable goal.

In the Focused Evaluation of 2013, there were specific references to research productivity, to research funding, performance evaluation, and progress through rank. Substantial progress had already been made at that time. We have continued to work on improving the intensity of scholarly and creative activity, and to ensure normal progress through ranks.

To specifically address some of the other issues raised by the Accreditation Visiting Team, we can clarify that the School follows the workload policies of the University of Waterloo and the Faculty of Engineering. Regular faculty members are to devote 40% of their effort to teaching, 40% to scholarly and creative activity and 20% to administration and service. This breakdown is directly reflected in the performance evaluation process. Each year every faculty member produces a detailed report of their activities in these three areas.

Since 2012, the annual evaluation process is performed by a committee, consisting of the Director and the Associate Directors Undergraduate and Graduate. It used to be done by the Director alone. Faculty members are provided with a document that clearly lays out the different ways in which they could be expected to contribute in teaching, produce and disseminate research, and serve the University both internally and externally. Graduate supervision has, since 2011, also been made mandatory in fulfilling teaching responsibilities. In the field of research and creative activity, the Faculty of Engineering has also reasserted the wide range of activities recognized as scholarly:

Scholarship in research is broadly defined to include research articles in refereed journals, research monographs, books, expository articles at all levels, innovative designs and patents, conference papers, reports, reviews, invited talks and addresses to professionally/learned societies, etc.

– Faculty of Engineering: Guidelines for Annual Performance Reviews

The fact that the evaluation is now done by a committee has had an effect on the culture of the School in demystifying the process and bringing more diverse points of view into the evaluation of the performance of colleagues. Still, the distribution of the teaching tasks as well as the administrative responsibilities could be more transparent. While teaching expectations were more or less laid out as annual teaching loads of 3 to 4 teaching tasks, we are now working on a clearer model to calculate equivalencies between each type of course. We are moving to finalize a table that is to be approved by all faculty members by the end of 2016. We will work towards the discussion of what this model, based on

time commitment, would imply with regards to administrative responsibilities.

Notwithstanding our desire to make some of these tasks and assignments more transparent and equitable, it is clear that the majority of our faculty have been very actively involved in research and its dissemination over the past six years. This has been addressed in this report, namely in relation to our specific goals under the strategic area of Research (D), as well as earlier in this section, in relation to the Concern 2: Scholarship and Research. Please refer to these two sections in relation to the way in which the faculty members have been engaged research and made this available and valued beyond the School.

12: Student Performance Criteria

B5: Accessibility

Team Comments: Accessibility is discussed and analyzed in ARCH 654 (Acts and Codes). However, application of this criterion appears inconsistent in the comprehensive design projects (ARCH 493), suggesting that the principles of accessibility, which are essential aspects of any design regardless of the particular focus of the studio, are not fully integrated into the design work, particularly in the early years. Accessibility issues were not explicitly addressed in design course outlines or in results of exercises.

This condition was considered to have been met after the Focused Evaluation in 2013.

Every Design Studio promotes awareness of issues of universal access. The Building Construction courses and Acts and Codes course provide specific information about the architect's responsibility in the area of accessibility.

In the first year, students are handed out booklets with different standard dimensions, including accessible spaces. This is followed, in second year, with a more thorough implementation of accessible space in the context of a studio organized around the program of housing units linked to a cultural space. The large building studio (3A) likewise requires students to address issues of accessibility, and this aspect, if not as central in the more speculative 3B option studio, is typically expressly included in all the studio projects thereafter.

When the last Visiting Team Report indicated the program did not meet Criterion B5 on accessibility, the staff teaching the Comprehensive Building Design (CBD) Studio in the 4B term made a special effort to increase awareness, indeed to focus directly on issues of universal access. The program for the 4B CBD Studio changed from a multi-faith worship and community space to being a centre for the development, testing and fitting of wheel chairs. The entire design revolved around issues of mobility and support for differentially-abled users of the facility. Students themselves each spent several hours in a

wheelchair navigating the School of Architecture and the town of Galt. The final designs not only accommodated individuals with various physical and cognitive abilities, but made the issue of accessibility the centre of the entire design from concept to detail.

Jeff Adams, Canadian paraOlympic gold medal champion and co-founder of the revolutionary iron wheelchair, lectured on sustainability and donated a wheelchair to the School. As a result of this studio, the School now owns a wheelchair, which is available in the library so that all students can access and test to better appreciate first-hand issues of accessibility. The 4B project continues to require and evaluate accessibility as part and parcel of any design and in relation to the comprehensive design studio. More generally, the requirement is one that marks the majority of studio projects through every student's education.

3 COMPLIANCE

WITH THE CONDITIONS FOR ACCREDITATION



- 3.1 PROGRAM RESPONSES TO CACB PERSPECTIVES**
 - A/ARCHITECTURE EDUCATION AND THE ACADEMIC CONTEXT
 - B/ARCHITECTURE EDUCATION AND THE STUDENT
 - C/ARCHITECTURE EDUCATION AND THE REGISTRATION
 - D/ARCHITECTURE EDUCATION AND THE PROFESSION
 - E/ARCHITECTURE EDUCATION AND SOCIETY
- 3.2 PROGRAM SELF-ASSESSMENT**
 - SELF-ASSESSMENT INSTRUMENTS
 - FUTURE DIRECTIONS
- 3.3 PUBLIC INFORMATION**
 - PROGRAM DESCRIPTION
 - DEGREES
 - ADDITIONAL REGULATIONS, EXAMINATIONS + PROMOTIONS
- 3.4 SOCIAL EQUITY**
 - GENERAL PRINCIPLES
 - SPECIFIC PRINCIPLES
 - OFFICES RELATED TO EQUITY, CONFLICT MANAGEMENT, AND HUMAN RIGHTS
- 3.5 HUMAN RESOURCES**
 - STUDENTS
 - FACULTY
 - ADMINISTRATION
 - SUPPORT STAFF IN THE SCHOOL OF ARCHITECTURE
- 3.6 HUMAN RESOURCES DEVELOPMENT**
 - DEVELOPMENT POLICY
 - FACULTY APPOINTMENT-PROMOTION-TENURE
 - FACULTY DEVELOPMENT OPPORTUNITIES
 - PRACTICE + LICENSURE
 - OFF-CAMPUS ACTIVITIES
 - STUDENT ORGANIZATIONS
 - STUDENT SUPPORT SERVICES
 - GUEST LECTURERS + COLLOQUIA; VISITING CRITICS; EXTERNAL COMMITTEE MEMBERS
 - PUBLIC EXHIBITIONS

- 3.7 PHYSICAL RESOURCES**
 - CURRENT RESOURCES
 - PHYSICAL CHANGES SINCE 2011 AND FUTURE DEVELOPMENT
- 3.8 INFORMATION RESOURCES AND INFORMATION TECHNOLOGY**
 - CURRENT RESOURCES - LIBRARY
 - CURRENT RESOURCES - COMPUTING FACILITIES
 - TECHNOLOGY ACTION PLAN + FUNDING
- 3.9 FINANCIAL RESOURCES**
 - CURRENT RESOURCES + INSTITUTIONAL CONTEXT
 - ENDOWMENTS
 - SCHOLARSHIPS
 - DEVELOPMENT ACTIVITIES
- 3.10 ADMINISTRATIVE STRUCTURE**
 - ADMINISTRATIVE STRUCTURE
 - COMMITTEES
- 3.11 PROFESSIONAL DEGREE AND CURRICULUM**
- 3.12 STUDENT PERFORMANCE CRITERIA**
 - CURRICULAR GOALS + CONTENT
 - CURRICULAR SUMMARIES
 - SPC THEMATIC SUMMARY
 - GRAPHIC MATRIX

3.1 PROGRAM RESPONSES TO CACB PERSPECTIVES

The School's contributions to the institution

The School of Architecture benefits from its position as a professional School at the University of Waterloo. It contributes directly, concretely and enthusiastically to the success of the institution of which it is part.

Since 2004, the School of Architecture has been located 30km and 40 minutes drive from the campus. The move created the opportunity for direct engagement with the Cambridge community. It was also coupled with a change in academic affiliation within the University, leaving the relatively small Faculty of Environmental Studies and joining the Faculty of Engineering, which is one of the largest and strongest faculties at Waterloo. Architecture joined Engineering in a position of strength having raised all the funds necessary to create the new facility, having established a profile and identity in the University and the community and having demonstrated its capacity to operate with a high degree of independence. Architecture also gained in many ways from this move: financially in its association with Engineering, culturally with respect to its new Cambridge location, and strategically as it builds upon closer links to the faculty of Engineering as well as with the University more generally.

The School of Architecture, together with Conrad Center and the six departments of Engineering together form the Faculty of Engineering. The Faculty of Engineering is one, and the largest, of six faculties at the University of Waterloo. As a part of Engineering, the School is present at Engineering Faculty Councils, and the director, associate directors and other representative from Architecture sit on different committees, such as Chairs and Associate Deans Committee (CAD), Academic Policy Committee (APC), Faculty Undergraduate Operations Committee (FOPS), Faculty Undergraduate Committee (FUGS), or the Faculty Graduate Committee. Whether through weekly, bi-weekly, monthly or term meetings, the School is in constant conversation with the Faculty, with different School members interacting with their counterparts from other departments to decide on undergraduate issues (for example the integration of courses on English as a second language), graduate concerns (funding, retention or recruitment), or general academic or administrative questions (tenure and promotion, awards, teaching excellence, etc.).

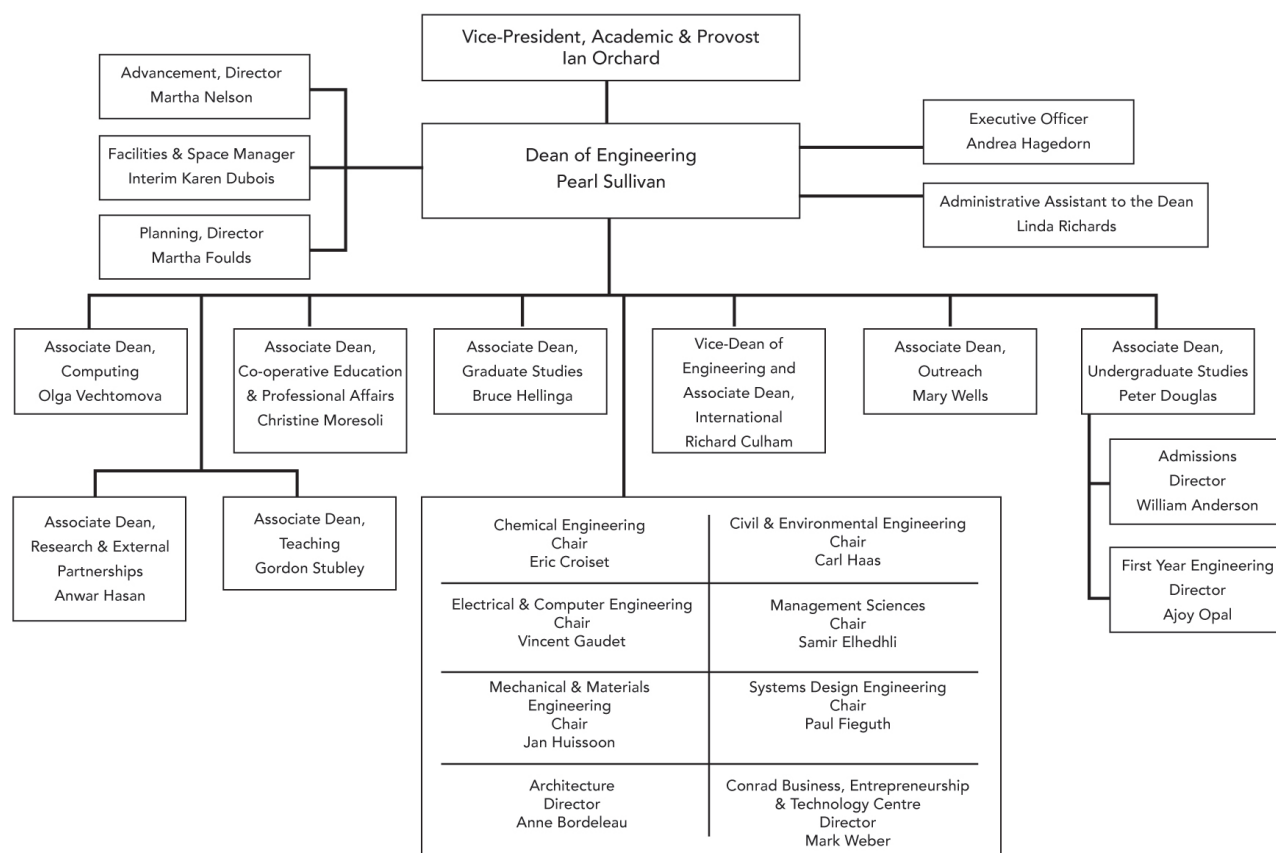
A
ARCHITECTURE
EDUCATION AND THE
ACADEMIC CONTEXT

While the School resides in the Faculty of Engineering and, of course, benefits from the structure and services it provides, the agreement made between Architecture and Engineering at the time of the move gives the School of Architecture substantial autonomy in the management of its curriculum, admissions, and in all aspects of decision making. The School follows University policy on all matters pertaining to promotion, curriculum development and changes, as well as evaluation, but it still has a great level of independence in relation to how it manages its program. For example, the School produces its own Graduate Handbook, it provides an amended Engineering form for the faculty annual report, and does its own scheduling. At the same time, the School benefits from the input, counsel and support of the Associate Deans (research, teaching, international, etc.) as needed. In short, the School maintains a great level of independence. While changes to the curriculum must be formally approved at all levels, there is a strong degree of autonomy in the administration of the program and all decisions pertaining to the Schools' curriculum and initiatives.

Notwithstanding these fruitful interactions and the availability of support, the School does often remain at the periphery of the concerns brought up in the different Engineering meetings. For example, the percentage of women in Engineering programs, which is a high priority in other departments, is not at all an issue in Architecture. The preparation for accreditation, which is supported by the Faculty for other departments, must, de facto, be run solely by the School, though it does of course get financial support for it from the Faculty. Research and Teaching likewise represent different realities in Architecture, and this must constantly be addressed with tenure and promotion cases or even when considering the amount of funding the School brings with respect to other Engineering departments.

As we move into the implementation of a new budget model, a more transparent system based on tuition income to establish overall spending, some of these distinctions will definitely need to be very well understood, and supported, by Engineering. This is certainly one of the challenges that lies ahead in relation to the appreciation for the School's contribution to the faculty of Engineering and more generally the institution. This argument will be built upon the quality of the degree offered by the School generally, as well as from the School's ongoing contribution to the Faculty and University over the years.

FIGURE 1 | FACULTY OF ENGINEERING ADMINISTRATIVE CHART



Indeed, there have been a series of examples that speak to an appreciation and influence from the School. The University of Waterloo has achieved a reputation as one of the most outstanding, most innovative and best managed academic institutions in Canada. A comprehensive university, it offers a full range of courses in arts, social sciences, sciences, mathematics, computing science, fine arts and engineering. Besides Architecture there are professional Schools of Planning, Accounting, the only School of Optometry in English Canada, and a School of Pharmacy on a satellite campus in downtown Kitchener. In relation to the School of Pharmacy, it is worth noting that the success of the School of Architecture and its partners in Cambridge is directly responsible for the alliance between Kitchener and the University that gave birth to the School of Pharmacy. This is a precise indication of the strength and influence of Architecture at the University of Waterloo.

In the same vein, the School of Architecture has been instrumental in establishing the foothold of the University abroad and enhancing its international profile. As it had been running a Rome program for almost 40 years, the School was naturally the facilitator in the negotiation that led to the formal implementation of a Rome satellite campus for the University of Waterloo. Building upon the presence of the School in Italy, the University took over the leasing and maintenance of a large, centrally located studio space that it now makes available not only to Architecture students every Fall, but also to other departments across the University. The School of Architecture continues to act as the main administrator of that space. So far our partners include the Faculties of Mathematics and Environment.

The School of Architecture has also taken a leading role in relation to matters of design at the University. In the past 10 years, the School, its faculty, students or recent graduates have been involved, for example, in the design and construction of the University's booth at Ontario University Fair (OUF), the largest post-secondary recruitment event in Canada. The booth design has won nine national and international awards in the areas of post-secondary recruitment and trade fair booth design. Graduate students in Architecture were likewise invited to design and produce projection mapped models, multi-media displays, and architectural centre pieces for the celebration of the naming of former President of Waterloo as Governor General of Canada. The largest project of all

involved the School in the development of a program of public space design, signage and wayfinding for the main campus of the University. The project was awarded to a team lead by Donald McKay at the School of Architecture with a team of 6 graduate students. They designed a sign system that is flexible, durable and, as much as the new OUF booth, expresses the identity the University has declared for itself. These projects point to the role the School of Architecture is playing at the University of Waterloo and the degree to which the University has taken to heart the notion that designs – not words – are the best way to express identity. Graduate students have been engaged by various bodies on campus to carry out high profile design projects, including the University of Waterloo Visitor's Centre, the real-time data gathering project on campus space and services, Electrical and Computer Engineering undergraduate student commons, as well as the complete overhaul of the design of the Convocation ceremony.

The School also has great impacts in relation to the specific pedagogical approaches it puts in practice – and more specifically what is increasingly being referred to as “experiential learning.” As other departments are looking at innovative ways of approaching education, architecture often emerges as a forerunner in the application of these novel approaches. Likewise, the particular emphasis on reading and writing skills that have been encouraged for many decades as part of the cultural history streams become models to be emulated by the Faculty of Engineering as it seeks to focus on the development of communication skills and greater cultural perspective.

Other practices that start to foster the interest of other department include our approach to admission, whereby a team of faculty and students interview up to 450 applicants in order to come to a final selection of our 75 students' cohort. Learning from Architecture's admission process, the University is now considering admission strategies that likewise will use an interview component and grant the ability to appreciate a candidate's strength not solely based on grade but more broadly on involvement in extra-curricular activities, interests or intellectual curiosity. Studio teaching is also seen as a model that can be emulated, something that we will describe below in greater detail in relation to a new Architectural Engineering Degree.

Another way in which the School of Architecture positively influences the Faculty of Engineering is related to the program's ability to attract and retain strong female students. While engineering continues to struggle to reach beyond 30% female students, architecture's students population has been ranging from 55% to 70% on average. This is not going unnoticed in a Faculty that still finds it challenging to retain strong female applicants. Our large female population is also drawing attention from Waterloo initiatives such as Enterprise Co-op and VELOCITY, a program that begun at Waterloo to offer opportunities and experience to young entrepreneur. These programs turn to Architecture to find female role models.

The profile of Architecture has grown exponentially with the move to a free-standing location in Cambridge and the wide reporting of the success of the project. This attention has, in turn focused more interest on the accomplishments of the students and faculty. The special nature of the School and its level of activity - exhibitions, well-known visiting lecturers, performances, plays - also adds to its visibility within the University and the community. At the same time, our situation in a satellite location, the modest student population that we are attending to in Cambridge and the differences between our program and others within the Faculty continue to be aspects that we must consider as we strive to enrich our students' experience, maintain the strength of our program and increase opportunities for faculty to engage in conversation and collaborative research with colleagues from main Campus.

Academic and professional standards for faculty and students

The overall health and success of the University can be attributed to the fact that the administration has traditionally championed fiscal stability and academic innovation. New opportunities appeared in 2006, especially in the area of graduate study. Given its successes and the new location in the Faculty of Engineering, the School was in an excellent position to grow both academically and financially. The school participated very successfully in the program of graduate expansion mandated by the provincial government and central to Vision 2010, the Faculty of Engineering Strategic Plan. The current strategic

plan placed more emphasis on undergraduate growth and experience. The goal is quality improvement: to continue to grow according to carefully planned strategies that continue to make the Faculty better.

The School of Architecture attracts excellent students from across Canada and around the world. In 2016, approximately 1200 students applied for 75 places in the first year class. This is one of the most selective programs in the entire Ontario post-secondary system. The normal entrant from high school has a grade average of about 90%, which is among the highest in the university, on par with other programs in the Faculty. This average would, of course, be higher still if the academic record were the sole criterion by which applicants were judged. Since the admission process includes a personal interview, portfolio review and a précis test it is possible for students with lower averages to be admitted on the basis of particular commitment, capability, judgment, graphic ability, creativity or innovation. Of the 1200 applicants, about 500 are selected for interviews. The cut-off mark for an interview varies from year to year in the range of 84% percent. After a selection based on interview, 28% of the students admitted last year had final entering grade averages above 95%, while nearly 9 out of 10 first-year student had an average above 85%.

The academic program is demanding; architecture students carry a weighting of 6 to 9 term courses (3.0 to 4.0 credits) per term. The normal academic program in the University demands 5 and Engineering 6. In Architecture, the high term course count partially reflects the 1.5 credit equivalent for Studio courses. Standards of grading are stringent. Class averages in the Honours BAS academic courses fall in the range of 76-79%. This is also true for Design Studios.

The faculty complement is well qualified and experienced. All regular faculty teaching Architecture courses hold appointments in the School, though several have specific expertise that is reflected in cross-appointments in departments and Schools such as Civil Engineering. A review of the resumes of full-time faculty will demonstrate that standards in faculty selection are high. In the past six years, 5 new faculty members have joined the School, including 4 women, 2 with PhDs. An additional faculty member, who will be joining later this year, is a PhD candidate expected to complete within the year. Each of the recently-hired design faculty hold advanced degrees.

One of the clear strengths of the School lies in how it has gathered 20 strong faculty members that each bring their own approach to architectural education and research. This distribution of interest is matched by a great spirit of collegiality and collaboration. The School is a nurturing school that puts the interest of the students first, and wherein faculty, students and staff are all equally engaged in the project of educating the architects of the future.

In this respect, our graduate and undergraduate offices are both made up of very strong committees of staff and faculty members that ensure transparency of processes and fairness. Through the calendar and graduate handbook, through dedicated attention and open communication, we ensure fair treatment to all students and always aspire to deliver the curriculum in the best possible manner.

Interaction between the program and other programs

At the Undergraduate level, the School promotes intellectual and creative exchange amongst faculty and students and with other academic units. This exchange is however somewhat challenged by the location in Cambridge, without a regular connection to the main campus and given an existing public transit system that is simply impractical with the round trip taking over 2 hours. As a result, we have decided to provide most elective courses in Cambridge. For example, we regularly hire an instructor from the Italian department to come to teach Italian Language to those students interested in taking it prior to their Rome term. However, with the projected implementation of two new programs, Architectural Engineering and Integrated Design, there will be more opportunities for exchange, and we look forward to the increase and diversification of elective course offerings for our students, as we do to the opportunity to accept students from Design and Engineering in our current architectural elective courses.

The School's course offerings do attract students from the University and the community. The Environment courses (Arch 125 and 126) and Building Construction courses (Arch 172 and 173) attract some students from outside Archi-

itecture, so do our professional courses. A special section of Arch 276: Timber Design, Structure and Construction is offered on campus to Engineering students. Taught by an engineer, it is the only course dealing with the subject of timber in the entire Faculty of Engineering. The Cultural History stream draws a few students from across campus, though the load is sufficiently heavy to drive off all but the most dedicated. The Italian Studies Program offered by St. Jerome's University (a UW affiliate) includes several Architecture courses (ARCH 428, 446, 449), all offered in Rome. A number of Architecture courses are also listed as recommended electives in the Art History and Visual Culture programs of the Department of Fine Arts (Arch 246, 248, 342, 425, 428, 442, 449, 520, 540).

There are currently a number of opportunities at the graduate level for students to interact with other programs. Students entering the Master of Architecture can elect to take a Structures Certificate, with many courses in Civil Engineering. Others can choose to register in the Master of Architecture (Water), a collaborative program in water jointly offered by ten departments across the Faculties of Arts, Engineering, Mathematics, and Science. There has been a total of 7 students availing themselves of the opportunity so far, and faculty member Elizabeth English also participates in the program.

Through different research projects, Professor Philip Beesley has also been collaborating with colleagues across the University of Waterloo, and beyond. In his most recent partnership, the Living Architecture Systems Group, he is actively collaborating with Dana Kulic from Electrical Engineering, Colin Ellard in psychology, Rob Gorbett from Knowledge Integration (all at the University of Waterloo) as well as with Rachel Armstrong from Newcastle University.

Contributions of the students, faculty and administrators to the governance as well as the intellectual and social life of the institution

Since the establishment of the graduate program, the School has been collaborating with the Associate Dean of Graduate Studies for the Faculty of Engineering and the Office of the Dean of Graduate Studies of the University. The

success of this initiative is due largely to the support of the Dean of Graduate Studies and his staff. The new program has also brought academics from other departments and other universities to participate in thesis committees and thesis defenses, making the creative and intellectual standard of the School of Architecture better known to and appreciated by the rest of the academic community. A key moment in this certainly was the recognition of Alison Brooks, a graduate of the Architecture program and prominent UK architect. After receiving the Alumni Achievement Medal for Professional Achievement in 2014, she was awarded an honorary Doctor of Engineering on June 18, 2016. Her presentation at convocation spoke to all the values of Waterloo Architecture that radiate out to the University: the strong foundations in cultural history, the leading role that women can take and must continue to claim, the firm entrepreneurial foundation that can give Waterloo graduate some wings, and more generally, the social and cultural role that architects can play in the contemporary world and how Waterloo Architecture education prepares its graduates to that role.

At other levels, Architecture makes its own special contribution to University life: the lectures, exhibitions, presentations and plays. While in some cases the distance can be a challenge, we continue to nurture communication at all levels. Our two students' associations, Waterloo Architecture Student Association (WASA, undergraduate) and Society of Waterloo Architecture Graduates (SWAG, graduate) maintain links to the main Campus. Staff members are constantly interacting with their Waterloo counterparts, whether in training, administrative meetings, in the admission process or in relation to research directions. Faculty likewise are present on Campus at the Faculty and University level, on the Tenure and Promotion Committee, at Engineering Faculty Council, or on the Honors and Awards committees to name but a few.

Part of the ongoing interest in Waterloo Architecture actually hinges on the School's relocation to Cambridge. The Cambridge initiative presents a wonderful opportunity to achieve the School's goal: become a global academy with roots in a community and to provide first class facilities for its students, faculty, staff, and outreach activities. More recently, the student-run *BRIDGE Centre for Architecture and Design* storefront has successfully become a gathering space not only for community events that promote the interaction between students and community members, but also in association with School events (Master

thesis defenses, the Rome Show, exhibitions, participation in School symposia such as *Drawing Ambience* in 2015) and, just as importantly, as a venue for outreach events like Future Schools, in which Architecture students introduce groups of local middle school students to architecture (July 2016), or simply as music venues for some of the School's many musicians (Bluegrass Band, March 2016). They have partnered with the Grand River Film Festival, as well as larger conferences such as ArtCOP21 Waterloo Region conference (November 2015).

Many members of the University, including the senior executive and hundreds of faculty, staff and students, supported the Cambridge project and have taken tremendous pride in its success and the quality of the new School. The City of Cambridge and the broader Cambridge community have equally embraced the project as a tremendous accomplishment and point of pride for their city. As we move towards the final steps in a proposal for an Integrated Design program, there is no doubt that the City of Cambridge and its community continue to support the Waterloo presence.

The School of Architecture may have moved from main campus, but its vision, outreach and leadership in the last 11 years have been an inspiration to the entire University. In a somewhat paradoxical fashion, by relocating 30km from campus, the School of Architecture seems to have strengthened its position in and relationship with the University. Our current discussion with Civil Engineering on the Architectural Engineering Program and with Systems Design on our projected Integrated Design program are only one part of our ambition project to continue to grow the student population in Cambridge along with the opportunities to continue to interact both with the University and the local community.

Contributions of the institution to the program in terms of intellectual and personal resources

The School continues to benefit from all kinds of support from the Faculty of Engineering as well as the Provost Office. There is no doubt that the program is prized and valued highly. In this respect, there is an ongoing commitment to

support co-operative education through the Co-op office. There is likewise an investment of human and financial resources in the Cambridge Musagetes Library with acquisition and a dedicated architecture librarian. We have also been successful in obtaining support for students with two different counsellors each coming one day a week in Cambridge.

For research, there are two offices within Engineering and Arts that reach out to architecture to assist in the application to grants and also come up with additional sources of funding. Other resources include the Center for Teaching Excellence, who support academic integrity, ethics in research, and demonstrate a willingness to come to Cambridge to deliver training for students, staff and faculty. For example, our program review self-study retreat was moderated by two facilitators from the Faculty of Engineering. While it is of course not as easy for our students to access resources such as, for example, the Writing Center that is located in Waterloo, there has been increasing willingness to make a number of scheduled Cambridge sessions available throughout the year. The support from the Faculty and University include some support in computing, in plant operations, security and safety.

B
ARCHITECTURE
EDUCATION AND THE
STUDENTS

Waterloo Architecture publicly proclaims its position that architectural education is a project involving faculty, staff and students in equal measure. The program is emphatically international in its reach, conception and in its student body. It is as racially and as culturally diverse as any department on campus and far more than most. The School sustains a culture of engagement, respect and concern that has seldom been violated and needs little institutional support. Policies on ethical behavior exist and are enforced when required, but the spirit of collaboration, aspiration, respect and collective pride runs very deep. An open and discursive environment prevails in which the Director reports to the School directly each term and meets student leaders on a regular basis. The School explicitly seeks to prepare its graduates to be responsible professionals, citizens and community leaders.

The School is committed to supporting its students and the school community. When the building was designed a deliberate choice was made to provide the

best light and the river views to the students in their places of work as a tangible sign of the policy of placing student interests first. The School also offers a curriculum in which design is a constant presence from the first to the last day of their educational career. Finally, the School makes a commitment that students will have every opportunity to complete a professional degree. All students are informed of the standards and requirements for promotion from term to term and the specific requirements for admission to the graduate program. The standards are clear and the resources of the School are deployed to support students in achieving their educational goals.

Two aspects of the Architecture program at Waterloo distinguish it from most others available on the continent, and both of these contribute directly to the personal and professional growth of the students: the co-op program and the emphasis on cultural history.

The Waterloo co-op Program places students in paid positions in architect's offices beginning in the second year. This provides direct experience of practice, revealing its nature, range and the opportunities, responsibilities, requirements and limitations associated with it. The co-op experience demystifies the practice while also providing an array of specific skills and experience, which balance with the more exploratory work that goes on in the Design Studio program. The benefit of international employment experience comes to virtually every student. Most spend at least one work term outside the country and no student has ever done all his or her work terms at one firm or in one city. This brings an extraordinary variety and maturity to the senior undergraduate classes and graduate students.

Because of co-op, the School runs all year round, resulting in better utilization of space and resources, but also allowing students an opportunity to study in the summer months when design/build work can go on outside. Co-op also means that the entire student body is never together in Cambridge at one time, but is distributed in cities around the world. Nevertheless, the School community remains strong and connected through social media and electronic groups.

When in Cambridge during their academic terms, students work in the studios at the Riverside building. It is the site of most of their activity since few cos-

metropolitan distractions exist and virtually all students live within a few minutes walk. The four-month term ends quickly, the work term comes and members of a class are quite literally distributed to offices around the world. Within this rhythm of work and school, metropolitan culture and academic intensity, Rome and Cambridge, a remarkable culture develops. Jobs and information are passed, formally and informally, from student to student, class to class. The recent extension of student placements to offices in Holland, Germany, Scandinavia and Spain came about as a result of student initiative provoked by the co-op program and nurtured by the truly global perspective that exists in the School.

The co-op program has other direct benefits to the students: it provides income and connections in practice. These are of great importance in that they make it possible for students to be virtually independent through their university careers and to graduate, in many cases, to established positions in firms. A 2016 survey of alumni from the MArch (see 5.3 Student and Alumni Surveys) showed that over 30% had employment arranged before they completed their degrees, and 86% had found employment within three months of graduation. As for co-op employment, around 97 and 98% of undergraduate students are consistently employed during their work terms.

The cultural history and theory stream represents a second unique aspect of the Waterloo program that is conceived to allow students to respond critically and creatively to situations in their educational, professional and personal lives. This sequence of courses is based in the conviction that architecture is a form of cultural praxis that demands of its practitioners a very high level of literacy and critical understanding. This understanding is gained through experience of diverse historical cultures represented by primary texts. The aim of these courses, indeed the entire curriculum, is to prepare students to be continuous learners, informed observers and critical thinkers throughout their lives. The School is very proud of the fact that this stream has expanded over the last decade with deeper coverage of the modern world.

Students in the program read and write a great deal. They read in literature, philosophy, history and criticism. They examine directly and in reproduction, works of visual art, architecture, theatre and music. These courses rate just be-

low studio in credit value and in demand on student time and attention. In addition to the establishment of high levels of critical and discursive ability, which inform discussion in design studios throughout the program, the cultural history foundation is built on in two specific ways. The program involves and promotes travel within a curriculum aimed at achieving a broad background of cultural and architectural experience. First year normally visits New York for a week, second year Chicago; while in Rome fourth year students visit some of the most compelling archaeological, architectural and cultural sites in the world: Masters students have had the option of studying in Rome, and it is something we intend to revive. Many students also opt to take advantage of their third term of graduate studies to do international research travels, many being successful in obtaining scholarships to cover some of their cost. Other field trips regularly occur.

If cultural history and theory emphasizes the roots and continuity of architectural experience, the curriculum is also designed to inform and prepare students properly to deal with the contemporary conditions of practice. Emphasis is placed on environmental issues and theory, on the context and varieties of architectural practice and on effective and socially-engaged positions in architectural design.

The intent of all this is not to produce scholars (though, of course, we have produced a large number), but to enrich the cultural base, the discursive ability and the critical and creative judgment of future architects. These skills and attributes of intellectual speculation, critical interpretation, and public presentation should be bound together into a single but inclusive praxis founded upon abilities in design, communication and fabrication. To this end the School has attempted to dissolve the arbitrary temporal, geographical and experiential horizons by which the conventional university career is defined. In this sense too the line between university and what follows should begin to blur. The overlapping of work and study therefore becomes the model for a future professional career.

The Waterloo Masters Program is now just over 15 years old. In its first decade it has faced many challenges, but it has had some remarkably positive effects on the students and the range and quality of work produced at Waterloo Ar-

chitecture. We are still hoping to get higher levels of financial support. Still, the self-determined and directed research programs, as well as the more flexible time lines, allow participation in a variety of internal and external activities, and opportunities to become involved in teaching. All of these contribute to an environment in which students can achieve and take satisfaction in their achievements.

The independence of the students in the graduate program has not been without challenges. Students were on their own a great deal, often working in a field seemingly isolated from their peers. The School has been reviewing the Masters program and implemented a more structured route through it. This has been yielding some positive results so far. First, students seem to appreciate the fact that even though they work within smaller studios of about 15 students, they are nevertheless part of a cohort moving through similar timelines, at least for the two first terms. There is then flexibility for those who wish to engage in international travel, take a bit more time to investigate their thesis topic, while there is support for those students wishing to complete within three terms.

As it stands now, the Masters thesis as it has developed in Waterloo addresses one of the most problematic aspects of architectural education. Prior to the transition to the BAS+MArch model, the fifth year thesis still seemed inevitably to provide a platform for the most talented designers in the School to thrive and demonstrate their excellence. It was less likely that students with other strengths would be recognized for their work. In the Masters theses, by contrast, one can see a variety of interests - technical, social, ethical, environmental, conceptual - playing out. The result is a situation where students who are not the most naturally-gifted designers are producing extremely successful and important work and, of course, being recognized for it. The range of thesis work is simply remarkable, a credit to the independence and dedication of the students and a foundation on which an individual can build a career.

The structure was implemented together with a closer attention to a number of ancillary activities that can directly contribute to the culture of research. These include events wherein faculty, adjuncts and even students are invited to present their work in different format - posters, pecha kucha, smaller discussion groups (3-4 faculty gather around a question), or more informal gathering (On

Empathy). Echoing a bi-annual event for undergraduate students – *Paths to Practice* – the graduate students have been organizing *Re-Post*, now renamed *Translations*. These events are either symposium, small conferences or even events leading to publications that introduce students to the different ways in which academic work can be disseminated.

Concurrently, a number of ‘labs’ have emerged. FormLab was a student initiative that promoted the organization of workshops, ran by students, on topics that they had themselves identified. There is also DATALab, which was lead by two faculty members and considered different aspects of big Data in architecture. A more recent initiative is the MakerLab. Supported by the Workshop Supervisor, this is providing students access to a select set of tools 24 hours a day, 7 days a week, granted they have completed the required training. Some of these are student initiatives, other initiated by faculty, but in all cases the School seeks to support and encourage students in their ventures. Some of these initiatives are more long-lasting than others, but all emerge in response to a specific set of concerns and a group of researchers – irrespective of whether they are faculty, staff or students, interested in pursuing the interest.

The entire school is a living and vibrant intellectual, creative and professional community in which students are the primary focus and the curriculum is designed to provide a wide array of skills and experience to the undergraduates and, to the graduates, the independence to apply, experiment and speculate.

Waterloo Architecture is, unequivocally, a professional School; virtually all students entering it are motivated by the desire to practice architecture. The program’s conception and the elements that define the educational experience; that is, the co-op program, the academic courses, the design studios and the Masters thesis are conceived to provide the foundation for entry into the architectural profession. At the same time, the curriculum reflects the fact that architecture is a liberal field and, while opportunities in areas of traditional practice continue to be available, there are new forms of practice and new types of design enterprise appearing. The outcomes of an architecture education, skills, knowledge and practice, are also highly transferable and may lead to unex-

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pected careers. All this is acknowledged. Hence an architectural education must be simultaneously broad and open, dense and focused. Within this apparent paradox the school has attempted to maintain a balanced view.

As indicated in the curriculum summary and the response to the student performance criteria, licensing and matters related to it are explicitly covered in the Arch 655: Architectural Professional Practice: Ethics, Business, Legal Issues, and Contract Administration, a core course in the Graduate Program. The Architects' Act is specifically taught in Arch 655. This course has recently been re-structured and is now given as a block course that covers different dimensions of professional practices, from legal issues, Acts and Codes regulating professional practice, types of partnerships and rules of professional conducts, as well as drawings and specifications. Health and life safety issues are treated in academic and studio courses at every level and most particularly in the first and second year building construction sequence. A broad philosophical approach to issues of professional and environmental ethics is fostered in the cultural history and ecology streams. .

At the undergraduate level, students are introduced to and then encouraged to participate in the registration process. At the 3A level every student is provided with information and an application form to become Student Membership in the Ontario Association of Architects. This is in part because they can begin filling out their experience record. This is necessary because one of the co-op Work Reports is a completed logbook recording the experience gained on the 3B Work Term. Students initiate an online record and assessment of their educational and work experience tracked against the Student Performance Criteria as listed by the CACB. There is, therefore, no student in the School who is not familiar with the requirements and obligations of professional licensure. In their final report, they continue their tracking against two sets of criteria: the Student Performance Criteria and the Canadian Experience Record used by the provincial licensing bodies in Architecture to record professional experience.

There are many points in the curriculum that prepare students to their professional life as architects. Through the undergraduate degree, this is done via the many work terms and the two required reports that include the tracking of their experience against both the CACB requirement and the internship categories.

In their final undergraduate year, the Comprehensive Design Studio and its related technical report introduces students to the collaborative nature with other trades. In their final year of the graduate program, they are specifically prepared for the legal, ethical, and business dimensions of their upcoming professional life. As the goal of education is to place all material in a critical context, even a course such as Professional Practice attempts to explain the political and social significance the legal instruments as well as their provenance and place in the world of ideas. At the same time the exercises in the course are designed to prepare students for the conditions of practice and the experience of the licensing exam.

The school is dedicated to educating future professionals. It is committed to the development of new ideas and techniques that improve the quality, viability and value of the architectural profession. It is also devoted to enhancing the role of architecture in society, economy and culture. The School is connected to the profession through the world-wide network of employers who hire its co-op students. In turn, the School makes a contribution to the future of the profession through the skills, knowledge and critical abilities it provides the students and the wide range of research and design activity in the Masters program.

The culture of the school is based on engagement, hence the relationship between education and practice is intimate, reciprocal and discursive. Education is not separated from practice, nor practice from education. This is certainly supported by the co-op program, as much as it is from the presence of professionals in every studio teaching team and in some of our elective and core courses.

In the undergraduate program students acquire the basic skills required for practice. They design from the moment they enter the School. They begin working in architects' offices in their second year and complete at least 5 four-month work periods before they complete the undergraduate degree. Their engagement with the profession is direct and the school takes it upon itself to provide students with the skills and knowledge not only to contribute to the employer, but also to benefit from experience in a professional office. This prac-

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tical, professional, experience is present in the design Studios as well, especially in the 4B Comprehensive Building Design, which is modeled on actual architectural practice. But in fact every studio is set up to engage issues relevant to the profession and its contribution to society.

This professional focus is intentionally balanced with courses that promote critical, conceptual and speculative activity. The Technology and Environment and, particularly, the Cultural History and Theory stream engage the students in discourse that relates architecture to the arts, culture, and society, showing it to be both profound and open-ended. Cultural History, from the very first courses, also introduces the complicated philosophical and ethical issues with which a professional must deal. The early years of the Cultural History and Theory stream, built on a foundation of readings of ancient, medieval, renaissance and modern philosophers and critics, trace the history of ideas regarding the needs and aspirations of individuals and society. Waterloo students have been required to read Aristotle, Plato, Cicero, St. Augustine, Dante, Machiavelli, Galileo, Kant, Nietzsche and Freud, among others. This is an extraordinarily rich background against which to test a personal and professional philosophy and upon which to build a lifetime of reflective professional activity and educational pursuit.

In the Masters program the nature of the engagement shifts. While undergraduates are taught the skills and given the intellectual background, the graduate students choose the pieces of the profession upon which they will concentrate, taking on individual, unique and in-depth research and design projects. They range from highly technical to literary or philosophical. Most deal directly with a challenge faced by the contemporary profession. Each student develops a research question, clearly trying to advance architectural knowledge in an effective and useful fashion. In this respect, the students are encouraged to think not only within the traditional bounds of the profession, but on its fringes as well as beyond. The Masters program is open to inquiries that can take students across a great range of scales, from the skin of a building to territorial considerations. Likewise, their investigations can take different forms, whether the more traditional design approach to narratives that reveal or assess other dimensions of the built environment – social, political, psychological, amongst others.

Through these projects, students have worked on institutions, public space, economic development, the role of design in mid-size cities, installations that have been published and displayed in galleries around the world. Students are also directly and continuously engaged in the profession as part of their co-op work terms, and the great reputation gained by Waterloo intern students around the world speaks to their professional approach to their work experiences. Students are also engaged in professional considerations through their Professional Practice course, when they can reflect upon their own experience and judgments of the architectural practices and professionals with whom they have worked. The courses also specifically examine the diverse roles of professional collaborators involved in the design, construction and regulatory fields.

While students work in professional offices, so are professionals present in the School. In the fall of 2008 the school launched a new initiative called *Paths to Practice*. This event grew out of the review of the architecture co-op program. Both students and employers had said they wanted a broader base of contact than was provided in the co-op interview process. Every two years, the school hosts an event that has taken different forms, but always involve a keynote speaker, a prominent architect, who tells the story of his or her own route to a successful architectural practice, sketching for the students a personal view of the relationship between education and practice. Along with the keynote address there are typically a number of panels of alumni that present the non-traditional paths they followed after graduation from architecture school, and architects representing a variety of large and small firms that speculate on the future directions of architectural practice. Students can attend an information session on international placements. The day also includes a career fair in which architectural firms, local and international, set up display tables, talk to the students and recruit in advance of the job interviews coming up later in the term. The event is very well attended and the feedback from the students and employers has been extremely positive. The event has been ongoing since 2008.

Within the profession the School has attempted to make a mark through its participation in professional bodies, supporting the development of the accreditation program, participating in the OAA reviews and implementation, promoting the revised focus of the RAIC and forging connections between the Schools of Architecture in Canada, Asia, Europe, the United States and Mexico. The

desire of the Waterloo community to foster critical discourse within the profession is also indicated by the involvement of our faculty members in publications such as *Canadian Architect*, *Azure*, but also as editors of *Scapegoat* Journal, or by acting on the editorial board of the *Journal of Architectural Education*, or through involvement in the different conference of the *Association of Collegiate Schools of Architecture*. The school is also home to Riverside Architectural Press that has published about 30 titles on architecture and design since 2011.

Collegiality and the capacity to work in a team are elements of a professional formation. In all of the required design studios, as well as in some other courses as well, students do group projects. This form of activity has a long and successful tradition at Waterloo. The need to plan and divide work, to depend on the judgement and responsibility of others and to adjust one's point of view out of respect for other individuals and the collective are the lessons taught within the School by the regular alteration between group and individual projects.

Among the full-time faculty are scholars, architects and architect/scholars. But the School has been able to maintain a large contingent of practicing architects and engineers in both core technical courses and design studios. Among our regular faculty are award-winning designers, indeed, four of our faculty members have been representing the architectural profession in the last two Venice Biennale, adding to the other two representatives that have Waterloo faculty members prior to 2011. There are more than 40 part-time appointees each year, most of whom are practicing architecture. In addition, close to 100 guest critics, lecturers and visitors come into the classrooms and studios each year. Some faculty members in the School also associate themselves with firms in the execution of projects, maintain consulting practices, advise in selection of architects, or serve on juries for design competitions and awards.

The profession, its activities and knowledge are examined in the broadest historical, environmental, technical, theoretical, social and economic contexts. Specific professional knowledge and useful skills are also transferred to students throughout the curriculum. The resultant balance, or tension, is aimed at preparing students to deal with complex situations and a changing profession, the current condition which seems far from secure and confident. The aspiration of the School is to find the means of dealing with real architectural prob-

lems effectively, but also with the greatest sensitivity to the increasingly complex and nuanced cultural, social and environmental conditions in which one builds today.

The School of Architecture at Waterloo is thoroughly enmeshed in the social, political, cultural and environmental challenges of contemporary Canada. The School's move to and position in Cambridge has made it a true public institution, a pole in a community, a regional landmark and an example for universities and communities across the country. If there is no barrier between education and practice at Waterloo, we likewise seek to maintain openness between the School and the community.

The School is also a global entity. Waterloo is unique to other Canadian schools in having a permanent international location. The students work in more than 20 countries. The student body is multicultural. Faculty represent Canada on the international stage in the realms of architecture and design.

Our students are well aware of the need to work in a multi-cultural context at home and abroad; of the need to act responsibly in the face of environmental catastrophe; and of the need to promote consciousness of the global and local societies of which we are a part. These issues are addressed directly in the curriculum. These issues are the core of some of the faculty's research – from amphibious foundations to landscape urbanism.

The community of the School is itself diverse, including students from all parts of the world and of all races and ethnic backgrounds. Respect for cultural values is fundamental to the cultural history program. Students are provided with opportunities to serve the community and, in many cases develop such opportunities themselves, both inside and outside the curriculum. They have set up a base across the river, on Main Street in Cambridge. They are organized lectures and discussion groups with members of the community, and these talks take place both inside and outside the School – in the parks, a community members' shop, or in a café.

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Through their research projects, students address a range of social, political and cultural issues. A student considered the war-torn city of Sarajevo and proposed a new library: her project was exhibited both here in Cambridge at the Design at Riverside Gallery and in Sarajevo and London (UK). Another student studied yaodong or cave dwellings in China, winning the Moriyama RAIC Student Scholarship that went towards travel in China. She is bringing attention to how over 30 million Chinese people currently live in the Loess Valley, in the shadow of the current urbanization. Another student pursued an interest in bricks that took her from Rome, through the reconstructed city of Warsaw to then the design, production and firing of her own bricks to build a structure in Grymsdyke Farm, UK: her thesis received the Networked Digital Library of Theses and Dissertations (NDLTD) Award. She received her prize at the University of Leicester, UK. Another student mapped out the invisible architecture of the Eruv, the legal fiction that in many cities around the world bounds Jewish areas to facilitate daily life in a manner still observant of the Thora: her research is now under consideration for publication by The New Jewish Press. The School is immensely proud of this record, not only of actual construction, but of well-researched and deeply-committed design.

These are all remarkable examples of project that look at different issues in architecture, addressing the complex world of which it is a part. But examples likewise abound locally, in the very rich relationship that has developed between the School and its host city. Our students have been involved in the discussions around the transformation of an Old Post Office (designed by Thomas Fuller) into a branch of the public library network. They have taken part in the City's *Unsilent Night* festivities. More recently, the School and its students have been deeply involved in the Building Waterloo Region's festival of events, spearheaded by a faculty member at the School of Architecture, with contributions by colleagues and students.

The School has for decades advocated locally for design quality. Just as leadership in the academic and professional contexts has been central to the School's mission, there has been a concerted attempt to raise the consciousness of design in the community. Even before the profile of the School was raised by its very public relocation to Cambridge, its influence could be measured in the appearance of a substantial number of outstanding buildings in the Kitch-

ener- Waterloo-Cambridge areas. In several cases, the William G. Davis Centre, the Canadian Clay and Glass Gallery, and Kitchener City Hall, design competitions were carried out as a result of the direct intervention of individuals and groups associated with the Waterloo School of Architecture. Faculty, adjunct faculty, and graduates were directly involved or responsible for the design of such outstanding local buildings as the Seagram Museum, the Grand River Aquatic Centre, the Waterloo Regional Children's Museum, the new Kitchener Market, Cambridge City Hall and university projects such as the Applied Health Sciences Building, Centre for Environment and Information Technology, Co-operative Education and Career Services, Engineering V, the Balsillie School of International Affairs, the Perimeter Institute, and the School of Pharmacy. The number of these buildings that have won provincial and national design awards is remarkable.

Students, faculty and staff have served on public boards such as Local Architectural Conservation Advisory Committee, Municipal Heritage Advisory Committee, Public Art Advisory Committee, Cambridge Core Area Revitalization Advisory Committee, the Regional Official Policy Plan Review, Arts and Culture Advisory Committee and Legacy Cambridge. Other local initiatives included leadership in the development of the Huron Park Natural Area in Kitchener and regular participation in community-based lecture series, Third Age Learning Programs, design charrettes and conferences.

To say the least, the School has become a catalyst for debate within the community and the University. Social, economic, environmental and political issues were all connected in the discussion of the relocation, but the real effect of the move can be seen in the subsequent initiatives to relocate other professional schools to the core areas of nearby municipalities. *IdeaExchange*, the Regional Museums and Historic Sites, the City of Cambridge, the Cambridge and North Dumfries Community Foundation, the Social Planning Council of Waterloo Region, the Centre for Social Innovation Generation, the Musagetes Foundation, Rare Charitable Research Reserve and the Grand River Conservation Authority have all entered into agreements to collaborate with the School on projects involving research, design, exhibition and construction. The School of Architecture is not an outpost of the University of Waterloo in Cambridge; it is a public building and an institution serving the City and the Region. The School, its

faculty, staff and students have become active participants in the rebuilding of an urban core and the building of a community.

One side of the relationship to society is local, the other, of course is global. Students receive a range of cultural and urban experience through the field trips and exchanges that occur regularly in the program: whether field trips in New York, Chicago, or Montreal; a fourth year term in Rome; and exchange opportunities in Czech Republic, Switzerland, Sweden, England, Turkey and Australia. There are also opportunities for funded travel through MITACS that have taken students to China. Work term experience can also be gained anywhere in the world. Up until the late 1980's the greatest concentration of foreign placements was in London, England, where approximately 20 students worked in any given term. This number remained consistent until 2008. New York became the clear second to the Toronto as a destination for Waterloo students. Today the students have literally spread themselves across the globe, working in Germany, Italy, Spain, Portugal, Holland, Finland, Turkey, United States, China, Australia, Hong Kong, Singapore and Japan.

The stated goal in moving to Cambridge was to become a global academy with roots in a community. The School is certain this ambition has been achieved.

3.2 PROGRAM SELF-ASSESSMENT

3.2.1 SELF-ASSESSMENT INSTRUMENTS

The School of Architecture is an open and discursive institution in which review of administrative and curricular decisions is a continuous process involving faculty, support staff and students through means that are both formal and informal.

administrative mechanisms

The official mechanisms for establishing and reviewing curriculum are the School Undergraduate Affairs Committee (UGAC) chaired by the Undergraduate Officer (a faculty member appointed by the Director) and the Graduate Studies Committee chaired by the Graduate Officer (currently two co-officers). The Undergraduate Affairs Committee consists of four additional full-time faculty members representing the instructional streams in the program (design, visual and digital media, technology and environment, cultural history, urbanism and landscape), and the Student Services Coordinator. The Graduate Studies Committee consists of the two Graduate Co-Officers, at least two additional faculty members, and the Coordinator of Graduate Studies and Research.

The UGAC has the authority to monitor, review and approve curriculum, to review all changes to the program requirements and regulations pertaining to them and to approve all calendar changes, including course descriptions. In its deliberations the committee may instigate program or course changes or respond to propositions brought by the Director, the Registrar's office or any one of the theme area committees responsible for maintaining the relevance and quality of the courses in a specific academic stream. These committees consist of all faculty members teaching in the stream in the case of visual and digital media, technology and environment, cultural history, urbanism and landscape and of the studio coordinators in the design stream.

Decisions made by UGAC and the Graduate Studies Committee are reported to and debated at the School Committee, a body consisting of all full and part-time faculty members, all support staff and student representatives. All changes in academic curriculum (creation of new courses, deletion of courses, changes to course descriptions or changes in academic requirements) are then taken

through a complete external review process beginning with the Faculty of Engineering, Faculty Undergraduate Committee and Graduate Affairs Committee, whose recommendations must then pass at Faculty Council, University Senate Undergraduate Council, Senate Graduate Council and the full University Senate. Enforcement of specific regulations lies in the hands of the School Undergraduate and Graduate Officers and the Associate Deans Undergraduate and Graduate and Research of the Faculty of Engineering.

faculty retreat

Faculty retreats are organized annually or bi-annually around specific events or discussions. Over the past few years, faculty have been gathered at retreats to discuss the vision for the School, reassess the strengths and weaknesses of the curriculum, and establish future directions. It is also in the context of a faculty retreat, gathering all full time faculty as well as all staff, that we undertook parts of the self-study process that was essential to the preparation of the accreditation report.

student evaluation

The Faculty of Engineering has a clear policy on teaching evaluations. Students evaluate every course that is taught in the School of Architecture. Student participation in this evaluation process is optional. The forms offer both a multiple choice and a discursive section. Until 2016, the forms were paper-based, distributed by the School secretary and collected and returned by a class representative. The evaluation was done during class time, in the absence of the instructor. Beginning in Winter 2016 academic term, the Faculty of Engineering transitioned from paper-based evaluations to electronic delivery. The method of delivery is the only change that has been made. The content of the questions; the evaluation dates; the procedures on evaluation day; and the processing, use and sharing of results data continues to adhere to long-established practices.

While there are different evaluations for the undergraduate and graduate courses, the questions remain consistent across the whole Faculty of Engineering. These questions cover the content of the course, the delivery, the level of difficulty, pertinence of assignments, course load, instructor's knowledge and relation to the class, etc. There is currently a project to change to question to move towards a more qualitative evaluation. Examples of both undergraduate and graduate evaluations will be provided during the visit.

Results are not released to the instructor until all grades for the course are submitted. Evaluations are processed in the Office of the Dean of Engineering. The results are published and the reviews themselves are returned to the course instructor. While the overall numerical evaluation of the course is public, only the course instructors have access to the students' written comments.

The Director reviews the results when they are submitted and considers them once again in the context of the annual faculty performance review. The statistical results are published by the Engineering Faculty. The Dean writes individual notes to faculty members whose evaluations are very high and to those whose teaching is not well received by the students.

Students are also given the opportunity each term to evaluate the quality of the academic support areas such as the computer labs and workshops.

student meetings and surveys

The most effective methods of obtaining student feedback in the School involves student engagement with the Director, Associate Directors and Administrative staff. The Director meets with student leaders on a regular basis. Each week the Undergraduate Student Services Coordinator meets with the undergraduate student association, while the Coordinator of Graduate Studies and Research meets the executive of the Society of Waterloo Architecture Graduate Students. These meetings involve discussions of both operational details, student concerns and the overall direction of the school. The intimacy

and regularity of these connections leads to an environment in which change can take place on a continuous basis.

The School has also used questionnaires and polls in collaboration with the student organizations to obtain student views on specific topics. Polls have recently been used to determine student opinion on the first year computer courses, feedback on new curriculum course, software used in the school and relationships with the main campus.

alumni surveys

Surveys can be set up with the help Curriculum & Quality Enhancement, at the Centre for Teaching Excellence. We are able to survey both alumni from the Bachelor and Masters programs. As part of the self-study process, we conducted four different surveys, half of them with current students, and the other two with alumni. Results from these surveys are available in appendix 5.3: Student and Alumni Surveys.

recruitment and marketing

In addition, the Undergraduate Marketing and Recruitment Team at the University have carried out surveys of first year students and applicants who accepted and rejected an offer of admission. The results assist the School in managing the information it provides, the interview process and the correspondence with students after an offer is made. The survey results will be available to the Visiting Team.

external assessment

Until recently, the Graduate Program was reassessed by the Ontario Council of Graduate Studies (OCGS) as an autonomous, external assessment. This has been replaced by the University of Waterloo's Augmented Review, which assesses the quality of both the undergraduate and graduate architecture programs. Following submission of the Augmented Review within the University of Waterloo, the document is submitted to the OCGS for assessment. The two reviewing processes – the augmented review and the accreditation – are now to be conducted contemporaneously.

peer evaluation of faculty members

Peer evaluation occurs predominantly in the context of the Annual Performance Review. Regulations around the Annual Performance Review are laid out in the Memorandum of Agreement, Article 13.5 and Policy 77. In departments of 15 faculty or more, the review is to be conducted by an elected committee of a maximum of 5 members. This committee considers the report on performance in the three areas of research, teaching and service. For the purpose of research, we take a window of three years into consideration to allow for different levels of productivity at different points in projects. For the evaluation of teaching, the amount of course taught as well as the quality of teaching as expressed in the course evaluations are used to assess performance. There is an intention to move towards a peer review of teaching that would report on the quality of presentation, and content as well as the general course organization as it is evident from the course outline and other material. Peer evaluations would also be submitted to the School Promotion and Tenure Committee and become part of the teaching dossier that moves up through various levels. This is a process that was previously followed when Architecture was part of the Faculty of Environment. Service is also evaluated to assess the level of involvement both internally and externally.

The University is now in the process of moving to a biannual evaluation for all tenured faculty. This will be implemented as of 2018, but would not apply to tenure-track faculty members who will still benefit from the annual review.

The Tenure and Promotion process is outlined in Policy 77. In both tenure and promotion applications, the assessment of teaching is made based on a teaching dossier as well as on the review of course evaluations. The University is increasingly encouraging processes wherein this is supplemented by peer evaluation of teaching skills, and the School is currently working with the Associate Deans of Teaching in establishing a framework to conduct these peer evaluations of teaching in Architecture. Currently, what the School is considering is the range of courses and type of courses taught (e.g. studio, seminars, lectures); the quality of teaching based on evidence such as the course outlines, assignments and teaching evaluations; involvement in graduate supervision as well as more general involvement in curriculum development. For the evaluation of scholarship, the committee relies on their review of the candidates' documentation as well as on letters from external referees. Scholarship is assessed in relation to quality, originality, as well as impact. Both the steady involvement as well as the longer term projects are taken into consideration when evaluating scholarship. Through recent promotions, architecture has been making a strong case for consideration of different type of scholarship, including creative outputs such as built projects, design projects, art installations, exhibitions and other creative activities. In the evaluation of service, considerations are given to both internal and external service, with the possibility that some of these service activities overlap with contributions in teaching and research.

The School of Architecture is currently strictly working with the University's Policy 77 for Tenure and Promotion. The intention is to initiate work in the creation of Tenure and Promotion guidelines that would be specific to Architecture. While we have been able to make strong cases both within the Faculty and at the University level, such guidelines would be useful to any faculty seeking tenure as well as members of the School's Tenure and Promotion Committee.

3.2.2
FUTURE DIRECTIONS

As mentioned above, the current plan in Engineering is “Building on Excellence”, with the aspiration to be “a truly world-class school of engineering.” The key priorities include the ability to attract, engage, and retain outstanding people; to commit to excellence; to undertake high-impact research, to build connections and collaborations; to foster innovation and to provide world-class facilities. These priorities overlap with the University’s eight main areas: experiential education for all; uniquely entrepreneurial university; transformational research; outstanding academic programming; global prominence & internationalization; vibrant student experience; robust employer-employee relationship; and sound value system.

In relation to these priorities, the School of Architecture’s specific plans are to continue to grow the School in three realms – curriculum, community and collaboration. These three aspects together encompass subsets of the key characteristics of the School, and likewise intersect with the University and Engineering priorities.

For the curriculum, these include the co-operative systems, the strong foundations in Design (design from day one), the commitment to the highest quality across all streams (design, visual and digital media, cultural history and theory, technology and environment, and urbanism and landscape) as well as the continued presence in Rome and the relation of that program to cultural history. These are all characteristics that we must continue to build upon in the future. They form a position, but also inform a set of directions:

1. Our ambition is to become even more international. Building upon the experience gained in setting strong foundations in Rome, the goal is to integrate references to other origins in our curriculum, and to make new destinations accessible to students, irrespective of their financial means.
2. We want to continue to build upon the School’s strongest characteristics (co-op, cultural history and design from day one) while opening up to other realms of instructions and investigations (focus on urbanism, landscape, digital fabrication, material research). The key issue here to gain breadth, without losing depth.

3. More pragmatically, we are determined to continue to improve student experience: eliminate redundancies in the curriculum, create more flexibility for our undergraduate students, fine-tune the recent changes in the curriculum at the graduate and undergraduate levels. What is crucial is to reassert a School's vision that we collectively hold above and beyond our own individual investments in specific aspects of its curriculum.

Collegiality points to the climate of collaboration that has typically prevailed in the School, a climate that hinges on the preservation of open communication, fairness and transparency in the distribution of tasks and the evaluation of performance, as well as the ability for all to participate in the decision making processes and hence believe in the core mission of the School. The ambitions here are:

4. To achieve greater transparency in certain processes such as teaching assignments, participation in service, faculty performance evaluations, by increasing everyone's level of investment in these processes. The aspiration here is to involve staff, students as much as faculty to reassert their participation as essential collaborators on the common project of Architectural Education.

5. We want to cultivate a great sense of collegiality that brings together a set of strong and incredibly diversified people in terms of research interests or professional achievements. The goal is to engage this spirit of collegiality as the motor of a reinforced investment in a culture of research that can truly engage colleagues as collaborators, as well as students and other partners – whether academic or private – in collaborative research projects.

6. Ultimately, the ambition is to continue to promote and foster research to strengthen the School's culture of research and move towards the creation of a doctoral program within the School, to collectively establish the new undergraduate and graduate programs in Integrated Design, and to implement other ways of conducting graduate work whether through directed research or post-professional degrees.

When we refer to the School and its larger community, we are referring to the continued reliance on a remarkable support staff, and a great network of educators and practitioners that constantly, and crucially, energize the School. We are also referring to the need to continue to engage with the community of Cambridge and reassert the relation between town and gown.

7. With respect to the community, the ambitions are to make new, stronger, connections – in Cambridge and Waterloo – around two large initiatives: the projected program in Integrated Design and the Architectural Engineering program.

8. Quite pragmatically, we want to find partners locally and globally that can support our initiatives and provide funding for the new building to house the new program, for new global studios, for design-build projects, for publications, symposia and conferences.

8. Finally, we want to reach out to colleagues in other universities, co-op employers worldwide and alumni to improve the School's visibility and engage more actively the national and international communities.

3.3 PUBLIC INFORMATION

The following is an excerpt from the Architecture program description from the University of Waterloo online Undergraduate calendar 2015 - 2016 at:

<https://ugradcalendar.uwaterloo.ca/group/ENG-Honours-Bachelor-of-Architectural-Studies>

and the Graduate Studies calendar 2015 – 2016 at:

<https://uwaterloo.ca/graduate-studies-academic-calendar/engineering/school-architecture>

Additional information about the Graduate program has been taken from the Graduate Student Handbook, available at:

https://uwaterloo.ca/architecture/sites/ca.architecture/files/uploads/files/march_graduate_student_handbook_.pdf

The School makes every effort to accurately communicate its accreditation status and the process leading to professional registration.

The Guide to Student Performance Criteria is available to faculty and students on the University of Waterloo's LEARN site. In addition, the Director addresses the Guide to Student Performance Criteria at the all school meeting at the beginning of each term.

Architects organize spaces within and about buildings. They design, at a large scale, with an awareness of the demands of society. They design in detail with attention to the needs and aspirations of individuals and groups. They show understanding of structural technique, construction detail and the sound use of materials. They determine the way in which the building will be built and supervise the construction process.

Architecture is a vast spread of concerns about people and their surroundings, their history, cultures, resources, disciplines and contradictions. The School's primary concern is the development of design skills in architecture, and it stresses awareness of cultural background and existing environment.

The Academic Plan in Architecture is intended to prepare the student to become an architect capable of practice within contemporary professional constraints and capable, too, of adaptation to a changing profession and to the society it serves.

Two Academic Plans of study make up the five years of architectural studies: a four-year Honours Bachelor of Architectural Studies degree followed by a nominal one-year professional plan of study for the Master of Architecture degree. The Honours Bachelor of Architectural Studies Academic Plan is on the Co-operative system, which consists of alternating periods of academic study and practical work experience. The Master of Architecture degree is a one to two-year curriculum course of study with a self-directed thesis requirement.

The Pre-Professional Architecture Academic Plan comprises eight academic terms of study and six four-month Co-operative work terms leading to the degree Honours Bachelor of Architectural Studies. This degree, combined with a minimum cumulative average of 75%, indicates appropriate preparation for three subsequent academic terms of study leading to the degree Master of Architecture (MArch).

3.3.1

PROGRAM DESCRIPTION

3.3.2

DEGREES

honours bachelor of architectural studies (pre-professional architecture)

The Honours Bachelor of Architectural Studies degree provides the foundation of skills, knowledge, judgment and practical experience required for subsequent professional studies in architecture. Though the Academic Plan is pre-professional, it is fully dedicated to imparting to students the culture and practice of design. Design is a synthetic activity. To do it well and serve the needs of the individual and society requires an extremely broad education. Students acquire an understanding of the workings of society and culture, of the principles of physics, of materials and techniques of construction, of the human interaction with the natural and built environment, of historical process, of critical thought and of the diverse forms of creative expression.

undergraduate theme areas

Courses in the Honours Bachelor of Architectural Studies degree are arranged in five main thematic groups:

design – The practice of design and the understanding of its theories and methods. The understanding of cultural forces in the creative world.

visual and digital media – The use of creative and analytical tools and techniques.

cultural history and theory – The understanding of cultural and historical forces shaping the built world.

technology and the environment – The understanding of materials and methods, building technologies, and environmental issues and systems critical to the making of architecture

urbanism and landscape – An introduction to urbanism and landscape and the organization of natural and human ecologies.

design

The design courses are the primary focus of Architecture and are informed both directly and indirectly by the knowledge and skills developed in the other theme areas. Design courses are conducted in the form of studios in which students undertake a series of directed design projects, aimed to illustrate and engage practical, theoretical and aesthetic issues of architectural conception, and progressively establish expertise and understanding.

The projects range from fundamental design studies of building elements to large-scale architectural complexes, in exercises which include individual and multiple habitation, design in natural and built environments, development of buildings programs, studies of principal building types, and urban design. In the final term, design, theory, technology, environment, and urban issues are integrated into a major individual project – the comprehensive building design project and technical report.

visual and digital media

The visual and digital media sequence acts as a support for the design studio, introducing multiple methods of visualization that act as communicative, analytical, and generative tools for architecture. These courses build aptitude and understanding in the use of architectural tools and techniques, from hand-drawing and drafting in two dimensions to advanced three-dimensional digital modeling, visualization, and fabrication. At the upper levels of the curriculum and within elective coursework this focus area introduces a range of courses in traditional visual media, as well as an expanded series of digital offerings in areas such as parametric design, rapid prototyping using computer-aided design/computer-aided manufacturing (CAD/CAM) technologies, and interaction.

cultural history and theory

The cultural history and theory sequence is concerned with the human imagination, the forms through which it expresses itself, and the larger socio-political contexts within which it is enacted. In these courses, students are exposed to works of history, philosophy, literature and the arts, learning about architecture,

urbanism, and landscape within a broad cultural context that enriches their understanding. Architecture is thus conceived as a form of cultural expression and the creative activity of all students takes place against a background of humanistic study. The academic program fosters critical, discursive, and expressive abilities that are essential to the quality of the School and its graduates.

technology and environment

The study of the technical aspects of building and design begins with a series of courses that provide students with an understanding of the materials and methods of building construction, structural design and analysis, and environmental issues and their impact on design. Within this sequence students learn not only about the technologies of buildings and their material systems and assemblies, but also about architecture's essential relationship with its environmental context, as they are introduced to important topics such as sustainability, building energy, and environmental assessment systems such as Leadership in Energy and Environmental Design (LEED™). Upper level electives in this sequence give students the opportunity to engage in design-build projects and offer coursework in such areas as materials, advanced structural systems, alternative energy systems and ecological design among others.

urbanism and landscape

At Waterloo, students learn about architecture within the larger context of urbanism and landscape, and are introduced to the organization of larger systems, from settlement patterns to the morphology of cities, throughout their education. In this sequence, students are exposed to the principles of urban and landscape design in relation to natural and human ecologies and have the opportunity to study architecture and contemporary urbanism firsthand through the Rome program, one of the essential components of the curriculum. The intention is also to integrate upper level global cities courses that offer study abroad electives focused on international architecture, urbanism, and landscape in cities throughout Europe, Asia and South America.

master of architecture (professional degree)

The Master of Architecture is intended to prepare students to enter into the professional world of architectural practice and discourse. As they advance in the program, an increased emphasis is placed on architectural design and theory. Students deal with issues of a broader scope, have more flexibility in their choice of topics, and assume greater independence in their work. There are opportunities to choose from a selection of Thesis Research + Design Studios.

The Master of Architecture is a two-year degree program. Applicants holding a pre-professional Bachelor of Architectural Studies from the University of Waterloo (or an equivalent pre-professional architecture degree) can complete degree requirements in a minimum of three terms and up to a maximum of six terms. Successful applicants holding a pre-professional degree in architecture that does not meet the CACB criteria of the Waterloo pre-professional program are required to complete transitional coursework in the first year to adequately prepare for the final thesis year, and will complete the degree requirements in six terms.

The professional Master of Architecture, in conjunction with the pre-professional Bachelor of Architectural Studies degree from the University of Waterloo, comprises an accredited professional education. In Canada, all provincial/territorial associations/institutes/orders 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 Master of Architecture (March) and the Bachelor of Architecture (BArch). A program may be granted a six-year, three-year, or two-year term of accreditation, depending on its degree conformance with established educational standards. Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized by an accredited degree. The program in Architecture at the University of Waterloo received accreditation for a 6-year term by the Canadian Architectural Certification Board (CACB) in 2011.

graduate theme areas

Courses in the Master of Architecture degree are arranged into three main thematic groups:

design – The understanding and concepts of design put into practice

research – The research and methodology to support genuine research for the self-directed thesis

profession – The training and understanding of the professional aspects of architecture.

design

Design at the Graduate level is approached with a broader sense and scope of the theories and practices in Architecture. These approaches go beyond the practical, theoretical or artistic concepts established in the undergraduate program. They tackle larger issues and themes related to design and current trends in the industry. The focus is on real-world application of the design concepts introduced by students.

research

Students are engaged in all aspects of research to assist them in the development and completion of their thesis. Students participate in a series of Thesis Research + Design Studios and an Architectural Analysis course to develop a design or concept. This initial focused research process helps students build relationships with faculty members who share research interests, while allowing students the independence to continue with their specialized thesis of topics right up to the defense.

profession

The professional practice course gives students the necessary preparation required in order to enter the profession, once the Master of Architecture degree is completed. This course focuses on both the technical aspects of architecture and the financial aspects of professional practice. Students gain the hands-on managerial and business understanding needed to be successful in the industry.

Honours BAS Degree

The Honours BAS and the MArch are separate degrees. Students will not be permitted to proceed to the MArch until all of the course requirements of the Honours BAS are successfully completed. Students must apply to the MArch and meet all graduate admission requirements to be admitted to the MArch program.

In order to proceed unconditionally from one term* to the next in the Honours BAS, the student must satisfy each of the following requirements:

1. Students will be required to maintain a minimum cumulative overall average of 70% calculated at the end of each term. Students successfully completing all requirements of the fourth year and obtaining an average of 75% will be considered for admission to the MArch.
2. Pass ** the studio course
3. Not fail ** more than .5 units or equivalent (excluding studio) in any single term.

*A term of study refers to a particular four-month period of enrollment including the 1A Fall and 1B Winter terms and all 'A' and 'B' terms.

**A minimum passing grade in any course is 50.

3.3.3

ADDITIONAL REGULATIONS,
EXAMINATIONS +
PROMOTIONS

The School reserves the right to recommend exceptional academic decisions for students who require exceptional consideration, the Examinations and Promotions Committee will be guided by the following:

- Students who satisfy at least two of the above passing requirements, 1, 2 and 3, in a given term may be permitted to continue conditionally in the Academic Program as outlined in Notes 1, 2, 3, 4 and 5 below.
- Promotions decisions for students who satisfy only one of the passing requirements in any given term will be made on an individual basis by the Examinations and Promotions Committee.
- Students who satisfy one or none of the above requirements in a given term will normally receive the decision “Required to Withdraw.”
- The School of Architecture gives no supplemental examinations.
- If a student receives a “Required to Withdraw” or a “May Not Proceed” decision, he or she must withdraw from the Honours BAS Program for two academic terms.

Generally, students wishing to graduate with a University of Waterloo Honours Bachelor of Architectural Studies undergraduate degree must spend a minimum of two years, including their final year, in residence (full-time on campus). In this case the 4A Rome term qualifies as the program is offered within the University of Waterloo. This does not preclude special studies approved in advance. Architecture students who choose to undertake alternate studies to the Waterloo 4B term may not graduate with a BAS degree because of the residence requirements.

The possible academic decisions and their effect on the student’s progress in the program area as follows:

satisfactory standing – student has achieved a cumulative average that falls between 70% and 74.9% and is allowed to proceed unconditionally to the next term

good standing – student has achieved a cumulative average that falls between 75% and 79.9% and is allowed to proceed unconditionally to the next term

excellent standing – student has achieved a cumulative average of 80% or above and is allowed to proceed unconditionally to the next term

may not proceed – the student may not proceed to the next academic term. In the case of a failed studio, the student must repeat and pass the studio prior to continuation in the program. In the case of other failed core courses, the student will be given an Academic Advice Service Indicator and must make arrangements with the Undergraduate Officer to retake the core courses. In the case of Incomplete courses, these must be completed before the standing decision will be changed

required to withdraw – the student's registration in the Bachelor of Architectural Studies (BAS) program is revoked. Readmission is not possible for four academic terms following the term for which the decision applies. Students must apply to the program for readmission

recommended for BAS degree – all requirements of the program have been successfully completed

aegrotat – added to academic decision 1; proceed to next term. The student has adequate understanding of the material, but because of illness or other extenuating circumstances, normal evaluation for at least one course was not possible

proceed on probation – a decision used in exceptional circumstances that allows the student to proceed to the next term. Continued progress in the program is contingent on satisfying conditions which may be prescribed as terms of probation

additional notes on academic decisions

1. cumulative average

Students who fail to maintain the minimum cumulative overall average requirement but who satisfy the other two requirements will receive the academic decision "May not proceed." At the discretion of the Examinations and Promotions Committee such students must raise their cumulative average to a minimum of 70% by repeating the term or by repeating courses which are detrimental to their average and/or by taking approved elective courses before enrolling in the next higher level core or studio courses. The minimum cumulative average must be attained within the next calendar year. Failing this, the student will be required to withdraw. Failure to maintain the minimum cumulative average of 70% by the end of the next higher level term will result in the academic decision "Required to Withdraw."

2. studio courses

Students who fail a studio course (ARCH 192, 193, 292, 293, 392, 393, 492, 493) but who satisfy the other requirements will receive the academic decision "May not Proceed." Such students must repeat and pass the studio course. Failure to pass the studio in question on the second attempt will result in the academic decision "Required to Withdraw." Students may not register in any higher level studio course or core courses until the failed studio course is passed. Credit will be retained for courses passed in a term in which a studio course is failed.

3. elective courses

There are nine elective courses in the curriculum. Six of these elective courses in the Architecture Program are considered to be "free" electives, meaning there is no level or area requirements. Students may also elect to take these free elective requirements via online courses or with Letters of Permission in other programs. *(Please note that given the density of the curriculum, we have momentarily approved the removal of three electives, to be re-integrated when we have successfully consolidated other courses and effectively made space for these electives).*

The remaining three electives must be taken from: Arch 510 Visual and Digital Media; Arch 520 Urbanism and Landscape; Arch 540 Architectural History and

Theory; or Arch 570 Building Technology and Environmental courses. A selection of these 500-level courses will be offered throughout third and fourth year in these four elective areas.

Students who fail more than one term elective course or equivalent in any single term (but who pass studio and maintain the minimum cumulative overall average) will receive the academic decision "Proceed on Probation." Failed elective courses or their equivalents must be repeated and passed by the end of the next term of study. Should the student fail more than one half course or equivalent in the next term, the student will receive the academic decision "Required to Withdraw."

4. core courses

Students who fail or achieve "Incomplete" status in two or more one-term courses or equivalent in any single term, including the 4A Rome term, and students who accumulate three or more failed or "Incomplete" courses over a period of time (but who pass studio and maintain the minimum cumulative overall average) will receive the academic decision "May not Proceed." The failed core courses or equivalent must be repeated and passed before the student may register in any higher level studio or core courses. Should the student fail two or more one-term courses or equivalent in the next term, the student will receive the academic decision "Required to Withdraw."

5. conditional status (proceed on probation)

Notwithstanding the provisions of Notes 1-4, students who have been granted conditional status in a previous term during the course of the Honours BAS Academic Program will be required to withdraw if at any subsequent time they fail to meet any one or more of the three basic requirements for unconditional promotion as stated in 1, 2, 3 under "The Regulations, Examinations and Promotions" page.

6. incomplete courses

Students who receive the decision INC in any course must clear the "Incomplete" within four months of the decision or the grade will automatically revert to FTC (Failure to Complete), which calculates in the average as 32. To obtain credit for a core or elective course, subsequently, the student must retake

and register again for the course (or an approved equivalent). For an elective course, an alternative may be taken.

7. failed courses

When a course is repeated, both marks will appear on the student record and will be included in the calculation of the cumulative overall average. An exception applies to repeated core courses of greater than or equal to 1.0 credit weight. These will have the first failure removed from the average, however, the course attempt will be retained on the transcript.

8. course loads

Normally students of the School of Architecture are permitted to take only one more or one fewer term courses than that prescribed for the particular year and term in which they are registered. Any further addition or reduction to the student's program must be approved by the Undergraduate Officer of the School of Architecture.

9. appeals and petitions

See Appeals and Petitions in this section of the calendar.

10. letter of permission

Students may request to take a course(s) at other universities for credit towards a UW degree by Letter of Permission. A Letter of Permission is granted only to students who have successfully completed a minimum of four University of Waterloo courses and who are in good standing; that is, they have satisfied the minimum cumulative average requirements for their current Program. A maximum total of 10 courses may be taken on a Letter of Permission or by Cross-Registration with Wilfrid Laurier University or by enrolling in a Wilfrid Laurier University course that appears on the University of Waterloo Schedule of Classes. More information about the Letter of Permission Policy and Procedures is given on the reverse side of the form.

Courses taken on a Letter of Permission must be approved in advance by both the Undergraduate Officer and Registrar's office. Such courses must be taken at a degree granting university. Credit for courses taken on a Letter of Permis-

sion will be granted only when the assigned grade is equivalent to at least 60% on the University of Waterloo grade scale. It is the student's responsibility to ensure that transcripts from the host institution are forwarded to the Registrar's office.

Normally, courses considered by the Faculty to be core or degree term requirements may not be taken on a Letter of Permission. Wherever possible, courses taken on a Letter of Permission will be recorded as the equivalent University of Waterloo course and graded as per policy for the Faculty of Engineering.

11. transfer credits

Transfer credit may be given for courses in which a grade of 60% or better was obtained. Such courses must have been taken at a degree granting University. Students entering the Honours BAS Academic Program may apply for up to six term course credits towards the elective requirements of the degree. Application must be made to the Undergraduate Officer where transfer credits are desired as an exemption from required core courses. A maximum of 20 term course credits total may be transferred towards course requirements for the Honours BAS degree.

As the Honours Bachelor of Architectural Studies, Architecture Academic Program is included in the accreditation review of the professional Master of Architecture Program by the Canadian Architectural Certification Board, absolute equivalency of courses for transfer credit must be determined. It is the student's responsibility to submit transcripts and full course outlines for assessment.

12. co-op work-term reports

To be considered in good standing in Honours Co-operative Programs, in addition to maintaining the required minimum cumulative averages, students must complete and submit satisfactory Co-op work reports at the completion of each co-operative work term. The normal date for submission is the end of the second week of classes of the following academic term. A minimum of three satisfactory work reports is required for the Honours Bachelor of Architectural Studies Co-operative degree. Co-op work reports must be submitted prior to

students being interviewed for their subsequent work term placements. Students not meeting this requirement will not be included in the interview and placement process for the subsequent term.

co-operative system of study

Students gain invaluable architectural professional experience through the co-op program which integrates two years of alternating paid work terms into the pre-professional course of study. Through co-op, Waterloo Architecture students expand their professional education and opportunities as they apply their knowledge and skills within architectural firms all over the world.

The Honours Bachelor of Architectural Studies, Architecture Academic Program includes eight terms of study, six four-month Co-operative work terms (of which five are required to graduate) and one “off-term.” The work terms must

FIGURE 2 | WORK-STUDY SEQUENCE

Sept - Dec	Jan - Apr	May - Aug	Sept - Dec	Jan - Apr	May - Aug	Sept - Dec	Jan - Apr	May - Aug	Sept - Dec	Jan - Apr	May - Aug	Sept - Dec	Jan - Apr	May - Aug
1A	1B	off	2A	C	2B	C	3A	C	3B	C	C	4A	C	4B

be pre-approved by the Department of Co-operative Education.

note

The “off-term” in the Honours Bachelor of Architectural Studies Academic Program follows the first two terms of study (from September to April) in Year One. Students may use the “off-term” as a vacation period or they may seek temporary employment. Any employment arrangements made for the “off-term” are the student’s own responsibility. If architecture related employment

is obtained during the “off-term” following 1B, it will not be considered as a replacement for any subsequent Work Term requirement.

The terms are arranged as indicated in “Work/Study Sequence for Architecture.” Students wishing to take time off from school must complete a Work/Study Sequence change form.

professional development – architecture

This section is new and applies to students enrolling in Architecture in Fall 2013 and beyond. Students entering engineering prior to Fall 2013 are directed to earlier calendars or to their program advisor for the requirements in this area.

There are a total of five Professional Development courses, four Professional Development for Architecture student courses (PDARCH), and one Professional Development course (PD) required for the Bachelor of Architecture Studies (BAS) degree. These courses are normally taken during work terms and students are expected to enroll in one such course each off or work term until the requirement has been completed.

In the event that a student has taken a PDARCH course in each work term, but has failed the most recent PDARCH course, the student may request permission to repeat in a subsequent academic term, the PDARCH course that was failed. Students should contact their advisors to determine if they qualify for this alternative. Failed PDARCH/PD courses contribute towards the accumulated fail count.

It is recommended that the PDARCH courses be taken in the sequence as set out in the Program Chart. In the instance of the fifth Professional Development course, students are permitted to enroll in one of the following WatPD elective courses that deal with issues directly relevant to the architectural workplace: Teamwork (PD 4), Project Management (PD 5), or Conflict Resolution (PD 7).

Professional Development courses are online offerings. It is the responsibility of the student to ensure that they have adequate internet access during work terms to complete course requirements.

professional accreditation

The Canadian Architectural Accreditation Board Visiting Team reviewed the professional program in 2011, including the Honours Bachelor of Architectural Studies and Master of Architecture degrees. The team report was presented to the full Certification Board in June 2011. The Board granted the maximum six-year term of accreditation. The Program was deemed to have met all 37 academic performance criteria. The Canadian Architectural Accreditation Board (CACB) accreditation allows University of Waterloo Architecture graduates to directly enter the process of professional licensure in Canada and the United States.

The provincial architectural associations in Canada require that an individual intending to become an architect hold a professional degree in architecture accredited and/or certified by the Canadian Architectural Certification Board. Two types of degrees are accredited by the Board: (1) the Bachelor of Architecture, which currently requires a minimum of five years of study, except in Quebec, where four years of professional studies follows two years of Quebec Collège d'enseignement général et professionnel (CEGEP) studies and (2) the Master of Architecture, which currently requires a minimum of three years of study following an unrelated bachelor's degree or two years following a related bachelor's degree. These professional degrees are structured to educate those who aspire to registration and licensure to practice as architects.

Three- and four-year degrees, even when included in reviews of the professional programs, are not accredited by the CACB. These degrees are useful to those seeking a foundation in the field of architecture, as preparation for either continued education in a professional degree program or for other professional studies or employment options in fields related to architecture.

Graduates wishing to proceed to professional registration in Ontario should contact The Registrar, Ontario Association of Architects, 111 Moatfield Drive, Don Mills, Ontario, M3B 3L6 for information regarding the work experience and other requirements.

non-architecture students

Students not enrolled in the Architecture Program may take any architectural course listed in the recommended core Program (depending on availability of space) with the exception of courses in the theme area of Design. Prerequisites indicated in the course descriptions are primarily for Architecture students. For non-Architecture students, prerequisite evaluation must be carried out by the respective instructors. Please contact the Course Instructor or the Undergraduate Officer for Architecture if you are interested in taking any Architecture courses.

Master of Architecture Degree

(including MArch, MArch Co-Op, and MArch Water)

Graduate student administration is considerably different from undergraduate student administration. Students consult the University of Waterloo Graduate Calendar for regulations and policies relevant to the graduate program. There is currently no Co-operative program at the Graduate level in the Master of Architecture. Students admitted into the two year program degree have the option to participate in an optional co-op term. Successful completion of a co-op term is not a degree requirement.

The following information has been taken from the Graduate Studies Calendar:
<http://gradcalendar.uwaterloo.ca/>

Students may also access this information in the Graduate Handbook at this link: http://www.architecture.uwaterloo.ca/students/graduate_handbook.pdf

enrolment

At the University of Waterloo the calendar year is divided into three academic terms Fall (September-December), Winter (January-April) and Spring (May-August). Graduate students normally enroll for the first time in September at the beginning of the fall term. In some cases, a department permits new students to enroll in January or May. To enroll, a new student must have been is-

sued a Letter of Acceptance by the Graduate Studies Office which specifies the date for which enrolment is authorized.

enrolment and residence: on successful completion of each four-month period (Fall, Winter, Spring) students advance as follows:

- full-time students will advance at the rate of one term (1.0);
- part-time students will advance at the rate of one-half term (0.5);
- Inactive enrolment has a term value of 0.0

term enrolment

students will not be allowed to enroll after the government reporting date in a term (for relevant dates refer to the Calendar of Events & Academic Deadlines page). If they are not enrolled, students will not receive credit for course work completed up to that date and will have to apply for readmission to their program.

enrolment and time limits

(additional program time limits information is provided below) Students who have enrolled and paid fees, but have reached the maximum time limits allowed for their program must submit a **petition for program extension** form to their department/ Graduate Studies Office by the government reporting deadline of each applicable term. Students who fail to do so will be de-registered from their program. Once de-registered, students will be required to re-apply to the program.

Failure of students to arrange fees as required will cause their enrolment in Graduate Studies to lapse. It may be re-established only if an application for readmission is approved.

Students who are readmitted to a program must enroll for a minimum of one academic term.

continuous enrolment

A graduate student proceeding to a degree must maintain continuous enrolment, either active or inactive, in each successive term from the time of initial admission until the end of the term during which the requirements for the degree are completed. Students are responsible for ensuring that they enroll and arrange fees at the appropriate time each term (formal dates are available on the Finance website).

co-operative work terms

Students on a work term must change enrolment status to part-time/work term. Students requesting a status change, must complete a Change of Enrolment Status/Voluntary Withdrawal Form.

Enrolment in a course is allowed with permission from the student's home department. Failure to maintain continuous enrolment will cause their registration in Graduate Studies to lapse (see the Co-Operative Education page for more information).

inactive status

All graduate students must maintain continuous enrolment until the completion of their program. In certain circumstances such as illness, maternity/parental leave, limited external research or work opportunity which is not related to their UW program, or temporary financial difficulties for which the University cannot provide hardship funds, students may apply to the Associate Dean (Graduate Studies) of their Faculty for inactive status (leave of absence). Students who have been granted inactive status for a term are not entitled to use the services of the University, including graduate supervision, for the duration of that term. Normally, inactive status is approved for a maximum of two consecutive terms (maternity leave up to three consecutive terms). Students who request more than two consecutive terms of leave because they have other commitments such as a full-time job or travel plans, should voluntarily withdraw from their program until they are prepared to resume their studies. In advance of voluntary withdrawal, students must discuss with their department any conditions that must be met upon their readmission to their program. Normally, students who have incomplete courses on their record are not eligible for inactive status.

Students requesting inactive status must complete a Graduate Student Change of Enrolment Status/Voluntary Withdrawal Form.

enrolment - international students on study permits

Students without valid Study Permits will not be allowed to enroll at the University of Waterloo. All international students admitted to graduate studies degree programs at the University of Waterloo must have a valid Study Permit issued by Citizenship and Immigration Canada (CIC). A copy of the Study Permit must be submitted to the Graduate studies Office (GSO) upon arrival at the University.

If a Study Permit expires prior to program completion, students must apply to CIC for renewal and submit a copy of the renewed Study Permit to the GSO (check the 'valid until' date on the Study Permit). Make sure you apply at least 30 days before your current permit expires. If your Study Permit expires and you have made an application to renew it, but have not had a decision yet, you can continue studying until you receive a decision. Proof of application for renewal must be submitted to the GSO to permit continuing enrolment.

birth & parental leave

Students wishing to take birth & parental leave during their program of study may apply to change status to inactive. Interested students should consult with their academic supervisor(s) and Department Graduate Officer prior to making such an application; where an external agency is involved as in the case of visa students or those holding external scholarships, such agencies should also be consulted.

Further information on Birth and Parental Leave can be found in the Graduate Studies Birth and Parental Leave Guidelines. Students who wish to apply for a Parental Leave Bursary should complete the application available on the Graduate Studies Office website.

withdrawal

Students who are unable to participate in their program of study for more than two consecutive terms should voluntarily withdraw from the program. Students,

who reapply to a program and are approved for readmission, will be required to enroll for a minimum of one full term, without tuition refund, to complete their program.

The Graduate Student Change of Enrolment Status/Voluntary Withdrawal Form is available in department Graduate Offices and in the Graduate Studies Office.

The University reserves the right to require a student to withdraw from a program for academic reasons.

course drop/add date

During the first four weeks of term, students must drop or add graduate courses using Quest, the University of Waterloo's on-line student information system. For courses with enrolment restrictions, students must obtain permission through their Department Graduate Assistant.

Graduate students who wish to enroll in an undergraduate may petition using a Drop/Add form, obtainable through their Department or the Graduate Studies Office. Signature of the instructor, supervisor and Department Graduate Officer.

After the first four weeks of term, students may not drop or add a course except by petition using the Drop/Add Form, and only under exceptional circumstances with the signature of the instructor, supervisor, Department Graduate Officer and the Associate Dean (Graduate Studies) of their home Faculty.

These are Graduate Studies Office deadlines. Individual Faculties may have earlier deadlines. *(Please check with your Associate Dean's Office.)*

Courses may not be dropped or added, nor course status changed, after the examination period begins.

retaking graduate courses

Course selection by a graduate student is subject to approval from the academic department of the student's program. A graduate course may be retaken only once as a requirement for the degree and requires approval from the department and Faculty. The original course will be retained on the student's

academic record and is normally counted for credit in the overall average for the program.

enrolment vis-à-vis completion of degree requirements

Graduate students must enroll active, and pay appropriate fees plus incidentals, in each term in which they are engaged in course work, research, or thesis preparation including the term in which the completion of degree requirements is anticipated.

If a student plans to enroll in courses beyond the degree requirements, he/she must apply for non-degree admission for the term following the term of degree completion.

program time limits

The program time limit is 6 terms or two years at the Master's level.

Up to 3.0 terms' extension of these time limits may be obtained by petitioning the Graduate Officer of the Department. Further extensions must be approved by the Associate Dean (Graduate Studies) of the Faculty. A Petition for Extension of Program Time Limit Form may be obtained from department graduate offices or through the GSO website. If the Petition is not approved, the student will be discontinued from their program. If students fail to submit a Petition approved by the government reporting date of each term (departments may have earlier deadlines), they will be discontinued from their program and must reapply.

For the purposes of these time limits, a term is counted as 1.0 per term of full-time enrollment, and 0.5 per term of part-time enrolment.

grade submission

Instructors must submit final grades to the Graduate Studies Office by the end of the term in which the course was given or by the beginning of the following term. Interim grades may not be assigned. Once a grade has been assigned, it cannot be changed.

conversion of incompletes

An incomplete grade (INC) will remain on a student's transcript for at most two terms of enrolment following the term in which the course was taken. A student may seek a one-term extension by submitting a petition to the course instructor and the Department prior to the end of the two terms. If a grade has not been submitted by the end of the second term and an extension has not been granted, the INC will automatically convert to a failure to complete (FTC). For average calculation, FTC value equals 0. An FTC status may be reverted to an INC on the academic record only if a petition from the student is approved by the Department, Faculty, and the Associate Provost, Graduate Studies. Such a petition is granted only in exceptional circumstances.

grading scheme

The grading system of the University changed in Fall 2001. Grades for all courses taken prior to Fall 2001 appear on grade reports and transcripts either as one of 15 letter grades from A+ through F, or as numeric marks on a percentage scale depending upon the Faculty of enrolment.

Effective Fall 2001, numeric grades on a scale from 0 - 100 are used by all Faculties.

Averages are reported in all Faculties as percentages. Average calculation values are used for overall averages for students with letter grades on their records.

The following conversion scale applies to courses taken prior to Fall 2001.

Students must obtain an average of at least 70% in the set of courses, which they present in fulfillment of course requirements for any graduate degree. Some departments may require higher program averages or course grades for graduate degrees.

FIGURE 3 | GRADING SCHEME

Letter Grade	Percentage Range	Weighting Factor for Letter Grades
A+	90-100	95
A	85-89	89
A-	80-84	83
B+	77-79	78
B	73-76	75
B-	70-72	72
C+	67-69	68
C	63-66	65
C-	60-62	62
F	0-59	0

FIGURE 4 | NON-NUMERIC GRADES - GRADED STANDINGS

ACC	Accepted (thesis)
AEG ¹	Aegrotat, credit granted due to illness
AUD	Audit only, no credit granted
CR ²	Credit granted
DNW	Did not write examination, no credit granted
FTC	Failure to complete incomplete course work, no credit granted
INC	Incomplete course work, no credit granted
NAC	Not Accepted (thesis)
NCR	No credit granted
NMR	No mark reported
UR	Under review, no credit granted
WD	Withdrawn, no credit granted

If a graduate student takes an undergraduate course for graduate credit the above grading scheme will apply. Undergraduate courses taken for graduate credit or to meet probationary or transitional requirements for a graduate program are subject to the same regulations as graduate courses, i.e., interim grades may not be assigned, once a grade has been assigned it may not be changed; incomplete grade status (INC) converts to FTC after two terms following the term in which the course was taken. Students may petition for an extension of incomplete status.

1. The aegrotat designation signifies the granting of credit for a course when some coursework has been completed but no further assessment is possible because of illness or other extenuating circumstances. The aegrotat designation is used only in exceptional circumstances and must be approved by the Faculty Associate Dean.
2. Departments may offer, for graduate credit, courses that carry no grades, and satisfactory work in such courses will be indicated on the transcript by CR. CR/NCR courses are so designated in the calendar. No degree candidate can fulfil more than half of the minimum department course requirements by courses of this type.

religious holidays/examination scheduling

The University acknowledges that, due to the pluralistic nature of the University community, some students may on religious grounds require alternative times to write examinations and tests. Accordingly, a student who requires an alternative examination or test time on religious grounds should consult with the Associate Dean of the Faculty offering the course regarding alternative arrangements. Such a request should be made within one week of the announcement of the test or examination date. For students in courses taught at the Federated University or affiliated Colleges, the responsibilities of the Associate Dean in these procedures are exercised by the Dean of the Federated University or affiliated Colleges (or Head in cases where there is no Dean).

3.4 SOCIAL EQUITY

3.4.1 GENERAL PRINCIPLES

The University is an autonomous community which exists to further the pursuit and dissemination of knowledge and understanding through scholarship and teaching. The University aims to ensure an environment of tolerance and respect and believes that the right of individuals to advance their views openly must be upheld throughout the University. The realization of these intentions requires respect for the following general principles:

- That each member of the University endeavour to contribute to the existence of a just and supportive community based on equality and respect for individual differences.
- That the University of Waterloo is committed to providing an environment which supports and rewards its members on the basis of such relevant factors as work performance and achievement. Harassment, discrimination and the abuse of supervisory authority, for example, are inimical to this environment. Further, as required by the Ontario Human Rights Code and the Occupational Health and Safety Act, the University has a responsibility to provide an environment free from harassment and discrimination, and accordingly must deal effectively, quickly and fairly with any situation involving claims of harassment or discrimination that come to its attention.
- That services, benefits, opportunities, and facilities offered by the University be compatible with its purposes and be provided to all persons in the University community with the relevant qualifications. Thus, such provisions shall not be denied wholly or partly on irrelevant or prohibited grounds.

[Note: Under the Ontario Human Rights Code, a person has the right to equal treatment in a number of areas (i.e., services, goods and facilities, accommodation/housing, employment, contracts, membership in trade unions and vocational associations), free from discrimination based on the following prohibited grounds: race; ancestry; place of origin; colour; ethnic origin; citizenship; creed/religion; sex; sexual orientation; age; record of offences; marital status; same-sex partnership status; family

status; receipt of public assistance; mental or physical handicap.] The Accessibility for Ontarians with Disabilities Act prescribes accommodation for those with mental or physical handicaps.

- That the University supports academic freedom for all members of the University community. Academic freedom carries with it the duty to use that freedom in a manner consistent with the scholarly obligation to base teaching and research on an honest and ethical quest for knowledge. In the context of this policy, 'academic freedom' refers to academic activities, including teaching and scholarship, as is articulated in the principles set out in the Memorandum of Agreement between the FAUW and the University of Waterloo, 1998 (Article 6). The academic environment which fosters free debate may from time to time include the presentation or discussion of unpopular opinions or controversial material. Such material shall be dealt with as openly, respectfully and sensitively as possible.
- That no member of the University community (faculty, staff, student) unduly interfere with the study, work or working environment of other members of the University or any aspect of another's University activity. This shall be taken to apply to the campus of the University and to official off-campus functions of the University, such as course- or program-related field trips and co-op employment.
- That those with supervisory authority (academic or employment) use such authority, both on campus and off, solely for the purposes explicitly stated or implied in University policies and with regard to the overall aims and purposes of the University.

3.4.2
SPECIFIC PRINCIPLES

Without limiting the generality of Section I above, the following shall be taken as violations of this policy, and may also be in contravention of the Ontario Human Rights Code:

- **discrimination** is defined as any action or behaviour that results in adverse or preferential treatment related to those grounds prohibited under the Ontario Human Rights Code.
- **harassment** is defined as engaging in a course of vexatious comment or conduct that is known, or ought reasonably to be known, to be unwelcome.
- **sexual harassment** includes comment or conduct where acceptance of sexual advances is a condition of education or employment, or where rejection of sexual advances negatively impacts decisions that concern the recipient (e.g., grades, performance evaluation or any academic or employment decisions) or where unwelcome sexual advances, comment, conduct or communications interfere with the recipient's work or study.
- A **'poisoned environment'** (or one that is intimidating, hostile or offensive) can be created based on any of the prohibited grounds under the Ontario Human Rights Code, and can be described as comment or conduct that is contrary to the aims of maintaining a supportive, respectful and tolerant environment.

And the following may be in contravention of the Occupational Health and Safety Act:

- **workplace harassment** is defined as engaging in a course of vexatious comment or conduct against a worker in a workplace that is known, or ought reasonably to be known, to be unwelcome.

It is recognized that harassment is often context-dependent and that, while sexual harassment typically takes place in a situation of power differential between the persons involved, it may occur between peers.

The University policy on Student Appeals guarantees fairness in the evaluation of student work and provides a variety of avenues of redress in instances of misjudgment or professional misconduct.

Procedures are in place to achieve equity and diversity in School operations and activities.

The School operates according to the policies of the University of Waterloo and deals with issues by the letter of those policies. At the same time, there is a special concern for students in the School. The School operates on principle of a supportive community whereby architectural education is a project in which faculty, students and staff are engaged in equal measure. Applicants are introduced to the fact that the School makes a commitment to complete a professional degree to all students admitted. If they are successful in gaining admission, and meet the published standards for advancement in the program, students will graduate with a professional degree. There is no culling. Admission to the Masters degree is automatic for students who have achieved an average grade of 75% in the undergraduate program. The practice of the School community is to be fair, open and supportive of the students.

The admission process is also driven by principles of openness and fairness. All interview panels involve both faculty members and students. The published "Guidelines for Interviewers" establish the acceptable practices, types of questions and unacceptable practices forms of communication in the interviews. The results are clear in the fact that architecture has one of the most ethnically diverse student body at the University of Waterloo.

All instructional spaces, technical support facilities, labs, darkrooms, and workshops, used by the School of Architecture are fully accessible.

3.4.3 equity office

The Equity Office is a central source of expertise for the University of Waterloo community members on substantive equality, diversity, and inclusion matters. The key functions of the Equity Office are to:

- Develop and promote a strategic approach to advance equity at the University
- Evaluate and enhance University policies, procedures and practices to address equity
- Provide consultation and advice on equity issues (including Duty to Accommodate and climate)
- Address systemic issues
- Develop equitable recruitment and retention strategies
- Deliver learning and development on equity-related matters

The University of Waterloo understand equity is about the recognition of human diversity and engaging individuals fully and fairly. Equity is based on the fundamental notion that all human beings are worthy of respect. It is grounded in the recognition of the dignity and worth of all individuals irrespective of their age, ancestry, colour, racialization, ethnicity, place of origin, creed, (dis)ability, family status, marital status, gender identity, gender expression, sex and sexual orientation. It includes efforts to ameliorate the conditions of historically disadvantaged groups.

At the University of Waterloo we believe that equitable learning, teaching, working and living environments are critical for future success – to be recognized as one of the top innovation universities in the world.

For more information on specific initiatives and services provided by the equity office, visit: <https://uwaterloo.ca/equity/>

conflict management and human rights office

In addition, the University has established the Conflict Management and Human Rights Office which serves as the focal point for all members of the University community on matters involving ethical behavior and human rights issues.

The Conflict Management & Human Rights Office provides a variety of services for persons dealing with conflict human rights issues or workplace harassment.

Conflict management services include:

- **group facilitation** – customized programs designed to help groups improve problem solving and decision making, thereby enabling group effectiveness.
- **meeting facilitation** – where groups are concerned with the quality of their meetings, facilitators can positively impact meeting results by encouraging the use of improved structure and promoting open discussion
- **support person** – trained personnel are available to assist individuals as they attempt to resolve concerns through formal and informal grievance mechanisms
- **mediation** – trained neutral facilitators provide participants with an informal although structured, mechanism enabling participants to focus their efforts in designing mutually agreed upon outcomes
- **conciliation** – conciliation (sometimes referred to as *shuttle diplomacy*) is similar to mediation except that parties do not meet together. Facilitators help by bridging communication and promoting understanding. After a clearer understanding of the issues, parties are better able to work through facilitators in designing mutually acceptable outcomes. In the later stages of this process, it is possible that parties may wish to meet together.

- **education and training** – the office provides customized and prepared training programs on a variety of topics including diversity, sexual harassment and conflict management. Office personnel are also available to groups or individuals requiring more specific human rights and conflict management.
- **coaching** – *coaching* is available to individuals and small groups who are looking for assistance in responding to conflict. Coaches do not intervene but work one-on-one to provide a range of services from simply *listening* to *actively planning* resolution attempts. The coach's primary aim is to assist an individual with their efforts to improve a difficult situation.

Human Rights services include:

- **complainants** – Concerns related to human rights issues or workplace harassment can sometimes become overwhelming given the complexity of the issues, strong emotions and perceived costs. Conflict Management & Human Resources (CMAHRO) staff are available to meet with individuals and assist in developing an effective response. A thorough discussion of issues, policies, resources, confidentiality and outcomes can often address feelings of uncertainty.
- **managers/supervisors** – A manager's or supervisor's role is extremely important in responding to human rights complaints or workplace harassment given the legislative responsibilities, potential impact and varied responses. These, combined with the relative infrequency of such complaints, can make it difficult for managers to navigate a complaint through to an effective resolution; this creates a prime opportunity for managers and supervisors to consult with CMAHRO staff.

CMAHRO acts as a primary resource providing managers and supervisors with an opportunity to discuss a variety of topics related to their role. A sampling of those topics is below:

- issue identification
- policy and legislative implications
- resources and support
- formal versus informal responses
- confidentiality
- what's my role?
- option development

Managers and supervisors may consider CMAHRO's Conflict Management Services when reviewing and assessing appropriate informal responses. Where an informal response to a complaint has been unsuccessful or deemed to be inappropriate, assistance with a formal investigation of a complaint ranging from one-on-one consultation to full investigation can be provided.

CMAHRO's role in an investigation is to review the issues, evidence, facts and interpretation, and potential breaches of university policy. Managers and supervisors retain the responsibility for final determination and remedy.

- **education** – CMAHRO staff are available to provide educational services on a variety of topics:
 - sexual harassment
 - harassment and discrimination
 - workplace harassment
 - responding to human rights complaints: supervisory responsibilities
 - The Ontario Human Rights Code
 - diversity management

Educational services can be tailored to address specific concerns and can often be part of an effective response to address broader departmental / school concerns

For more information on the initiatives and services of the Conflict Management and Human Rights office, visit: <https://uwaterloo.ca/conflict-management-human-rights/>

3.5 HUMAN RESOURCES

3.5.1 BAS: applicant and student profiles STUDENTS

The undergraduate program draws its students from a pool of about 1200 applicants each year. The size of the pool guarantees that admission standards will be high. The program attracts students with excellent academic records and high levels of artistic achievement. The cut-off mark to be granted an interview now sits in the mid 80s for students applying for admission from secondary school. But the school does not base final admission decisions on grades alone; rather, we carry on a rigorous review process that begins with a thorough review of the academic background of each applicant. From this group between 450 and 500 proceed to a second stage that involves a personal interview, portfolio review, and written précis test. The school is deeply committed to this process which involves the entire faculty, academic support staff, undergraduates and graduate students with excellent support from the Office of the Registrar on campus. Offers are sent to about 95 applicants to produce a class of usually between 75 to 77 students. This uptake ratio is the highest in the University.

All admission requirements to the BAS can be found online at:

<https://uwaterloo.ca/architecture/future-students>

The majority of applicants come directly from Ontario secondary schools, and of these students most are Ontario Scholars (high school average over 85%). Only those with exceptional circumstances will be considered for admission to the program if their average falls below this 85% line. A second group, roughly one fifth of the class, is made up of individuals with previous university or life experience having degrees in arts or science.

In the past, all students at the School of Architecture were required to be either Canadian citizens or permanent residents. However, beginning in 2002, the School was permitted to admit up to ten non-Canadians. This move is part of the University of Waterloo's overall strategy to internationalize and brings new resources to the School through a fee sharing agreement with the University Administration. The students admitted must meet the same standards as Canadians. There has been no reduction in spaces available to Canadian students.

FIGURE 5 | GRADE RANGES OF ADMITTED STUDENTS, 2011 -2015

	<i>Below 80</i>	<i>80-84</i>	<i>85-89</i>	<i>90-94</i>	<i>95-100</i>
<i>School of Architecture</i>	3%	9%	25%	47%	16%
<i>Faculty of Engineering</i>	2%	5%	21%	45%	27%
<i>University of Waterloo</i>	4%	19%	28%	33%	16%

There has been some difficulty in filling this target, largely because international students are judged by precisely the same criteria as Canadian applicants. The majority of applicants to the program are thus of Canadian citizenship, usually around 90%. Since 2011, between five and ten international applicants were accepted each year. When the number of international students falls below the target, the slots are filled with Canadians and Permanent Residents.

The standards applied in the admission process result in a first year class that is culturally diverse, but shares high levels of academic ability, literacy, numeracy, capacity for independent critical inquiry, artistic ability and creativity. Students at the School are typically discursive and intellectually self-assured. The result of this general disposition is a persistent independence and heterogeneity in the design and academic work that emerges in the early years and continues through to the completion of the Masters thesis.

The economic, social and cultural backgrounds of students at the School are a reflection of the population at large. The School actively seeks candidates from a wide variety of backgrounds. Information and recruitment materials are directed to every high school, vocational institute, college and university in the province, and many beyond its borders. The School promotes open discourse, investigation and speculation at all levels.

FIGURE 6 | STUDENT RETENTION IN THE BAS PROGRAM

<i>Academic Year</i>	<i>Cohort Size</i>	<i>BAS Degree from UWSA</i>	<i>Still Seeking BAS Degree</i>	<i>Program Retention %</i>
2007 - 08	64	55	0	85.9%
2008 - 09	81	69	0	85.2%
2009 - 10	72	59	5	88.9%
2010 - 11	73	62	3	89.0%
2011 - 12	74	0	66	89.2%
2012 - 13	76	0	66	86.8%
2013 - 14	74	0	71	95.9%
2014 - 15	74	0	80	98.8%

The table above shows that the retention and completion rates of students in the undergraduate program are very high. In general, the BAS retains between 85 to 90% of students admitted in the first year of study all the way to graduation.

MArch: applicant and student profiles

Applicants to the graduate program must meet the minimum University of Waterloo requirements for admission (75%) or the minimum equivalents based on the country of study as outlined in the International Admissions placement guide. Any applicant who meets the minimum average (or equivalent country requirement), holds a pre-professional undergraduate Architecture degree and meets the ELP (English language proficiency) minimum test score will then be put forth to the admissions committee for reference review and portfolio evaluation.

These requirements apply to all graduate students, irrespective of where they completed their pre-professional undergraduate degree. Until 2014, the School's graduate cohort was largely made up of graduates from our BAS, as well as a few incoming students who were required to complete a Qualifying Year. The purpose of the Qualifying Year was to ensure that all students completed the Comprehensive Building Design requirement. In addition, the School was keen on ensuring that students who did not conduct their undergraduate studies at Waterloo could benefit from its strong characteristics and be exposed to the broad cultural framework within which architecture is approached in our program. We have now eliminated the Qualifying Year, accepting the Waterloo BAS students with automatic advanced placement into the Second Year (ie. Thesis Year) of the MArch degree and providing other incoming students with the opportunity to benefit from Waterloo's strong characteristics in a specifically tailored First Year. All students apply directly to the MArch program; students can elect to take the MArch Co-Op or MArch Water degree following acceptance into the program.

Other requirements for admission to the MArch include two academic (or one academic and one professional) letters of reference, a CV or resume, a completed Supplemental Information Form indicating applicant's proposed research interest, academic transcripts, and a digital portfolio. Students holding a BAS from the University of Waterloo are exempt from the portfolio requirement. In addition, an English Language Proficiency (ELP) examination score is required for students applying from non-English speaking countries unless the applicant has:

- completed 3 or more years of post-secondary education or completed a graduate degree at a Canadian university
- complete 3 or more years of post-secondary education or completed a graduate degree at a university at which English was the primary language of instruction
- has been employed for at least 3 years in a position in which English was the language of business in a country listed as "all exempt"

All specific admission requirements to the MArch are listed online at:

<https://uwaterloo.ca/graduate-studies-academic-calendar/engineering/school-architecture>

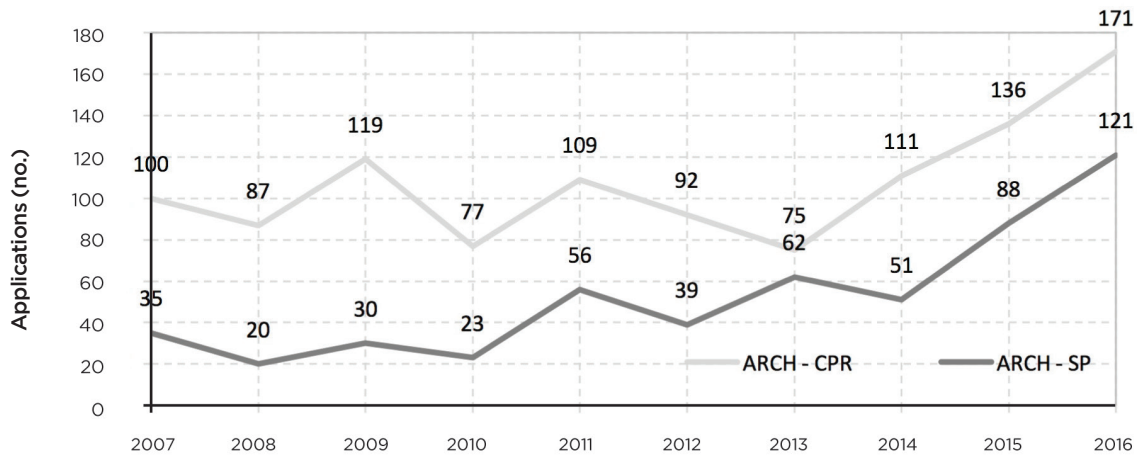
Taken together, these requirements cover the basic considerations of accreditation, design and communication skills, as well as critical thinking. Given that the students are expected to demonstrate a certain level of independence in the identification of their thesis topic and in the conduct of their research, we continue to feel that communication and demonstrated strengths in design are crucial to their successful completion of the program.

source of students

The majority of our students come from the Waterloo Architecture undergraduate program. In the recent years, we have been working to attract more students from other undergraduate programs, to encourage the diversification of our cohort. In the most recent admission processes, we were successful in attracting between 10 to 15 students from external programs into the graduate program. This number represents between 15 to 22.5% of our graduate student intake.

The majority of the students are Canadian citizens, with a smaller proportion that are permanent residents, and a somewhat low but steady number of international students. Of 204 applicants in 2015, 113 were Canadian citizens, 15 were permanent residents, and 76 were international. This was a net increase in our international applicants' number. Four of these students (from Russia, Italy and Iran) were admitted in the MArch 2-year program. In 2015 there was also an increase in the number of students from other schools deemed advanced enough to enter directly in the second year of our MArch, with 6 students in a cohort of 54 (11% of the cohort).

FIGURE 7 | INTERNATIONAL STUDENT (SP) AND CANADIAN & PERMANENT RESIDENT (CPR) APPLICATIONS TO THE M.ARCH PROGRAM



The total number of applications to our graduate program is on a steady increase since 2012, when it reached a low point of 98 from a previous average of around 130 applicants a year. In 2015, the total number of applicants was 224.

The international applicants come from different countries, including China, India, Iran, Iraq, Nigeria, Pakistan, El Salvador, Syria, Mauritius, Egypt, Libya and Nigeria. As for Canadian applicants, they are drawn from undergraduate programs in Alberta, British Columbia, Saskatchewan, Quebec and mainly Ontario (85%).

We see practically no students that transfer from other graduate programs, since most architectural schools are built similarly around a 3 or 4-year baccalaureate and a 1 or 2 year Masters degree. The change in school therefore naturally occurs between one degree to the next.

FIGURE 8 | M.ARCH ENROLMENT SIZE, TIME TO COMPLETION, AND WITHDRAWALS

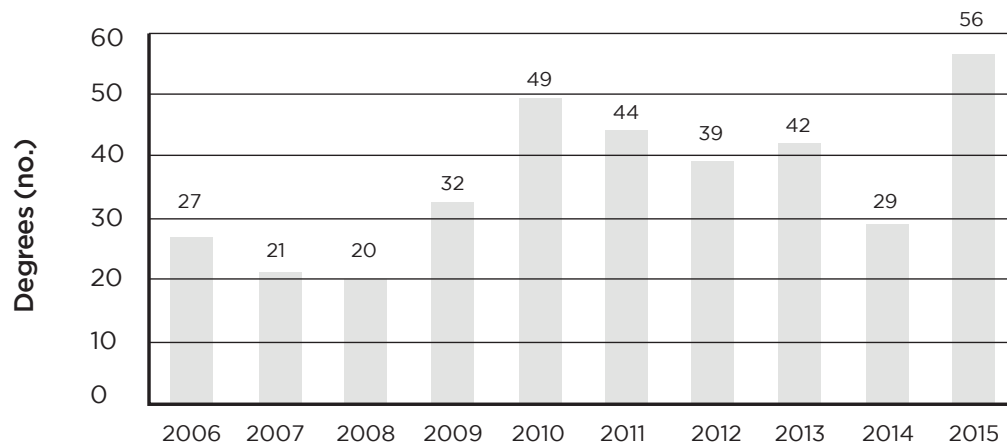
Cohort Entry Year	Enrolment Size ¹	Time to Completion (students)									
	(students)	3 Terms		4 Terms		5 Terms		6 Terms		7 Terms	
	No.	No.	%	No.	%	No.	%	No.	%	No.	%
2011	42	0	0.0	4	9.5	3	7.1	7	16.7	3	7.1
2012	44	1	2.3	0	0.0	4	9.1	13	29.5	4	9.1
2013	33	1	3.0	5	15.2	7	21.2	10	30.3	5	15.2
2014	59	5	8.5	10	16.9	8	13.6	10	16.9	4	6.8
2015	58	7	12.1	NA	NA	NA	NA	NA	NA	NA	NA

1. Enrolment size measures number of students newly enrolled in the M.Arch program (2011–2013) or the Thesis Year of the M.Arch program (2014–2015).

2. PT = Part-time student. Number of part-time students are those enrolled part-time as of September 2016.

3. FT = Full-time student. Number of full-time students are those enrolled full-time as of September 2016.

FIGURE 9 | M.ARCH DEGREES GRANTED BY YEAR



						Avg Time to Completion	In Progress				Withdrawn	
8 Terms		9 Terms		10 - 13 Terms		(terms)	(students)				(students)	
No.	%	No.	%	No.	%	No.	No. PT ²	% PT	No. FT ³	% FT	No.	%
6	14.3	7	16.7	8	19.0	8.6	1	2.4	0	0.0	3	7.1
9	20.5	3	6.8	2	4.5	6.9	0	0	0	0.0	7	15.9
2	6.1	2	6.1	0	0.0	5.8	0	0	0	0.0	1	3.0
1	1.7	NA	NA	NA	NA	NA	10	16.9	9	15.3	2	3.4
NA	NA	NA	NA	NA	NA	NA	20	34.5	31	53.4	0	0.0

retention rates

The program is set up such that students entering directly into the Second Year it can be completed in a minimum of 3 terms and a maximum of 6 terms, for students who enter directly into the second year of the program, and can be completed in a minimum of 5 terms and a maximum of 8 terms for those students who require the qualifying year. As can be seen from Figure 8, one of the concerns we have been dealing with in the past years is the time taken to complete. Our average completing time was beyond the two-year mark until 2012 and 2013. This is something that we have been successful in slowly rectifying over the past three years. While more than 20 students were beyond their sixth term a few years ago, we have now only 6 students who are in their seventh term and nearing completion.

Though the average listed on Figure 8 still remains higher than our target of 2 years, we must read this number in the context of the implementation of the direct entry in the Masters program for graduates holding undergraduate degrees other than Waterloo's. These students are in effect in a program that should take a minimum of 5 terms, and a maximum of 8 terms. The numbers for 2013/14 and 2014/15 also include our push to have students in terms higher than term 6 complete and graduate, so although current students are now finishing much more quickly, the averages remain high.

The withdrawals listed in table Figure 2 result from a number of different situations, some of which are related to the time that some students could traditionally take to complete. However, there are very few actual withdrawals from the program. With the recent changes in the graduate curriculum, we are directly addressing the fact that some students took too long to graduate. We are currently working on a model in which those who enter directly in the second year of the graduate program would take on average 4 terms to graduate. We still consider that a graduation time of 2 years or less for the short program and a maximum of 6 academic terms apply whether or not the student enters in the First Year or Thesis Year. The challenge here is to preserve one of the key characteristics of the Waterloo program (the independent, self-directed thesis), while offering a clear framework and timeframe within which students can effectively complete. Likewise, we want to carefully weigh the preservation of the quality and diverse natures of our theses against the effective management of graduate cohorts.

3.5.2 full-time faculty

FACULTY

Currently, there are 20 faculty positions in the School of Architecture: 19 of these are full time appointments including two Continuing Lecturers. One faculty member holds a fractional (50%) appointment. In addition, Lorenzo Pignatti is the School's Director of the Rome Program, and is an Adjunct Associate Professor equivalent to additional 50% appointment. There are therefore 20 full-time equivalent positions currently filled.

Following the retirement of Associate Professor Richard Sliwka in 2015, the school began a search for a replacement faculty member that has now concluded. We are also expecting the departure of two current faculty members in September 2016. One of these positions has already been filled as of July 1st, 2016, with the addition of Jane Hutton, an Assistant Professor who adds to the school's strengths in ecology and landscape. The other position, however, is not to be filled as it was considered in addition to our regular complement. Therefore, with the expected replacement of Associate Professor Sliwka in December 2016, there will still be 19 full-time faculty positions, and 1 full-time equivalent

position filled between our fractional appointment, Professor John Straube, and Adjunct Associate Professor and Director of the Rome Program, Lorenzo Pignatti.

The full-time faculty represents a broad range of experience, interest and qualification. Appointment dates of current faculty range from 1976 to 2013. As of August 2016, the distribution of full-time appointment dates for current faculty are as follows:

1975-1979	2
1980-1984	0
1985-1989	2
1990-1994	4
1995-1999	3
2000-2004	0
2005-2009	4
2010-2016	5

Of the 20 regular appointees, 20 are tenured or tenure-track. While the school only had one Full Professor during the previous 2011 accreditation, since then four existing faculty have been promoted to Full Professor and one new faculty was hired on with Full Professorship, making the current total six. In addition, there are 10 Associate Professors, 2 Assistant Professors, and 2 Continuing Lecturers. Seven regular faculty members hold a PhD or Doctoral degree – one in Civil Engineering, two in Design, two in Architectural History, and one in Philosophy. Seven members of the faculty have professional Masters degrees in architecture; six other faculty members hold other Master-level degrees, including 1 in Design Studies, 1 in urban design, 2 in engineering, 1 in psychology, and 1 in history. Two faculty members hold post-professional degrees in architecture. Four members of the faculty have no degree beyond their professional bachelors in Architecture. There are 5 registered architects and 2 registered engineers in the complement. There are nine members who carry on various forms of design and consulting activity.

FIGURE 9 | NUMBER AND RANK OF FULL-TIME FACULTY BY CALENDAR YEAR

Calendar Year	Assistant Professors		Associate Professors		Full Professors		University Professors		Total	
	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT
2005	-	-	1	12	-	-	-	1	1	13
2006	-	2	1	11	-	-	-	1	1	14
2007	-	3	1	11	-	-	-	1	1	15
2008	-	5	1	11	-	-	-	1	1	17
2009	-	5	1	10	-	-	-	1	1	16
2010	-	3	1	10	-	-	-	1	1	14
2011	-	3	1	10	-	1	-	1	1	15
2012	-	2	1	12	-	2	-	1	1	17
2013	-	2	1	10	-	5	-	1	1	18
2014	-	2	1	10	-	5	-	1	1	18
2015	-	2	1	10	-	5	-	1	1	18
2016	-	3	1	9	-	5	-	1	1	18

faculty responsibilities

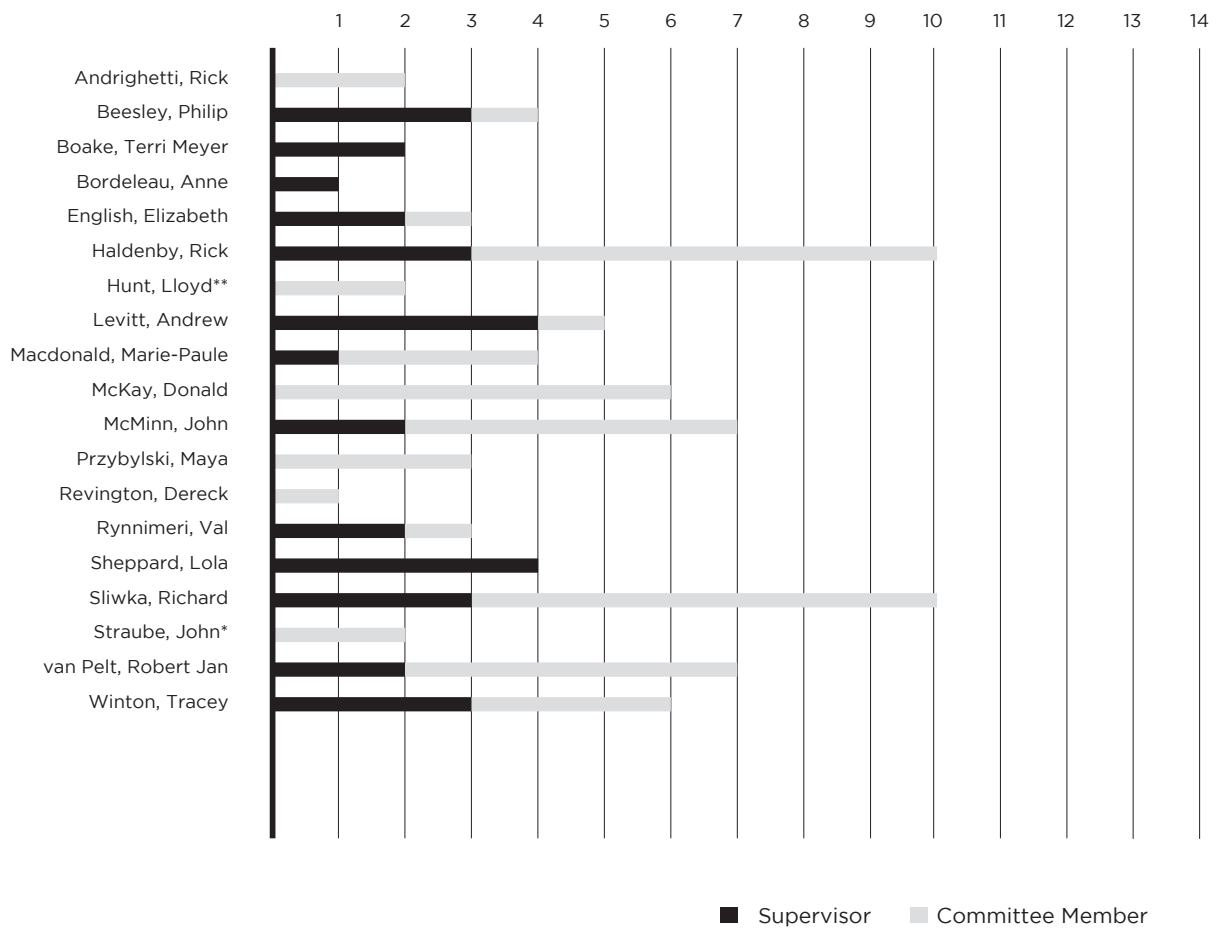
All full-time faculty of professorial rank are expected to devote 40% of their time to teaching, 40% to scholarship and creative activity and 20% to administration and service to the university, the profession or the community. For Continuing Lecturers the allocation for teaching rises to 60% and scholarly and creative activity drops to 20%. Every faculty member has the right to request an adjustment of this workload breakdown, but neither teaching nor scholarship and creative activity may be accorded less than 20% time. One faculty member has availed himself of this opportunity and is at 60% teaching.

All faculty members teach two out of three terms in any year except when on sabbatical. Most teach both lecture and studio courses, though the degree of overlap varies widely. A normal teaching load for a faculty member typically consists of four teaching tasks. A teaching task is defined as 0.5 credit course, which normally amounts to a course preparation for 3 hours of instruction a week over the 12-week term. Some of our cultural history courses are 6 hours per week and a 1.0 credit load, and thus represent 2 teaching tasks. In assessing the weight of a Design Studio, two measures are used: the number of students in the Design Studio, and whether the faculty is coordinating the Studio or assisting. For the coordination of a large Studio (over 60 students), a faculty member is considered to have covered two teaching tasks. Assisting in a large Studio or coordinating a small studio amounts to one teaching task.

For large Studios, faculty teaching in undergraduate Design Studios normally work in teams of four to five, one of whom, usually a regular faculty member, serves as coordinator. The other members may be regular faculty or adjunct appointments, but all are involved in planning, delivery and evaluation of work produced. Each studio is allocated a budget for visiting instructors, lecturers or critics that normally translates into 18 to 25 person-days over the term. Given that the studio meets for 12 weeks, these guests represent the equivalent of at least one half person on the teaching staff. This composite half-person has not been included in the following staff/student ratios for design studios. Each undergraduate Studio also benefits from the participation of at least one graduate Teaching Assistant.

To summarize, most faculty members distribute their effort as follows: 40% teaching, 40% research and 20% service. The three to four teaching tasks that each faculty members carry in their two teaching terms amount to the 40% teaching. Research is carried out year long, but most productively during a faculty's non-teaching term. Research can take different forms, whether through scholarly research, publications, competition, speculative work, award-winning design work or artistic installations. According to University Policy 49, a maximum of one day a week may be spent in a practice or on consulting. For those faculty members who do maintain a practice, the nature of the work is such that a percentage of it can effectively compute as research (e.g. competitions, environmental systems, research and speculation in collaborative practices).

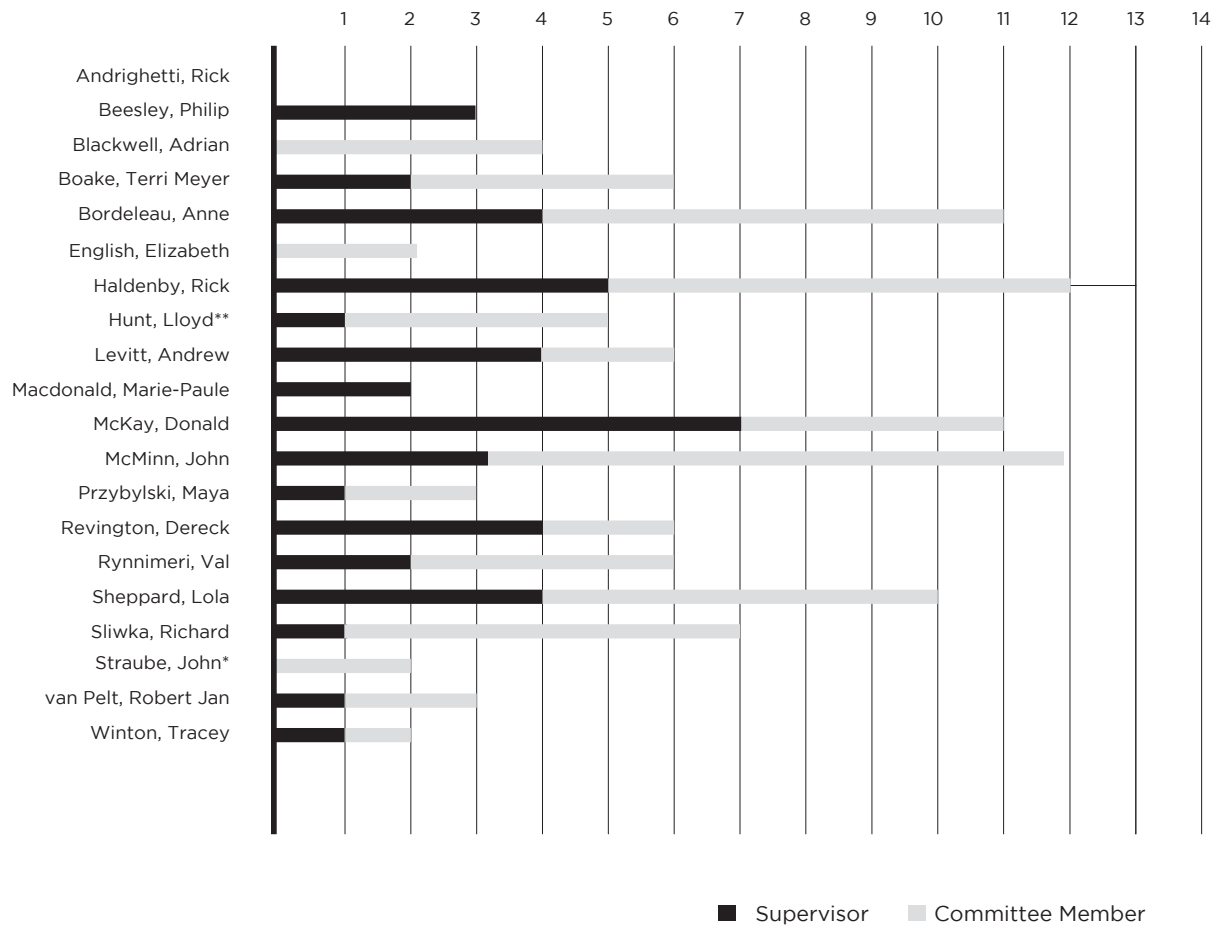
**FIGURE 10 | FACULTY SUPERVISOR AND COMMITTEES
COMPLETED THESES - 2012**



* Cross-appointed faculty member

** Full-time Adjunct who can supervise theses

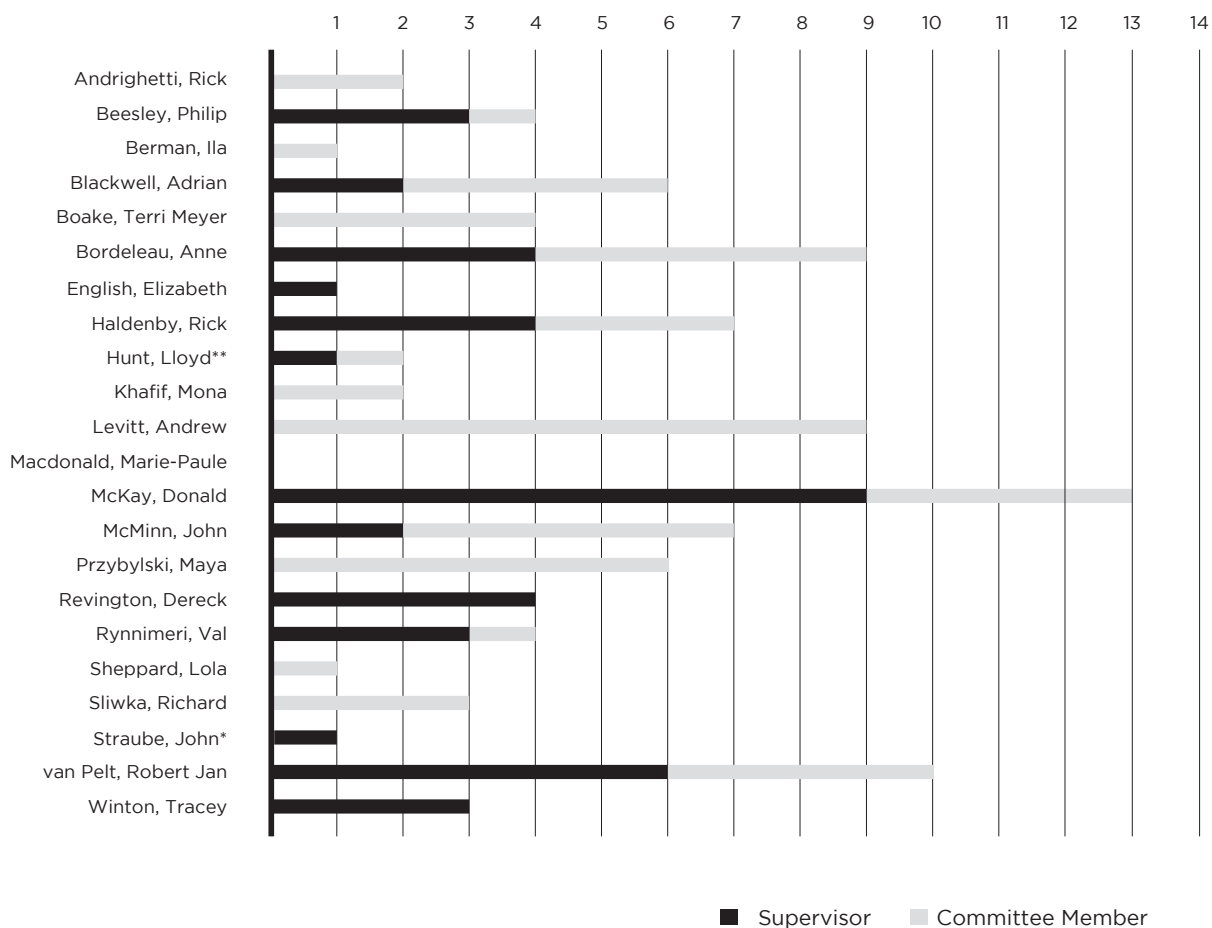
**FIGURE 11 | FACULTY SUPERVISOR AND COMMITTEES
COMPLETED THESES - 2013**



* Cross-appointed faculty member

** Full-time Adjunct who can supervise theses

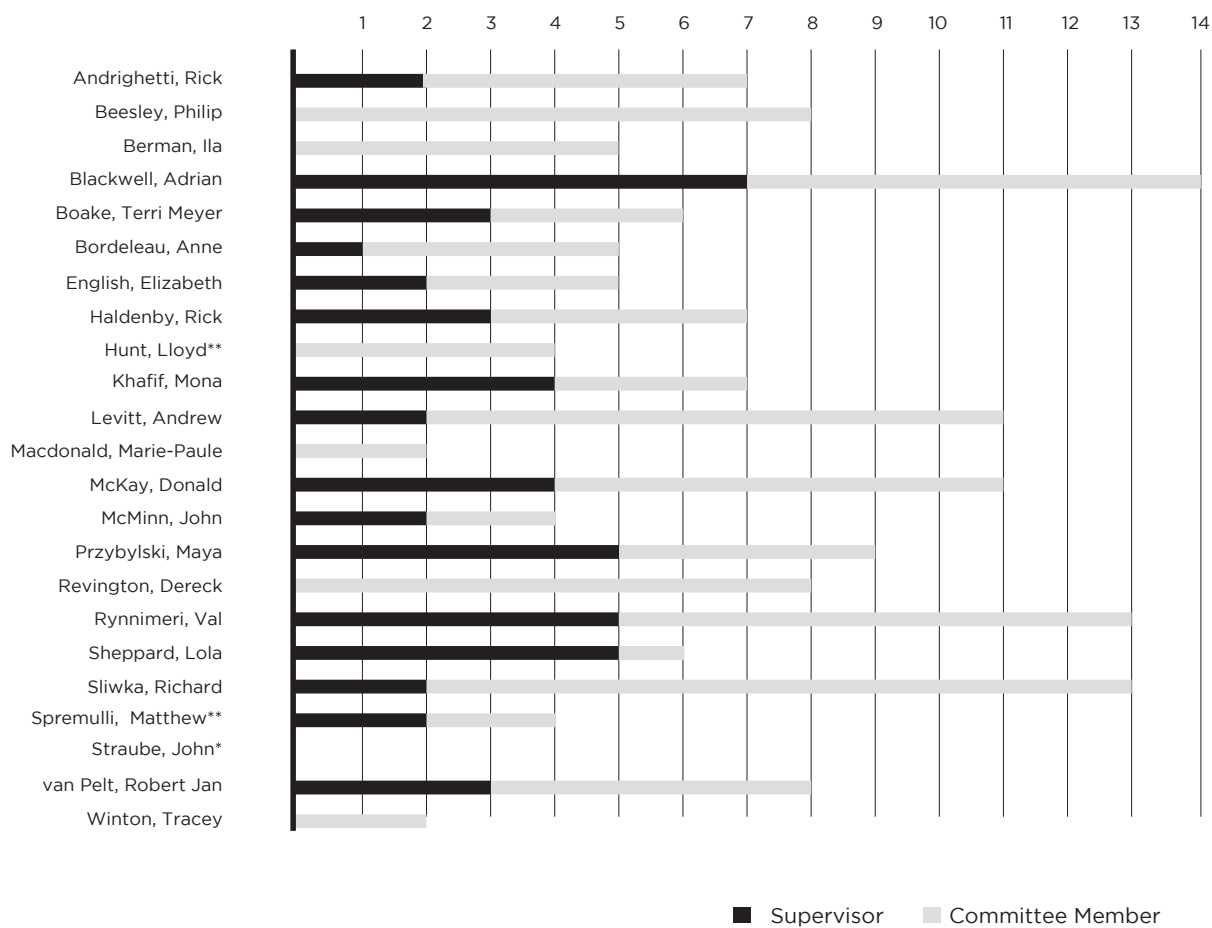
**FIGURE 12 | FACULTY SUPERVISOR AND COMMITTEES
COMPLETED THESES - 2014**



* Cross-appointed faculty member

** Full-time Adjunct who can supervise theses

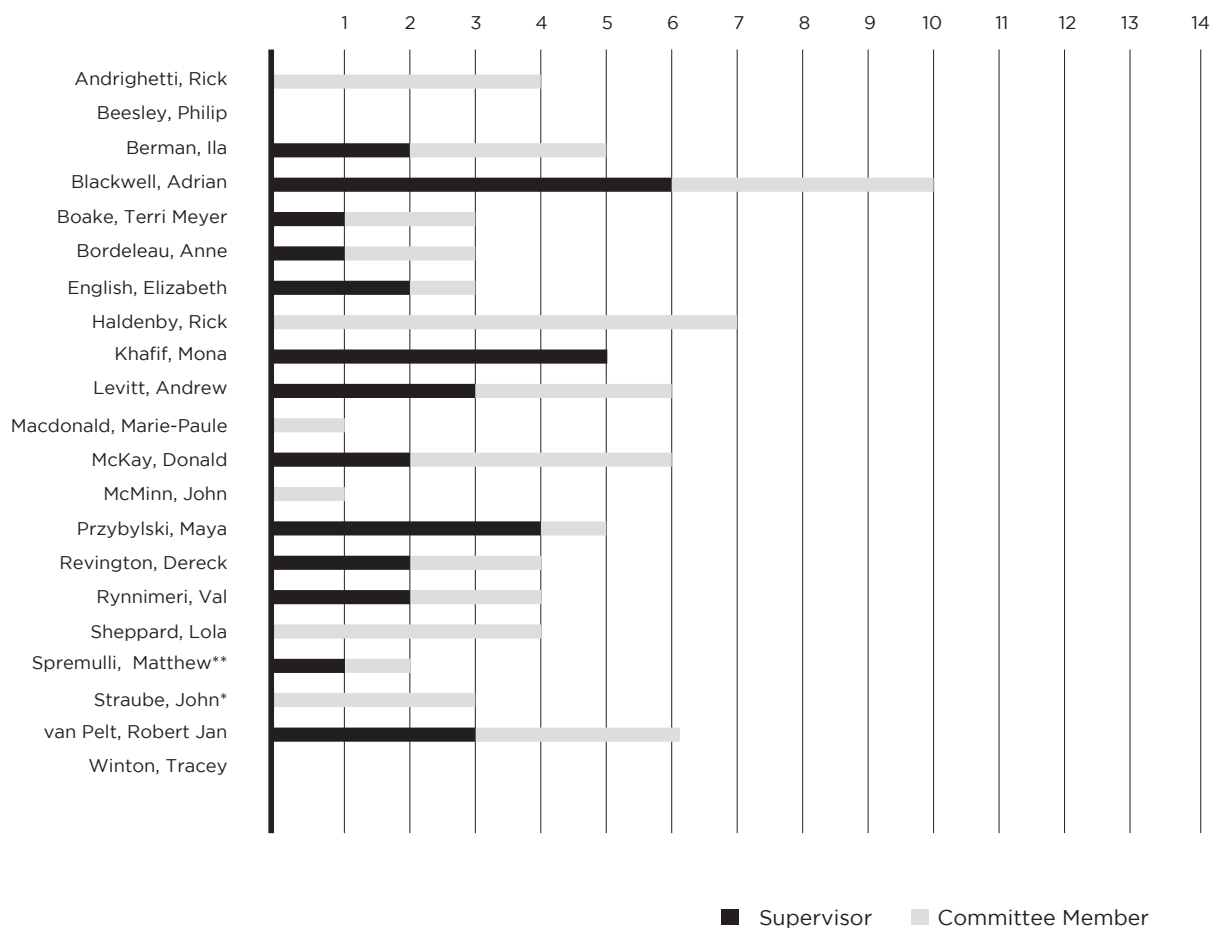
**FIGURE 13 | FACULTY SUPERVISOR AND COMMITTEES
COMPLETED THESES - 2015**



* Cross-appointed faculty member

** Full-time Adjunct who can supervise theses

**FIGURE 14 | FACULTY SUPERVISOR AND COMMITTEES
COMPLETED THESES - 2016**



* Cross-appointed faculty member

** Full-time Adjunct who can supervise theses

The consideration of research therefore includes such activities carried out in practice that contribute to moving the discipline forward. Likewise, scholarship and creative work can equally be considered as research. Finally, expectations of service carry year round, whether or not a faculty is in a teaching or non-teaching term.

Some professors contribute almost exclusively to studio teachings, but most contribute in a range of areas across the curriculum at both the undergraduate and graduate levels. Even when professors are not directly engaged in a graduate seminar or studio, they are expected to contribute to the graduate program as supervisors.

Graduate supervision is a part of the teaching assignment of a regular faculty member at the University of Waterloo. The average supervisory load of a faculty member is between 3 to 5 graduate students. Within Architecture, graduate students can request a specific supervisor based on their independent thesis proposal. This accounts for the unevenness of graduate supervision between faculty members. However, faculty members act as committee members as well, to assist supervisors and students with the thesis work, ensuring the weight of the work is distributed as required. This often alleviates the seeming inequality of the supervision numbers. Students must select a supervisor by the second term of study, unlike other departments who assign supervisors prior to the start of graduate studies. Contractual agreements are signed, marked by defined milestones that address the thesis proposal, full committee membership, and thesis defense approval.

part-time faculty

In addition to 20 regular faculty, the School now appoints 45 part-time instructors each year to teach core and elective courses across all streams. The holders of these positions are appointed as Adjunct Lecturers carrying teaching loads that range from a one-term course, to two days a week in design studio over two or three terms a year. Most adjunct appointees are practicing professionals with expertise in specific technical and professional fields including Computing, Urban Planning, Mechanical Systems, Acoustics, Timber Design, Financial Aspects of Architecture, Acts and Codes, and Specifications.

FIGURE 15 | STUDENT/FACULTY RATIOS IN DESIGN STUDIOS

	2012 – 13 enrol	studio faculty	ratio		2013 – 14 enrol	studio faculty	ratio
FIRST YEAR							
1A Fall	76	6	12.7		77	5	15.4
1B Winter	80	5	15.2		75	5	15.0
SECOND YEAR							
2A Fall	68	7	9.7		70	5	14.0
2B Spring	79	6	13.2		70	6	11.7
THIRD YEAR							
3A Winter	80	7	11.4		80	7	11.4
3B Fall	59	7	8.4		59	9	6.6
FOURTH YEAR							
4A Fall (Rome)	78	6	13.0		59	6	9.8
4B Spring	91	7	13.0		70	8	8.8
GRADUATE – Old							
M1 Fall	33	3	11.0		25	2	12.5
M1 Winter	9	1	9.0		10	1	10.0
M1 Spring	n/a				8	1	8.0
GRADUATE – New							
Arch 690							
Arch 691							
Arch 692 (TRD 1)							
Arch 692 (TRD 2)							
UNDERGRADUATE	611	51	12		560	51	11.0
ARCHITECTURE TOTAL	653	55	11.8		603	55	11.0

1. 2016–17 includes Fall studios only

2014 - 15 enrol	studio faculty	ratio	2015 - 16 enrol	studio faculty	ratio	2016 - 17 enrol ¹	studio faculty	ratio
83	6	13.8	76	5	15.2	78	6	13.0
83	7	11.6	78	6	13.0			
74	6	12.3	78	6	10.1	75	5	15.0
75	6	12.5	81	6	12.5			
65	6	10.8	78	6	13.0			
71	7	10.1	62	5	12.4	73	5	14.6
71	6	11.8	70	6	11.7	60	5	12.0
71	7	10.1	73	8	9.0			
n/a			9	1	9.0			
9	1	9.0	9	1	9.0	14	1	12.0
42	3	14.0	59	4	14.8	60	4	15.0
n/a			59	4	14.8			
593	48	12.4	596	48	12.4	286	21	13.6
644	58	12.6	732	58	12.6	360	26	13.8

Adjunct faculty members have an important role in the design studios, maintaining a direct link to practice and bringing energy to the studio teaching terms. Normally adjunct appointees join studio teams, teach two days each week and participate fully in organization, delivery and evaluation.

Studios are scheduled from 9:30 am to 5:30 pm twice a week. With student/faculty ratios consistently below 15:1 there is adequate time for effective exchange between faculty and students and regular opportunities for formal and informal review of student work.

All full-time faculty members are required to devote 20% of their effort to the administration of the School, the Faculty and the University and doing service to the profession and the community. While most administrative assignments are made by the Director, some come from the Dean, while others, most notably Promotion and Tenure Committees and Search and Appointments committees, are elected. The following is a list of Committees and other assignments on August 1, 2016.

3.5.3 ADMINISTRATION

O'Donovan Director: Anne Bordeleau

The Director is the chief administrative officer in the School of Architecture. According to University Policy #40 (Appendix E) the Director, whose position is equivalent to that of Chair of an academic department, is responsible for providing academic and administrative leadership in the School of Architecture. The Director also chairs the School Committee, the Search and Appointments Committee and the Promotion and Tenure Committee.

The principal duties of the Director according to Policy #40: include “the determination of equitable teaching loads, the control of the department budget, the implementation of the academic program, the allocation of space, the carrying out of annual performance reviews, and recommendations on matters pertaining to promotion and tenure, new appointments and reappointments, and salaries.”

The Director serves a four-year term that can be renewed. Though it is not

normal to renew more than once, such renewals are allowed in policy. At each renewal the Dean must consult the incumbent to determine his or her willingness to stand. If he or she is willing then the faculty must be given the opportunity to determine by vote on whether the incumbent should stand opposed or unopposed.

The Director reports on all matters to the Dean of the Faculty of Engineering and through him or her to the Vice-President Academic and Provost. The Director sits ex-officio on four Faculty of Engineering committees: Chairs and Associate Deans, Academic Policy, Engineering Planning Committee and Faculty Council. The first three groups deal with operations, policy and planning for the Faculty and make recommendations to the Council which is responsible for approving all academic program changes and setting policy within the Faculty of Engineering.

The Director receives a stipend above and beyond his or her yearly salary, and a 50% reduction in teaching load given the responsibilities of the Director are onerous administratively and time consuming. Twenty percent of his or her time is dedicated towards teaching, 20% research and 60% to the administration of the school.

associate directors

There is no formal executive group in the School of Architecture, but the University has authorized three additional administrative appointments. The Associate Directors are appointed by the Director; one is responsible for the administration of the Rome Program, one for Undergraduate Affairs and one for Graduate Affairs. All three report to the Director. The Graduate and Undergraduate Associate Directors also serve on and report to the appropriate Committees in the Faculty of Engineering, the Associate Deans, and the University Senate Undergraduate and Graduate Councils.

Associate Directors do not normally receive teaching reductions, however they do receive a stipend.

Associate Undergraduate Director (also referred to as Undergraduate Officer):
Lola Sheppard

Co-Associate Graduate Directors (also referred to as Graduate Co-Officers):
Adrian Blackwell and Valerio Rynnimeri

Associate Director Rome: Lorenzo Pignatti

the school undergraduate affairs committee (UGAC)

The Committee is chaired by the Undergraduate Officer and consists of four additional full-time faculty members representing the instructional streams in the program (design, visual and digital media, technology and environment, cultural history, urbanism and landscape), and the Student Services Coordinator.

The UGAC has the authority to monitor, review and approve curriculum, to review all changes to the program requirements and regulations pertaining to them and to approve all calendar changes, including course descriptions. In its deliberations the committee may instigate program or course changes or respond to propositions brought by the Director, the Registrar's Office or any one of the theme area committees responsible for maintaining the relevance and quality of the courses in a specific academic stream. These committees consist of all faculty members teaching in the stream in the case of visual and digital media, technology and environment, cultural history, urbanism and landscape and of the studio coordinators in the design stream.

graduate affairs committee

The Graduate Affairs Committee is chaired by the Graduate Officers, and consists of a minimum of two additional faculty members teaching in the graduate program (or three additional faculty members when there are not two Co-Officers) and the Coordinator of Graduate Studies and Research. The Committee handles the graduate admissions process, the approval of thesis supervisors and committees, the assignment of Teaching Assistantships, and the awarding of scholarships. The Committee deals with curricular matters, setting academic requirements; revising, inaugurating and deleting courses; monitoring course outlines for conformance with descriptions and policy; and establishing academic regulations. The committee also deals with the application of regulations in specific cases as well as students seeking exemptions from requirements and prerequisites.

tenure and promotion committee

Each year the full-time tenured and tenure track faculty elect four tenured faculty to serve on the Promotion and Tenure Committee. Operating according to University Policies #77 on Tenure and Promotion of Faculty Members and #76 on Faculty Appointments, the Committee reviews applications for consideration for Promotion and Tenure. These policies set out specific schedules and criteria for the review process.

undergraduate admissions committee

The School receives approximately 1200 applications for admission into the program. The Admissions Committee consists of three faculty members appointed by the Director and the Student Services Coordinator. The Committee reviews the file of every applicant, selecting approximately five hundred to be invited to the School for interviews and a written test. The Committee schedules and manages the interview process, hears appeals, reviews the precis test and interview scores and makes the decision on which students will receive offers of admission.

school advisory committee on appointments

When the School is authorized to fill a new or vacant faculty position it constitutes a School Advisory Committee on Appointments made up of four or more full-time tenured or tenure track faculty and chaired by the Director. The Committee is charged with setting the job description and criteria, writing the advertisement and, on the approval of the Dean and Vice-President Academic, advertising the position in the appropriate academic and professional contexts. The Committee reviews the applicants and establishes a short list of individuals to be invited to the School. At this point a parallel Committee of student representatives is established to report to the Search and Appointments Committee. Alternatively, students are involved as representatives on the committee.

When the interviews and presentations are complete, the faculty and student Committees meet to discuss the selection. Ultimately, the School Advisory Committee on Appointments makes a recommendation to the Director who in turn recommends to the Dean. The entire process is then scrutinized by the University Appointments Review Committee to ensure that it was fair, open and

free from bias. The Vice-President Academic and Provost ultimately approves the appointment and it is reported to the University Senate.

school committee

All faculty members, full and part-time, all technical and support staff, one student representative from each class and the executives of the Waterloo Architecture Student Association and the Society of Waterloo Architecture Graduates are full members of the School Committee. Meetings take place one to two times per term as required. All matters pertaining to the life of the School are reported to and debated by the Committee.

other committees:

There are other committees and individuals charged with specific administrative and advisory tasks within the School of Architecture. Most committees have representation from faculty, staff and students, both undergraduate and graduate.

accreditation committee

The accreditation committee consists of the director, two faculty members, as well as the Administrative Officer. They discuss the preparation of the document, schedule and organization of the accreditation process.

integrated design curriculum committee

The Integrated Design curriculum committee was formed to work on the curriculum and planning for the new program in integrated design. Chaired by the director, the committee includes three faculty members and advisory members as required. It is responsible for making the proposal, reporting on progress and submitting the program through the approval process.

awards committee

Three faculty members sit on the awards committee. Its mandate is to evaluate the candidates and proposals to different internal and external awards. These include, for example, the Alumni Gold Medal, Ontario Graduate Scholarships, as well as different awards within the School. The committee meets as required.

The UGSCC and Graduate Coordinator act as administrative members of the committee.

the musagetes architecture library advisory committee

The Musagetes Architecture Library Advisory Committee is responsible for maintaining connections with the Liaison Librarian for Architecture, dealing with collection development policy, setting the annual purchase budget and promoting special projects.

design at riverside exhibition advisory committee

The Committee has equal representation from the School of Architecture and the Cambridge Libraries and Galleries. It is responsible for selecting, developing and scheduling exhibitions in the space, establishing policies and acting as a liaison group between the School and the Gallery. The CEO of Idea Exchange, the director of the Gallery, the curator, the director, a faculty member and a graduate students sit on this committee.

currently inactive committees that will be reinstated:

house committee

The House Committee provides advice and guidance on all aspects of the operation of the physical facilities of the School of Architecture in Cambridge, including policies on external users, internal use of spaces, events, displays, maintenance, indoor environment, security, services.

computing and media advisory committee

The committee provides advice and guidance on the computing and media services offered in the School of Architecture including hardware, software and staffing issues.

workshop advisory committee

The committee provides advice and guidance on the workshop policy, operations and staffing.

3.5.4
SUPPORT STAFF
IN THE SCHOOL OF
ARCHITECTURE

There are currently 12 full-time staff members that serve the student and faculty at the School and 1 temporary position covered by a co-operative student in the Architecture, Computing and Media (ACM) office.

administrative officer

The Administrative Officer (AO) leads and manages all staff managers in Cambridge and the full-time administrator in Rome, Italy. She is responsible for managing the school building, administering the budget and finances, overseeing the operation of research grants and contracts, supervising other support staff and community engagement. The AO also oversees the preparation and administration of contracts, manages records of school activities, provides on-site administration overseas programs, and provides academic and budgetary information to the Dean's Office and the other University administrators.

The facilities management portion of the position includes the oversight of building operations, grounds and systems, security and relationships with the Design at Riverside Gallery and Melville Café. Many aspects listed above regarding facilities management is supported by the Resource Assistant (RA) position at the front desk. The AO oversees the finances and budgeting, human resources and staff and, in conjunction with the Director, does financial projections and planning for the School. The AO reports to the Director and, on financial matters, to the Dean's office as well. The AO also supports the Director in all financial and administrative procedures including Faculty Appointments, Tenure and Promotion, and Faculty Performance Reviews.

administrative manager

The Administrative Manager (AM), though not directly involved with the undergraduate and graduate program, supports faculty with research grants and funding and supervises the Undergraduate Student Services Coordinator and the Coordinator of Graduate Studies and Research. The AM currently reports to the AO. Since the responsibilities of administrative staff in the School of Architecture can result in overload conditions, the AM and other staff members must be willing to assist in almost every administrative area when needed. In particular, because the program coordinators report directly to the Administrative Manager, it is important that the AM be knowledgeable in all aspects of Under-

graduate and Graduate Studies, ensuring support can be provided and advisement can occur if required.

The AM also supervises the Resource Assistant. The AM is responsible to follow all relevant policies and procedures regarding the budgetary process in both Cambridge and Rome. The AM is responsible for the finances and budgeting, human resources (payroll) in conjunction with the Director and the AO creates financial projections and planning for the School. The AM also manages endowment and trust funds and assists faculty to budget those funds correctly pertaining large international projects. The AM is consistently looking for favorable efficiencies and optimal strategies to better serve the SOA. The AM is the SOA's point of contact for all financial queries both internal and external.

undergraduate student services coordinator

The Undergraduate Student Services Coordinator (USSC) handles all matters relating to undergraduate curriculum, progress and services. This includes maintaining student records and forms, advising students on factual matters relating to curriculum requirements and regulations, providing information to applicants, participating in the marketing and recruitment for undergraduate programs, managing the undergraduate interview and admissions processes, and supporting the Associate Director Undergraduate Affairs. The Undergraduate Student Services Coordinator sits on Undergraduate Admissions and Undergraduate Affairs Committees.

The holders of the USSC and CGSR positions must coordinate their activities and share knowledge to mirror each other. Cross training provides for coverage of all essential administrative areas when the need arises, both USSC and CGSR are able to carry out the duties of the other, and also those of the RA. The RA assists in covering the duties of both Coordinators.

coordinator of graduate studies and research

The Coordinator (CGSR) is responsible for the operational aspects of the relationship between the School of Architecture and its Graduate Students. The CGSR also supports research activity in the School especially as it effects student funding and support through the identification of opportunities for both students and faculty. The main focus of the CGSR is the operation of the

graduate program in Architecture, including the maintenance of the academic program, establishment and application of academic regulations, allocation of space in graduate Studios, scheduling and allocation of space for graduate courses, graduate recruitment, admissions, graduate orientation, maintenance of student records, tracking student progress, coordinating special events and programs, administration and management of Teaching Assistantships and the Student Life Fitness Coordinator, as well as oversight of the application process for external and internal scholarship support, graduate student advisement and support, and support of the Graduate Officers.

The CGSR reports directly to the AM, but also reports indirectly to the Co-Graduate Officers and Director of the School. The role includes liaison with the Associate Dean, the GSO, Office of the Dean of Engineering, Human Resources, Waterloo International, Institutional Analysis and Planning, Centre for Career Action, and all other University groups pertaining to Graduate Studies.

resource assistant

The Resource Assistant (RA) is a front line support role, the first contact for students, faculty and visitors to the School and responsible for the daily operations of the facility including key control, studio fees and payments, mail and deliveries, outside services, plant operations, catering, field trips, and other related tasks. The RA administers the teaching evaluation process, supervises the fax, printers and copy machines, the allocation of space in the building, and other required duties.

workshop manager

The Workshop Manager (WM) is responsible for the operation of the Architecture Workshop, MakerLab and Fabrication Lab. Working closely with Faculty, students, and staff, the Manager maintains the facilities in order to support design and research projects in the School, ensuring the Workshop is appropriately equipped, well maintained and safe. The WM provides ongoing administrative supervision for the workshop and its users, coordinating the personnel, making the best use of talents, time and capital available and ensuring that all regulations are followed. The WM establishes systems and procedures for users, maintains the Workshop policies and guidelines, establishes charge out fees,

demonstrates safe and correct operating practices for shop equipment and hand tools, supports the direction and assistance of student activities.

The WM also supports students and faculty in design and other courses, acting as adjunct for specific core courses, such as Arch 570: Design/Build Workshop, that are dependent on the Workshop. The WM ensures that the facilities are appropriate to support an innovative and ambitious program of research and education in design which means maintaining a plan for upgrading equipment, facilities and services in the Workshop.

workshop technician

Workshop Technician (WT) reports directly to the Workshop Manager and assists in supervising the Architecture Workshop facility. The WT is responsible for the safe operations and maintenance of all equipment, ensures students are properly qualified and supervised in the workshop at all times, and provides orientation and training sessions/tours and basic instruction in the safe operation of fixed and hand tools.

architecture, computing and media system manager

Computing and media at the School are crucial to the success of the institution in providing a high quality environment for architectural design and research. Information technology and digital media provide the means to explore and represent architectural and design ideas. In this sense architecture is a digital medium in which drawings, models and even full scale constructions are produced using digital equipment. The School has become responsible for much of its own technical support because it is a satellite campus. There are three full-time staff members dedicated to maintaining the network infrastructure, input and output devices and systems, computing and multimedia equipment and software. Architecture Computing and Media also manages the School's supply store, ordering and selling materials used by students, maintaining student print services, and assisting students with their multimedia and computing needs. The original staffing plan called for a fourth position to provide expertise in Geographic Information Systems, and the School looks forward someday to filling this role. In the meantime, staff from Engineering Computing, and IST provides excellent support to the ACM staff. The supply store hires co-op students

on a term-by-term basis to provide direct assistance to students and support the supply store.

The System Manager (SM) is responsible for the operation of all computing services, activities, and equipment at the School of Architecture in Cambridge. The SM plans computing support and services to be provided to Architecture faculty members, staff and students. The SM is responsible for the selection and procurement of computing related goods and services, along with the interaction with Waterloo campus computing units, and off campus computing units and groups is a major part of this role.

multimedia specialist

The Multimedia Specialist (MMS) is responsible for the provision of photographic services, both digital and conventional, as well as digital imaging, video, web design and audiovisual services at the School of Architecture. The MMS coordinates selection and procurement of photographic, digital imaging and related goods and services to be used at the Cambridge campus; costs out, manages and undertakes photographic and digital imaging contract/grant projects as well as the exhibition activities at the School. The MMS oversees the School's digital projection and other Audio Visual equipment, and trains and supervises student assistants hired to provide day-to-day support. The MMS will normally be capable of offering both informal and formal academic instruction.

computing administrator

The Computing Administrator (CA) is responsible for supervising all computing office operations and computing consulting services at the Cambridge campus. This includes maintaining all financial accounts and budgeting for computing and related equipment repair and purchase. She assists in hiring and scheduling part-time student assistants working on the Help Desk. She is also responsible for the day-to-day administration and maintenance of the faculty's main public web site and internal web site including research sites. This is a hands-on development and web management position heavily emphasizing Drupal in a virtual LAMP environment, implementing campus standard themes, views, groups and modules.

client support specialist

As a member of the ACM team reporting to the Architecture, Computing and Media System Manager, the Client Support Specialist provides a wide range of direct services and support to faculty, staff and students in their use of the electronic workspace at the SOA. The Client Support Specialist is responsible for providing services, support, consulting, training and communication services to clients (students, staff and faculty). Services include trouble shooting client customer issues, providing instruction and training for school services (printing, wireless access, shared resources and information systems) and maintaining school computing equipment (three computer labs, multifunction printer/copier/scanners/large format plotters). This position also supports 3 computer labs consisting of 40 computers, the Musagetes Library (17 computers), Administration staff (17 computers) and a wired/wireless network supporting 350+ computers.

administrative manager - Rome program

The Administrative Manager of the School of Architecture's Rome Program oversees the operations and administration of the facilities at the Rome Studio and provides direct support to faculty, students and senior administration. The AMRP is responsible for maintaining the accounts of the Rome Program and the library in the Rome Studio. Primary responsibilities include providing administrative and academic services, signing authority on accounts relating to department organized conferences and administrative operations, as well as overseeing financial transactions, and administrative tasks for the Rome Program. She provides assistance to students in dealing with the challenges of finding accommodation and dealing with the challenges of living in Italy.

other staff positions:**security**

G4S Secure Solutions provides security service to the School of Architecture under the supervision of the University of Waterloo Police. The commissionaires are on site from 4 PM to 8 AM each day and 24 hours a day on weekends and holidays. They are responsible for safety and security in the building, administering the drive-home program, dealing with police and fire department and

reporting on a daily basis to the Administrative Officer on any security issues that may arise.

custodial and maintenance

The University has provided a team of two custodians who work five nights a week and are available for special needs on the weekend. The University is also responsible for the maintenance of the grounds and Parking lot.

counselor

A counselor is currently on campus once a week to meet with students individually by appointment. Beginning September 2016, a second counselor will be available to architecture students on the Cambridge campus, and together counselors will be available to meet with students twice per week. Appointments are made through the central University of Waterloo office.

3.6 HUMAN RESOURCES DEVELOPMENT

3.6.1 DEVELOPMENT POLICY

The School of Architecture promotes the individual development of faculty, students and staff. The School's stated position is that architectural education is a project in which faculty staff and students are involved in equal measure. The curriculum is designed to equip students to develop intellectually and creatively at the same time they acquire knowledge and skills that will serve them in their Co-op work terms and throughout their professional lives. Service learning opportunities are provided that allow students to work for academic credit on community projects. Students get support for their engagement in competitions, displays, and installations, both inside and outside the School. The graduate program is specifically structured to allow students to pursue individual program of research and design to create a platform for their future careers and contribute to the development of knowledge and relevance of the architectural profession. To further develop staff there has been numerous cross training efforts within and external to the school for various staff.

3.6.2 FACULTY APPOINTMENTS, PROMOTION + TENURE

Faculty members are hired in accordance with University Policy (#76) that requires fair and open searches. The University Appointments Review Committee vets all faculty appointments to ensure the integrity of the process across campus. Candidates are required to present evidence of teaching experience and record of scholarship and creative design achievement.

When positions are advertised they are described with due reference to the expectations and versatility required by the School. The following excerpt was taken from an advertisement from the last faculty search launched in winter 2016.

The successful candidate will be equally committed to ensuring excellence in undergraduate and graduate teaching as he or she is to research. The School of Architecture at Waterloo strongly promotes explorations in design technology, visualization, new materials, and experimental media. It has a record of innovation and discourse in the fields of computational modeling, visualization, interactive systems, and digital fabrication, and offers a track record of successful funding for digital design infrastructure. The successful candidate's role will

include ongoing development of the graduate and undergraduate curriculum, expansion of The School's technology resources and facilities, and development of research and funding initiatives in collaboration with external professional, professional, academic and industrial organizations. The School of Architecture expects the successful candidate to teach in studio, and in tutorial-based lectures courses, and – as a full-time faculty member – to lead seminars at undergraduate and graduate levels in core and elective streams, integrating technology, design, and culture.

The School of Architecture also carries out a specific interview process for shortlisted candidates in which each candidate is interviewed by the School Advisory Committee on Appointments and, separately, by a representative committee of students. Each candidate also gives a public lecture to the School and responds to questions from the entire community. The final recommendation on any appointment is made only after the School Advisory Committee on Appointments meets with the student representatives and reaches a common position.

Faculty members of professorial rank teach two terms out of three each year in order to provide a non-teaching term, giving adequate time to maintain productive individual programs of research and design. Faculty members are also encouraged to take regular sabbaticals and pursue individual interests and renew their teaching activities. The University provides a broad range of staff and faculty support programs listed below.

3.6.3 FACULTY DEVELOPMENT OPPORTUNITIES

Organizational & Human Development

<https://uwaterloo.ca/organizational-human-development/>

Workshops include, but not limited to the following:

principles of leadership – what is 'genuine' leadership, and why does the University of Waterloo have Principles of Leadership? In this workshop participants

explore essential leadership qualities and discover the six leadership principles that are fundamental in developing a culture of respect and sustain positive relationships at the university. Examine how each quality contributes to personal and organizational success and assess how you currently practice the Principles of Leadership in your daily interactions.

principles of inclusivity – this workshop introduces the University of Waterloo’s Principles of Inclusivity and helps faculty and staff to understand how UW perceives inclusivity and diversity. As each principle is examined, participants will increase their knowledge and awareness of inclusivity and learn skills to promote and practice inclusivity in the workplace.

integrity matters – what is integrity, and how can you promote a culture of Integrity through your everyday behaviours? Building on the Six Fundamental Values of Integrity, this interactive session explores what actions and avoidances demonstrate these values in our ‘work, study and play’. Knowing that integrity is personal, and requires personal choice, learn how it influences your everyday interactions and decision making. You will have the opportunity to discover what integrity means to you by examining your own core values and creating a personal mission statement.

exceptional service – what is Exceptional Service? No matter what position you hold or which area you work in, you are delivering service every day. Learn to make your service positive, professional, and personal by exploring tips and techniques to work through scenarios and challenging situations.

Centre for Teaching Excellence

<https://uwaterloo.ca/centre-for-teaching-excellence/>

Workshops are offered to faculty on a variety of topics including but not limited to the following:

course design for blended learning – blended learning integrates thoughtfully structured online activities into face-to-face courses. Students engage in online activities such as taking quizzes and contribution to discussion forums, and interact with online course materials such as lecture notes, screencasts, and simulations. These online activities and resources contribute to student success in several ways: they can promote understanding of challenging course concepts; they can assess students' retention of course concepts and skills; and they can foster a sense of community within the course.

course design fundamentals – this six-hour workshop introduces the principles of aligned course design to faculty and teaching staff with little or no prior teaching experience running courses of their own. By the end of the session, participants will have considered learning outcomes, assessments, activities and their alignment in disciplinary and logistical contexts.

assessment for learning – how do we know students know and can do new things as a result of our courses and assignments? How will they know they know? Assessment decisions are made in the context of course objectives and constrained by class size and grading time allotted. We'll cover principles of feedback and evaluation of student work as well as practical advice. Participants will leave with the knowledge required to start an assessment plan for a course or assignment, along with tips about assessment tools such as rubrics, group-grading forms, and multiple-choice item analysis.

getting started in Learn – this two-hour hands-on workshop will introduce you to LEARN (Desire2Learn), our course management system for presenting course activities and resources in on-campus and fully online courses.

enhancing learning with assessment tools – Assessment is traditionally thought of as a measure of learning; however, assessment can be a powerful tool to enhance learning. Research has shown that testing can improve subsequent recall, retention, and classroom performance. In this workshop we will examine some of the research literature on assessment as learning and then explore different tools for enhancing learning via assessment, including mTuner, IF-AT cards, and LEARN's quiz tool.

Office of Research

<https://uwaterloo.ca/research/research-excellence/research-support-fund>

The Office of Research offer workshops on a variety of funding options for research, such as Social Sciences and Humanities Research Council of Canada (SSHRC). It maintains a site with current information on funding opportunities, provide support for grant applications and administration of the Common CV. It also manages funding and applications.

3.6.4 PRACTICE & LICENSURE

University Policy also allows and encourages faculty members to be engaged in professional practice and consulting for up to 20% of their time and evaluation criteria explain that professional work that is related to research activity counts in the annual performance review and promotion and tenure consideration. This is a clear encouragement to practice and is reflected in the fact that all design faculty members maintain a creative professional practice. Not only are these faculty members current, they are at the forefront of practice.

The Office of Research also provides a number of resources as well as training opportunities, including training on Conflict of Interest, on Negotiating Authorship with Integrity, or Responsible Conduct of Research.

<https://uwaterloo.ca/research/office-research-ethics/research-integrity/training-and-resources>

field trips and field studies

3.6.5

OFF-CAMPUS ACTIVITIES

The Co-op program is a compulsory component of the undergraduate program at the School of Architecture and, as is shown elsewhere, it provides students with numerous opportunities not only to practice in their field, but to live and work in cities across North America and around the world. In the last six years, 35 to 45% of the co-op job placements have been in locations outside Canada.

In addition, many other trips and visits occur within the curriculum, including the fourth year program in Rome. Within Design Studios offered in Cambridge short field trips regularly visit the sites of remotely located design projects, or support the learning objectives by visiting large cities in Canada and the United States. More often field experience supports the more general aim of the program to broaden the students' cultural and architectural experience. The first year class travels each year to New York and it is normal for the second year classes to travel to Chicago or Montreal.

Before attending any field trip, students must acknowledge risk and responsibility associated with the activity. They are given instructions on health coverage, insurance, as well as information on preparation. In cases where students are travelling abroad, they also have to complete a University of Waterloo Pre-departure Orientation Session. All of these clearly make the students aware of the requirements for them to understand the risk and take responsibility for their decision to go on such trips.

The school also has a particular relationship with the metropolitan area just over the horizon to the east, even closer now that the School has moved to Cambridge. Toronto is the site for a great many studio design projects. It is the metropolitan laboratory most accessible to the School and it has been used time and time again for Design Studio. From the urban core to the Green Belt that now encircles the city, from the island airport site, along the lakeshore and; Toronto presents a range of paradigmatic architectural and urban conditions characteristic of the Canadian built landscape. The School is able to stand outside, but act from within.

international programs and exchanges

the rome program

The Rome program has been keystone of the academic program at Waterloo for more than a quarter century. It won the Scotiabank/Association of Universities and Colleges of Canada Award for Excellence in Internationalization in 2000.

Students entering the 4A term of the BAS relocate for four months (September to December) to the Waterloo Studio in Rome where they carry a full load of academic and design courses: three courses in architectural and urban history and one regular design studio. From the outset Waterloo has shared studio and classroom space in Rome with the Pratt Institute of Brooklyn, New York. The studio was originally located in a suite of rooms in the piano nobile of a palazzo overlooking Piazza S. Maria in Trastevere. The facilities include six studios, two lecture rooms, a student lounge area, a small library and iMac workstation. Many of these amenities are new since the expansion and renovation in 2014. The entire Rome studio is provided with wireless networking and facilities for printing, scanning, and digital presentation.

Italian architect and educator Professor Lorenzo Pignatti is the Director of the Rome Program, having been involved since 1982. In addition, Professor Pignatti teaches the Arch 449: Modern Italian Architecture offered to students while in Rome. Each year more than 20 Italian architects and academics also participate in the program as lecturers and critics. In addition, the holders of Rome fellowships and prizes in architecture who are in residence at the American, French, British and other academies are invited to participate, allowing for an array of outstanding teachers from a wide variety of backgrounds. This enables a creative environment the likes of which would be impossible in almost any other location. At the conclusion of the term, students mount a complete exhibition of their work in the Rome studio.

While in Rome the students live in apartments, mostly close to the studio. They shop in markets and learn to use the streets and piazzas of the city. The curriculum also includes a series of day-long visits to important historic sites in and

around Rome: the Forum/Palatine, Golden House, Trajan's Forum, Hadrian's Villa, the great renaissance villas north of the city and the churches and piazza's of Baroque Rome. The students pay visits to the recently constructed cultural projects by some of the world's leading architects and to the areas of transition on the periphery of the historic city and the modern metropolis. Two longer field trips take place: one five day trip south of Rome to the archaeological sites at Cuma, Baia, Pompeii, Paestum and Sperlonga; and one to the medieval, renaissance and modern cities of Umbria, the Marches and the Veneto, Orvieto, Siena, Gubbio, Urbino, Parma, Mantova, Verona, Vicenza and Venice. Each of these trips and visits is carefully conceived to support and enrich instruction in the academic courses given in Rome. There are assignments associated with the longer trips. The students are also obliged to keep a sketchbook throughout the term. The results in terms of the quality of student drawing are remarkable and lie at the root of the proposal to reinforce and celebrate graphic documentation, representation and speculation as one of the identifying features of Waterloo Architecture.

other international activity

In addition to the Italian exchanges, Waterloo has exchanged students with universities in Australia, Austria, Germany, Hungary, Norway, Singapore, South Korea, Sweden, Switzerland, USA. Waterloo Architecture has sent 60 students on international exchanges and has received over 35 students since 2005.

The research programs of most faculty are international in focus. Dr. van Pelt is the acknowledged expert on the architecture of the Holocaust and carries on a program of research and planning centered on the Auschwitz/Birkenau site in Poland. He is an international figure who has been involved in, for example, the David Irving/Deborah Lipstadt trial in London in 2001. Rick Haldenby has been involved in archaeological research, and environmental research and design in Italy, Tunisia, Malta and Egypt. Philip Beesley has undertaken projects in at least seven different countries, often involving students from Waterloo. Lola Shepard has been doing research in the North, from Alaska to Iceland and Greenland, and Terri Meyer Boake has been traveling around the world to look at structural steels in all its contemporary uses.

secondary school linkages

future schools: mentoring a new generation of architecture students

Future Schools is an event hosted by BRIDGE that offers local middle school students a taste of the architecture school in Cambridge. This program was first run in 2015, with another successful run in 2016.

The program is a student-organized event. This past summer of 2016, members of *BRIDGE Center for Architecture and Design* took middle schools students on a tour of the architecture building, answering questions about what it is exactly that we do here. At the end of the tour, visiting students were brought upstairs to the loft where two mini workshops were held. The first provided students with foam and foam cutters, and participants were encouraged to think about massing and form while allowing their imaginations to run wild. The other workshop taught students the fundamentals of drawing buildings in perspective. Both workshops had students envision what they thought future schools might look like.

BRIDGE held an exhibition at the storefront the following Monday for the students and parents to see their ideas on display beside their peers'. The event exemplifies exactly why BRIDGE was created here in Galt: to connect with the local community.

3.6.6 undergraduate

STUDENT ORGANIZATIONS

The Waterloo Architecture Student Association (WASA) represents the interests of undergraduate students within the School. The organization has existed continuously for more than thirty years and has always been an important part of the life of the School. While the relationship between WASA and the administration has always enjoyed a comfortable informality, the constitution and prerogative of the student association have, over the years, become more precisely defined. A copy of the constitution, as it was approved in 1991, can be found in Appendix 5.1.

Current positions on the WASA student union include President, Vice-President, Treasurer, Jr. Treasurer, Class Representatives, Events Coordinator, Sports Coordinator, BRIDGE Coordinator, and WEEF Representatives. These officers are elected to these positions at the beginning of each term. WASA derives its budget from a \$15 charge per term paid by the Architecture students to the University Federation of Students (FEDs). The entire amount is transferred back to WASA, yielding an annual budget of approximately \$7500. With this money, students organize events, manage the main Student Lounge, and support special projects.

WASA also plays a key role in purchasing equipment to enhance student opportunities through the Waterloo Engineering Endowment Fund. Each undergraduate student contributes \$75 per term to their endowment. This amount is refundable upon application. The total endowment is approximately \$3 million. It generates interest that is used to purchase equipment for students in the Faculty.

Through WASA students are elected to positions on other departmental and faculty committees. The Undergraduate Affairs Committee (UGAC) that reviews promotion and disciplinary matters requires student representation for all its deliberations. The student body elects a representative each term. Students are also represented on the W.E.E.F Endowment Committee, Student Services Committee, Musagetes Architecture Library Advisory Committee, the Computer and Media Advisory Committee, the Workshop Advisory Committee and the House Committee. The WASA executive and representatives from each class sit on the School Committee in Architecture. During the term the WASA Executive and the Class Representatives normally meet once to twice a month with the Director of the School to discuss matters of interest to the students.

graduate

Society of Waterloo Architecture Graduates (SWAG) was formed when the Masters program was first introduced to the school. SWAG serves as a departmental graduate student association, and is recognized by the Graduate Student Association (GSA) of the University of Waterloo. It represents all full and part-time Architecture graduate students at Waterloo. It serves by working

with administration, holding seats on committees, and performing other administrative duties. In addition, the SWAG acts to stimulate social, intellectual, and political contact among its members. The organization is comprised of the President (currently Co-Presidents), Treasurer, Secretary, Graduate Student Association (GSA) Representative, Health & Safety Rep, TA Representative, WASA Liaison, and Bridge Representative. A copy of the constitution as it was approved in 2001 and updated in 2015 can be found in Appendix 5.1.

SWAG initiates many events (Peer Reviews, Graduate Soiree) and other extra-curricular activities that support student development and wellbeing. The SWAG President volunteers his/her support by leading this group of students. A new president either volunteers or is selected at the beginning of every term, with the past President taking on an assistant role.

SWAG offers financial support of up to \$100 towards events organized by grad student organizations. In the past, such events have included Peer Thesis Reviews, Faculty Pecha Kuchas, and the annual Grad Soiree. The SWAG is also a partner in organizing the annual Graduate Student Research Conference at main campus.

other

Other student initiatives include BRIDGE, On Empathy, MLab, and the Waterloo Peer-mentoring program. These gather students rather spontaneously around community outreach, discussion on ethics and architecture, or the culture of making in the School and beyond.

3.6.7 STUDENT SUPPORT SERVICES

Support services provided by the School of Architecture and the Faculty are devoted to facilitating the creative and academic activities of the student body and fostering students' general well being. Students habitually use the computer labs, workshop, media centre and library. These facilities are described in Section 3.7: Physical Resources.

Within the School, students receive advice and direction in academic matters

from the Undergraduate Student Services Coordinator and the Undergraduate Officer, or the Coordinator of Graduate Studies and Research and the Graduate Officers. Since the curriculum is highly structured, academic advising is limited.

It is the standing policy of the School, a policy that is reiterated at the first all-school meeting of every term, that students should not hesitate to exercise the right to consult the Director on any matter of concern to them. Advice and special help can be sought and grievances can be lodged, not only with the Director but also with the Office of the Associate Dean, Undergraduate and Graduate Studies of the Faculty of Engineering. Problems of an academic and personal nature can be addressed either informally or through the formal instruments of the Undergraduate Affairs Committee or Graduate Affairs Committee.

architecture co-op

The undergraduate program at the School of Architecture is completely co-op. Co-operative Education and Career Action (CECA) administers a comprehensive system that identifies jobs, matches students and employers, supports a program of evaluation of student performance and tracks student experience through their undergraduate career. The main CECA operation is, of course, on campus in Waterloo, though the department has a network of Coordinators who are dispersed in the main job markets in Canada. CECA is responsible for managing the Co-op Program, locating jobs for the students in the program, organizing placement interviews in which representatives of firms and government agencies visit the campus. There is also an interview day in Toronto to make it easier for small firms to participate. On each return to campus from a co-op work term, every student meets with one of the coordinators to review the experience gained, to share information about the position and the firm, to discuss the quality of the overall work record and to set priorities for future job placements. The coordinators also run specific training sessions for students and graduates in areas of interview skills, portfolio presentation and handling a job search.

The co-op program is one of the keystones of the professional program in Architecture at Waterloo. It is a required element of the undergraduate curriculum that effectively diffuses the School across the country and, increas-

ingly, around the world. There are many practical benefits to the students: a substantial income, skills development, personal and professional connections and a broad knowledge of architectural practice. Many students say they were initially attracted to Waterloo because of co-op. And it is safe to say that co-op has served the School and the students very well. The skill, maturity and confidence that comes from co-op experience is evident in the work of upper year students.

It is impossible to overestimate the importance of the Co-op Program in the School of Architecture. Its presence clearly influences the structure of the academic program – the need for Design Studios and skill-building courses in the first two years, the ability to place the Comprehensive Building Design Studio in the undergraduate program and the freedom it provides to open the Masters to original research and specialization. This is an off-campus opportunity of exceptional value and a defining characteristic of the Waterloo School.

During the last six years, the overwhelming majority of students have been employed within Architectural, Engineering and Related Services (79%), while a number of other sectors including governmental positions, university research positions, tech industry work, and construction compose the remainder. Most students employed in private architectural and design firms receive an exceptionally high level of job experience.

The number of international placements topped out in 2005 at 56%, with New York and London as the main destinations for students. Following the financial collapse in 2008, locations shifted back to Canada, with over 40% of jobs in the Greater Toronto area. In 2009, the level of international placements fell to 26%. By the 2014–15 year, international placements had reached 37%. The large concentrations in London and New York have declined, and international jobs are now spread across the world. But the fact remains the rate of employment has remained high, virtually 100% and the market remains strong, thanks in part to the energy and ambition of the architecture students.

The introduction of the new Professional Development (PD) courses taken in students' first, second and third years of academic study are intended to help support students with necessary professional skills for the workforce. These

PD courses enhance the overall work-integrated learning experience of co-op students by providing engaging and relevant online courses that improve students' employability and workplace productivity. Students must also submit three Work Reports after their third, fifth, and sixth co-op terms.

School of Architecture General Student Support Services in Cambridge:

counseling

The intensity of the program, the high level of demand across the curriculum, the investment of creative, psychological, physical and spiritual energy in design studio projects, and the indeterminate quality of the activity (time and energy do not necessarily translate into high grades and positive evaluation) all place a great deal of pressure on the student of architecture.

As such there is a need for access to counseling services. Counseling is available in Cambridge two days per week, and the Architecture Counselors meet with students individually by appointment.

These appointments are made through the Counseling Services Offices and not through School of Architecture staff. The Counselors also offers seminars and workshops in time and stress management, study habits and nutrition. The connection of an individual counselor to the School means that there is a high level of understanding of the culture and conditions. As with all the service areas, architecture students may still, in case of emergency avail themselves of the Counseling Services on campus.

security

The School is located in an urban core with many of the attendant issues. On the main campus, there are Walk-Safe and Drive-Safe programs available for students needing to get home at night, however in Cambridge, the Drive Home"program fills the role of these services not available at the Architecture Campus. Architecture students can ask the security guard to call a taxi for them

anytime between the hours of 9 pm and 5 am. The student is picked up in front of the school and taken home at no charge to the student.

health services

Medical services are, of course, available in Cambridge through the Cambridge Memorial Hospital and several Walk-in Clinics. The University has established a relationship with a local physician, to take on Architecture students. Personnel from University Health Services do come to Cambridge for specific purposes such as the flu shot clinics.

recreation and fitness

The excellent recreational facilities available on campus are, effectively, inaccessible to the architecture students who would have to travel for almost two hours to use them. In 2005, a fitness facility was installed in the School of Architecture and includes a range of standard fitness equipment. The facility is accessible by key to students 24 hours a day, and monitored by video cameras.

A Graduate Student Fitness Coordinator position for up to ten hours a week is funded by the School to provide programming and fitness centre facilities management. The coordinator also engages other services in the community such as yoga instruction for students at the School of Architecture through a local studio.

Waterloo main campus student services

Architecture students still have full access to services provided by the University of Waterloo.

athletic services

Over the course of the three academic terms yearly, there are a range of informal athletic activities fostered within the School.

The winter and spring terms have seen weekly basketball, volleyball and soccer games. All these activities are open to students in all years as well as staff.

The University offers a broad range of extra-curricular athletic programs and sports facilities for men and women. The Physical Activities Centre, golf course, numerous outdoor fields, Columbia Ice Field Arena and other facilities provide excellent accommodation for these activities.

Centre for Career Action

In addition to the comprehensive placement service provided through the Co-operative Education Program, there are a variety of counseling and planning services offered by the Centre for Career Action. These are offered through the following programs.

- i) Graduating Students Interviews: Registered graduating students are offered counseling interviews to discuss employment prospects and career planning at the undergraduate and graduate level
- ii) Alumni Referral Service: This computer matching employment service is offered to both graduating students and Alumni.
- iii) Career Preparation Workshops: Workshops are offered several times each term to help students in self-assessment, researching career options, networking, etc.
- iv) Student Career Leaders: Students trained as career planners are available as peer resource persons and general career counselors.
- v) Career Resource Centre: In addition to job postings the centre offers an extensive library of information concerning work abroad programs, self-employment and non-traditional career paths.

counseling services

Professionally trained counselors are available to help students with educational and career decisions as well as personal and social concerns. Individual interviews, workshops, and study skills classes are some of the services, which Counseling offers to students.

health and safety department

The Medical Clinic provides comprehensive care to all students and emergency care to others on campus. Physicians, nurses, and counselors are on staff at the clinic which is open Monday to Friday 8:30 am. to 5:00 pm. In addition to OHIP coverage, full-time students receive a Supplementary Health Care Plan that provides partial payment for prescriptions and emergency services.

sexual harassment counselor

The University is determined to promote an environment, which supports and rewards its members on the basis of merit, equality, human dignity and achievement. The Sexual Harassment Counselor, available through Counseling Services, provides information, advice and active support in matters pertaining to sexual harassment.

mature student services

This office provides both academic information and support services for students who have been away from formal education for some years.

AccessAbility Services

The University of Waterloo has a long standing commitment to support the participation and access to university programs, services, and facilities by persons with disabilities. The School has worked closely with the AccessAbility to assist students facing a variety of challenges. The staff is highly trained, experienced and effective and visits the School of Architecture once per term and additionally as needed to support Architecture students.

childcare

There are three licensed childcare facilities located on the campus. Two of offer co-operative day care and the third offers professional service for children from 3 to 33 months of age. Realistically, these are not available to architecture students. There are, however, childcare facilities near the School in Cambridge.

federation of students

The Federation of Students' role is to provide services, businesses and representation for all undergraduate students at the University of Waterloo. The Federation consists of elected and hired positions. Some of the many services it provides include:

- CRT (Campus Response Team)
- CSS (Co-op Student Services)
- Food Bank
- GLOW (The Queer and Questioning Community Center)
- International Student Connection
- OCD (Off Campus Dons)
- Student Refugee Program UW Sustainability Project
- Women's Centre

federation businesses include:

- Bomber
- Federation Hall
- Feds Xpress
- Feds Used Books
- Curry Up
- Wasabi

graduate student support

Graduate Student Association (GSA)

The Graduate Student Association (GSA) is a student-run not-for-profit organization whose membership consists of the graduate students of the University of Waterloo. The GSA actively promotes and represents graduate student interests to the university administration and various levels of government. Our lobbying efforts focus on issues such as student funding, working conditions, academic regulations, and university services.

The GSA provides a number of services for graduate students, such as legal aid, income tax aid, supplementary health and dental plans, GRT bus pass, and student advocacy.

The GSA hosts events that are held on campus and off campus, and family friendly events.

The GSA offers financial support towards events organized by graduate student departments and clubs.

The GSA operates the Graduate House, a members-only club featuring food service, bar service, and entertainment.

Centre for Teaching Excellence - services to students

The Centre for Teaching Excellence provides workshops, small-group practice teaching sessions (microteaching), classroom observations and other sessions that help prepare graduate students at uWaterloo for their teaching roles. Graduate students can attend individual workshops or choose to enroll in one of our certificate programs:

- Fundamentals in University Teaching
- Certificate in University Teaching
- Certificate in University Language Teaching

In addition, every term CTE offers workshops for International Teaching Assistants (ITAs) who are new to teaching in Canada.

Graduate students who have taken full advantage of these opportunities have subsequently reported that they had more confidence in their role as TAs and instructors and felt better prepared for university teaching.

Teaching Assistants may also be interested in the Manual for Teaching Assistants (available at: <https://uwaterloo.ca/centre-for-teaching-excellence/sites/ca.centre-for-teaching-excellence/files/uploads/files/TA%20Manual%20W13.pdf>) that the Centre for Teaching Excellence has developed. It contains resources, policies, strategies and suggestions that any Teaching Assistant will find helpful.

CTE offers consultations for graduate students and Postdoctoral Fellows who are preparing their teaching statements or statements of teaching philosophy

3.6.8
GUEST LECTURERS +
COLLOQUIA

2012	Michael Green Rolf Seifert Michael Stacey Barry Sampson Joyce Hwang Perry Kulper Douglas Birkenshaw Donald Schmitt Margie Zeidler Kyra Clarkson	Canada Wood Council Seifert Architects, Austria Michael Stacey Architects, UK Baird Sampson Neuert, Toronto University of Buffalo, NY University of Michigan, MI B+H Architects, Toronto Diamond Schmitt Architects, Toronto Centre for Social Innovation, Toronto Kyra Clarkson Architect, Toronto
2013	Peter Clewes John van Nostrand Jennifer Keesmat George Baird Andrew Herscher Mark Cichy Frédéric Dubé John Hofstetter Paul Noskiewicz Pamela Blais Antoine Grumbach	architectsAlliance, Toronto planningAlliance, Toronto Chief Planner, City of Toronto Baird Sampson Neuert Architects, Toronto University of Michigan, MI Design It Mill Inc., Toronto Lapointe Magne et associes, Montréal Visual Artist, Waterloo ON NORR Limited Architects Engineers Planners, Toronto Metropole Consultants Ltd., Toronto Antoine Grumbach et Associes, Paris

Arch 392 Future Public Environments Symposium	Bruce Kuwabara Lisa Rapoport John van Nostrand Andre Sorensen Thomas Pucher Chris Hardwicke	KPMB Architects, Toronto Plant Architect, Toronto planningAlliance, Toronto Urban Geography, University of Toronto Atelier Thomas Pucher, Austria Sweeny Sterling Finlayson & Co Architects, Toronto
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Kelly Shannon	Oslo School of Architecture & Design, Norway	2014
Leslie Woo	Vice President, Metrolinx	
Jane Farrow	Journalist; Founding Director of Jane's Walk	
Paul Hess	Department of Geography and Planning, University of Toronto	
Sue Zielinski	SMART Transportation Research Institute at the University of Michigan	
John van Nostrand	planningAlliance, Toronto	
Pamela Blais	Metropole Consultants Ltd., Toronto	
Louis Becker	Henning Larsen Architects, Denmark	
Carsten Primdahl	Founding Partner, CEBRA architecture, Denmark	
Jenny Sabin	Sabin Design Lab at Cornell AAP, NY	
Nader Tehrani	Founding Principal Office dA and NADAAA	
Jessie Reiser	Princeton University School of Architecture	
Joel Sanders	Joel Sanders Architect, NY	
Sean Lally	Founder, WEATHERS	
Alison Brooks	Alison Brooks Architects, UK	

Kristina Verner	Intelligent Communities Waterfront Toronto	Arch 392 Future City Symposium
Stephen Otto	Toronto Historian, Founder of Friends of Fort York	
David Delaney	Freed Developments, Toronto	
Kim Storey	Brown + Storey Architects Inc., Toronto	
Kevin Stelzer	B+H Architects, Toronto; UNEP-Sustainable Buildings and Climate Initiative	
Thomas Pucher	Atelier Thomas Pucher, Austria	
Michael Leckman	Diamond Schmitt Architects, Toronto	

Re:POST: Exhibiting Architecture – Opportunities for Invention Symposium	Felicity Scott	Director of the Program in Critical, Curatorial, and Conceptual Practices in Architecture at Columbia University
	Larry Richards	John H. Daniels School of Architecture, Landscape, & Design, University of Toronto
	Christine Shaw	Department of Visual Studies, University of Toronto
	Lisa Hirmer	Artist
	Maiko Tanaka	Curator, Public Programs at InterAccess
	Annabel Vaughan	Principal, publicLAB Research & Design, Vancouver
Thinking Architecture Speaking Series – Symposium	Taymoore Balbaa	Atelier3AM, Toronto
	Graeme Stewart	ERA Architects, Toronto
	Marc Ryan	PUBLIC WORK, Toronto
	Liana Bresler	LGA Architectural Partners, Toronto
	Elizabeth Paden	KPMB, Toronto
	Scott Sørli	ø-slash, Toronto
Paths to Practice	Hans Ibelings	Architecture Critic
	Hunter Tura	Bruce Mau Design, Toronto
	Teresa Przybylski	Architect and Stage Designer
	Jason Halter	Wonder incorporated, Toronto
	Alar Kongats	Kongats Architects, Toronto
	Christopher Glaisek	Vice President for Planning and Design, WATERFRONToronto
	Colin Neufeld	Principal, 5468796 Architecture, Winnipeg
2015	Alissa North	John H. Daniels Faculty of Architecture, Landscape, & Design, University of Toronto
	Aaron Betsky	Critic and author
	Marc Fornes	Founder, THEVERYMANY, NY
	Gregg Pasquarelli	Founding Partner, SHoP, NY
	Poalo Disideri	ABDR Architects, Italy

Mark West
Demetra Katsota
Virginia San Fratello
Yasha Grobman

MIT Architecture, MA
Co-founder, Buerger Katsota Architects
San José State University School of Art & Design
Faculty of Architecture and Town Planning at the
Technion, Israel Institute of Technology

2015
(contd)

Dan Adams
Fionn Byrne
Matthew Kennedy
Mark Erikson
Elizabeth Paden
Jonathan Enns
Alexander Josephson
Andrea Ling

Landing Studio, MA
Office of Pedonic Operations, Toronto
Studio North, Calgary
Studio North, Calgary
KPMB, Toronto
Office Jonathan Enns, Toronto
Partisans, Toronto
Member, GUILD

**Re:POST: Thesis to
Practice Symposium**

Pat Hanson
Omer Arbel
Martin Bressani
Daniel D'Oca
Guan Lee
Paolo Desideri

Founding Partner, gh3, Toronto
Omer Arbel Office, Vancouver + Berlin
McGill University School of Architecture
Principal and Co-founder, Interboro Partners, NY
Grymsdyke Farm, UK
ABDR Architects, Italy

2016
to August 31

Michel Leckman
Drew Sinclair

Principal, Diamond Schmitt Architects
Principal, rePlan, regionalArchitects and planning
Alliance

**Arch 392 Hyper City
Toronto**

Nasim Adab
Mark Sterling

Urban Designer, City of Toronto
Principal of Acronym Urban Design and Planning,
Toronto

Lisa Rapoport
Richard Witt

PLANT Architects, Toronto
Quadrangle Architects, Toronto

**Translations
Symposium:
Representing
Ambience Today**

Alex Wall
Igor Marjanovic
Nicholas Boyarsky
Alessandra Ponte
Jane Hutton
Charles Stankieveh
Kian Goh
Janette Kim
Miguel Robles-Durán
Scott Sørli
Mejay Gula

University of Virginia
Washington University
Boyarsky Murphy Architects, UK
Université de Montreal
Harvard University
University of Toronto
Northeastern University
Syracuse University
University of Waterloo
ø-slash; Ryerson University
U Chicago Arts/Rebuild, Chicago

3.6.8

GUEST LECTURERS +
COLLOQUIA

2013

Neeraj Bhatia
Paul Dowling
Michael C B Hannay
Sascha Hastings
Kerri Henderson
Leslie Korrick
Janna Levitt
Jason Petrunia
Jonathan Tyrell
Emily Waugh
Javier Zeller
Taymoore Balbaa
Rebecca Beatty
Julie Bogdanwicz
Ken Coit
Amr El-Bahrawy
Dean Goodman
Suzy Harris-Brandts
Mary Lou Lobsinger
Donald B McIntyre
Raymundo Pavan Gutierrez
Robert Pavlich
Chris Pommer
Maiko Tanaka
Allan Wesley Wilson
Delnaz Yekrangian
David Warne
Brandon James Dehart
Brian Hunt
Melana L Janzen
Marc Ryan
Tim Scott
Scott Sørli
Karin Ruehrdanz
Julie Bogdanowicz

Denise Davis-Gains
Marc Downing
Frederic Dube
Maryam Ghayedi Karimi
Hagi Nakamura
Ian Chodikoff
Yvonne Popovska
Katherine Kuzan
Robert P Wiljer
Shirley Blumbert
Anya Moryoussef
John van Nostrand
Lloyd Alter
Robert Cadeau
David Dennis
Huxley Hogeboom
Alex Luchachko
John Potter
Han Qing Min
Chloe Town
Moiria Wilson
Mark Cichy
Fiona Lim Tung
Eric Beck Rubin
Marianna Rosa De Cola
Craig England
Daniel T Gallivan
Sean Irwin
Timea Jakab
Andrea Lacalamita
Angie Michail
Christine Pearson
Courtney Hon-Wall
Cory Zurell
Megan Cassidy

2013 (contd)	Jelena Porovic	Victoria Taylor
	Karen Houle	Aaron Grin
	Fred Thompson	Brian Hunt
	William Woodworth	Alison Patricia Janes
	Scott Barker	Barry Sampson
	Ian Mountfort	Michael Cook
	Jonathan Smegal	Carol Moukheiber
	Alex Tedesco	Zachariah Glennon
	Randy Van Straaten	Tomasz Kolbasenko
	Eric Cazdyn	Martin Liefhebber
	Vanessa Eickhoff	Amy Norris
	Olga Patricia Gaviria	Aleksandra Popovska
	Emily Hogg	Jelena Porovic
	Michal Ormston-Holloway	Viswam Ramasubramanian
	Todd Smith	
2014	Eric Beck Rubin	Mary Lou Lobsinger
	Walter Bettio	Christos Marcopoulos
	Neeraj Bhatia	Adrian Phiffer
	Liana Bresler	Ian Pieterse
	Paul Dowling	Lisa Rapaport
	Daniel T Gallivan	Shabbar Sagarwala
	Benjammin Golder	Alan Smart
	Brian Hunt	Steven Beites
	David Lieberman	Nikole Bouchard
	Edward Johnson Martin	David Dennis
	Rebindka Chris Mascarenhas	Fiona Lim Tung
	Yvonne Popovska	Stephanie Vermeulen
	Jelena Porovic	Victoria Beltrano
	Mark Sterling	Tings Chak
	Nova Tayona	Jonathan Cummings
	Fred Thompson	Adam Feldmann
	Jonathan Tyrell	Elizabeth Paden
	Viktors Jaunkains	Duncan Patterson

Taymoore Balbaa
Andrew Batay-Csorba
Scott Sørli
Chloe Town
Cheryl Atkinson
Chris Hardwicke
Jonathan Loewen
Nashid Nabian
Marc Ryan
Graeme Stewart
Annabel Vaughan
Ghazal Jafari
John Potter
Julia Smachylo
Cory Zurell
Fadi Masoud
Ian Mountfort
Alex Tedesco
Maximiliano Spina
Neyran Turan
Suzy Harris-Brandts

Victoria Taylor
Ekaterine Velikov
Julie Bogdanowicz
Michael Cook
Nevena Krilic
Guan Lee
Jennifer Maigret
Emily Hoff
Hal Ingborg
Tim Scott
Courtney Sin
Paul Syme
Alex Lukachko
Terri Peters
Matthew Spremulli
Robert Wiljer
Marianna Rosa De Cola
Margaret Ishii
Timea Jakab
Aleksandra Popovska

2014
(contd)

Christos Marcopoulos
Rachel Armstrong
Julie Bogdanowicz
Jonathan Gotfryd
Bindya Lad
Mary Lou Lobsinger
Christine Pearson
Chloe Town
Brian Hunt
Rolf Seifert

Jonathan Tyrrell
Taymoore Balbaa
Jeff Balmer
Bryan Beca
Walter Bettio
David Carter
Marianna Rosa De Cola
Jonathan Enns
Maryam Ghayed Karimi
Joey Giaimo

2015

2015 (contd)	Suzy Harris-Brandts	Lia Maston
	Ian Huff	Elizabeth Paden
	Joyce Hwang	Michael Piper
	Margaret Ishii	Colin Ripley
	Timea Jakab	Mark Sterling
	Viktors Jaunkains	Kim Storey
	David Lieberman	Annabel Vaughan
	Cam MacDonald	Ekaterine Velikov
	Edward Mitchell	Craig England
	Erkin Ozay	Dean Goodman
	Aleksandra Popovska	Allison Patricia Janes
	John Potter	McLain Clutter
	Cindy Rendely	Michael Cook
	Clara Romero	Ian Mountfort
	Tim Scott	Jonathan Smegal
	Paul Syme	Todd Smith
	Robert Wiljer	Victoria Taylor
	Janne Corneil	Alex Tedesco
	David Dennis	Trevor Trainor
	Jordan Geiger	Liana Bresler
	Ginger Oda Blaze Sorbara	Andrew Frontini
	Andre Sorensen	William Woodworth
	Scott Sørli	Kenneth Cryer
	Allan Wilson	Josimar Dominguez
	Robert Cadau	Paul Dowling
	Haji Nakamura	Anya Moryoussef
	Terri Peters	Adam Schwartzentruber
	Heather Rolleston	Maiko Tanaka
	Sinisha Brdar	Timothy Wickens
	Donald Chong	Marcin Kedzior
	Mark Donohue	Lauren Abrahams
	Adam Feldmann	Cheryl Atkinson
	Helena Furjan	Virginia Fernandez
	Sharon Haar	Amy Norris
	Branko Kolarevic	Adrian Phiffer

Jelena Porovic
Karine Quigley
James Joseph Strong

Brian Urbanik
David Warne
Diana Zepf

2015
(contd)

Robert Wiljer
Vivan Lee
Paul Syme
Taylor Davey
Delnaz Yekrangian
Tom Bessai
Michael Piper
Chris Pommer
Anthony Provenzano
Paul Syme
Andrew Batay-Csorba
Walter Bettio
Kyle Brill
Jacob Grobman
Andrea Hunniford
Any Moryoussef
Shane Walker Neil
Thomas Payne
Lisa Rapoport
Andrew Sinclair
Mark Sterling
Chloe Town
Allan Wilson
Michael Leckman
Luc Bouliane
David Bowick
Sydney Browne

Margaret Graham
Tomislav Knezic
Diarmuid Nash
Carol Phillips
Tim Scott
Sanaz Shirshekar
Liana Bresler
Michaela MacLeod
Angie Michail
Ian Mountfort
John Potter
Alex Tedesco
Jonathan Tyrrell
Randy Van Straaten
Cory Zurell

2016
to August 31

3.6.8
EXTERNAL READERS

2012 Chris Hardwicke
John Massey
Kim Davidson
Maria Mingallion
John van Nostrand
Michael Cook
Kevin Curtis
David Lieberman
John Massey
Mark Sterling
Tammy Gaber
David Jansen
Lynne Eichenberg
Robert Pavlich

Lorraine Johnson
Michael Hannay
Drew Sinclair
Justin Podur
Mike Lanctot
Scott Sørli
Mason White
Catherine Dowling
Michael McClelland
Dennis Maher
Ted Shore
Janna Levitt
Catherine Dowling
Dr. Joy Roberts

2013 Bruce Han
Tim Scott
George Baird
Jason Petrunia
Bob Wiljer
William Woodworth
David Dennis
Pierre Filion
Javier Zellar
Barry Sampson
Dr. Eric Cazdyn
Melena Jansen
Luna Khirfan
Moir Wilson
Huang Weiwen
Lloyd Alter
David Warne
Emily Waugh
Scott Sørli

Craig Pollett
Dr. Karen Houle
Taymoore Balbaa
Dr. Karin Ruehrdanz
Sascha Hastings
Neeraj Bhatia
Ian Chodikoff
John van Nostrand
Paul Sapounzi
Luna Khirfan
Patricia Gaviria
Marc Ryan
Drew Sinclair
Lowell Ewert
Adrian Blackwell
Shirley Blumberg
Janna Levitt
Huxley Hogeboom
John Hix

William Woodworth
Liat Margolis
Dr. Yvonne Lammerich
Arriz Hassam
Eric Beck Rubin
Luna Khirfan
David Lieberman
Fred Thompson
Jasmin Habib
Tamara Anson-Cartwright
Paul Dowling
Scott Sørli
David Dennis
Barbara Miskiel
Peter Oldenzki

Kanishka Goonewardena
Yam Lau
David Warne
Meng Yue
Janna Levitt
Fred Thompson
Sascha Hastings
Jane Holland
Hans Ibelings
Jennifer Foster
Paul Dowsett
Taymoore Balbaa
Liat Margolis
Dr. Dawn Martin-Hill
Bruce Han

2014

Graeme Stewart
Valerie Kaelin
William Woodworth
Sibel Sarper
Tom Bessai
Ian Carr-Harris
Jose Duarte
Peter Johnson
Olia Mishchenko
Andre Sorenson
Pooya Baktash
Angela Carter
Chris Pommer
Luna Khirfan
Bernice Eisenstein
Zhixi Cecilia Zhuang
Rolf Seifert
Pierre Filion

Elizabeth Paden
Karen Houle
Christos Marcopoulos
Valerie Kaelin
Simone Ferracina
Luna Khirfan
Paula Whitlow
Ingrid Cryns
Ali Fard
Alexander Dunkel
Scott Sørli
Christine Leu
Annabel Vaughan
Fiona Lim Tung
Michael Hannay
David Lieberman
Scott Walbridge
Paul Dowsett

2015

2015
(contd) Dr. Susan Elliott
Jennifer Davis
Joyce Hwang
John Potter
Thomas Mara
Rod Regier
Fred Thompson
Dr. Neil Turak
Bojena Videkanic

Patrick Simmons
Marco Polo
Patrick Spear
Catherine Dowling
Sascha Hastings
Barbara Mizkiel
Fiona McKenzie
Lisa Rapaport
Patrick Simmons

2016
to August 31 Donald Chong
Jordan Geiger
Tim Scott
Mark Sterling
Ginger Sorbara
Graeme Stweart
Scott Sørli
Erkin Ozay
Jason Hlater
Dieter Janssen
Gaston Soucy
Sue Ruddick
Pierre Filion
Michael Piper
Pat Hanson

Manuel Herz
Channa Daswatte
Raymond Moriyama
Anya Moryoussef
Sarah Wolfe
Marty Kohn
Jonathan Tyrrell
David Dennis
Pater Tan
David Lieberman
Andrea Hunniford
Vincent Hui
Mickhal Bartosik
Jonathan Freidman
Lisa Rapoport

3.6.8
PUBLIC EXHIBITIONS

2012

From the Fibre Art Collection 2012

JAN 24 – FEB 19

CURATOR Mary Misner

PARTICIPANTS Selection of artists from across Canada, from Cambridge Galleries' permanent collection

Patria Cycle: The Theatre Designs of Jerrard and Diana Smith

FEB 28 – APR 7

CURATOR Esther E. Shipman

PARTICIPANTS Jerrard and Diana Smith, and Tilly Kooyman

Projects Review 2012

APR 16 – MAY 19

CURATOR Dereck Revington

PARTICIPANTS University of Waterloo School of Architecture Undergraduate and Graduate Students

Abitation and the Ideal House Project

JUN 2 – JUN 30

CURATOR Esther E. Shipman

PARTICIPANTS Ian Carr-Harris and Yvonne Lammerich

3 by Land

JUL 6 – SEP 30

CURATOR Esther E. Shipman

PARTICIPANTS PLANT Architect Inc., Vlan Paysages, Janet Rosenberg + Associates

2012 (contd)

OCT 9 – OCT 28 Master Works 2012: Landscapes of Resistance

CURATOR Suzanne Harris-Brandts and Chris Knight

PARTICIPANTS Suzanne Harris-Brandts and Chris Knight

NOV 8 – JAN 13 Robin & Lucienne Day: Design and the Modern Interior

CURATOR Shanna Shelby

PARTICIPANTS Robin and Lucienne Day

2013

JAN 23 – FEB 17 Select Works 2013

CURATOR Esther E. Shipman

PARTICIPANTS Selection of contemporary textile-based artists as an homage to the rich history of textile manufacturing in the Cambridge region

FEB 27 – APR 7 Dialogues with the Transformative City: The Architecture of Lapointe Magne (1992-2012)

CURATOR Marie-Paule Macdonald

PARTICIPANTS Lapointe Magne et associés

2013 (contd)

Projects Review 2013

APR 15 – MAY 18

CURATOR	John McMinn
PARTICIPANTS	University of Waterloo School of Architecture Undergraduate and Graduate Students

2XGraphic Design

MAY 30 – JUN 22

CURATOR	<i>So Good</i> : jury selection; <i>Design at Work</i> 2012: Western Ontario Chapter of the RGO
PARTICIPANTS	Two exhibitions: a juried selection of 48 projects from 11 countries for the <i>So Good</i> exhibition, and 12 projects by regional designers for the <i>Design at Work</i> 2012: Best of Western Ontario exhibition.

Migrating Landscapes Unpacked

JUL 5 – SEP 8

CURATOR	Esther E. Shipman
PARTICIPANTS	Kfir Gluzberg and Liana Bresler; D’Arcy Jones; Anca Matyiku and Chad Connery; Andre Silva, Chris Gilmour and Kory Kaspersion; Marianna de Cola; Jean-Nicholas Bouchard and Philippe Charest; Andrew Batay-Csorba and Jodi Batay-Csorba.

Master Works 2012: Vernacular and Anonymous Architecture

SEP 17 – OCT 6

CURATOR	Ting (Nora) Guan and Ningxin (Sophia) Xu
PARTICIPANTS	Ting (Nora) Guan and Ningxin (Sophia) Xu

2013 (contd)

OCT 17 – NOV 17 Prototyping Architecture

CURATOR Michael Stacey

PARTICIPANTS Amanda Levet Architects; Barkow Leibinger; Yves Ebnoether; Kieran Timberlake; Philip Beesley Architects Inc.; and more.

APR 16 – MAY 19 Carded: Remarkable Greeting Cards by Canadian artists, illustrators and designers

CURATOR Esther E. Shipman

PARTICIPANTS Robert Achtemiuk; Jackie Bestemann; Carrier Budge Card Co.; Kate Carder-Thompson; Lual Carr - Impagination; Joanna Close; Coffee Stain Designs; Creepy Christine Paper Products; Designwerke Inc.; Emily Filler; Rick Filler; Flakes Paperie; Laura Friedland; Erella Ganon; Claire Gaulin-Brown; Doug Guildford; Hambley & Woolley; Sabina Hill; In Paper Dreams; Jeff Jackson; Khalil Jama; Jonesy; Tracey Lawko; Reagan Little; Monica Lima; Katherine Morley; Victor Nowicki; Carol Outram; Kelly Panacci; Dorie Preston; Andrew James Smith; Bill Schwartz; Sinking Ship Design; Talia Shipman; Xenia Taler Design; Wendy Tacock

2014

JAN 24 – FEB 16 25 Years of Collecting

CURATOR Mary Misner

PARTICIPANTS Selection of works by textile-based artists from Idea Exchange's permanent collection

2014 (contd)

Field Trip Project

FEB 25 – APR 13

- CURATOR Daisuke Takeya and Chie Kajiwara
- PARTICIPANTS A selection of 70 artists and designers (35 from Canada and 35 from Japan) commissioned to transform backpacks for children affected by the earthquake and tsunami in North Eastern Tohoku.

New Realities: Projects Review 2014

APR 22 – MAY 18

- CURATOR Andrew Levitt
- PARTICIPANTS University of Waterloo School of Architecture Undergraduate and Graduate Students

The OAA Turns 125: 25 Award Winners from 1989–2014

JUN 10 – JUN 21

- CURATOR Gordon Grice
- PARTICIPANTS Selection of works by Canadian architects

Building Waterloo Region: Ex Industria

JUL 5 – SEP 21

- CURATOR Rick Haldenby
- PARTICIPANTS Rick Haldenby; exhibit tracing the origins and development of industrial landscapes and their influence on the culture of Cambridge, Kitchener, and Waterloo

Master Works 2014: Second Skin

SEP 30 – OCT 26

- CURATOR Stephanie Boutari
- PARTICIPANTS Stephanie Boutari

2014 (contd)

NOV 8 – JAN 11 Slip + Inject: Ceramics Unmoulded

CURATOR Esther E. Shipman

PARTICIPANTS Angelo di Petta; Denise Goyer + Alain Bonneau; Koen de Winter

2015

JAN 16 – FEB 22 Select Works

CURATOR Mary Misner

PARTICIPANTS Group exhibition of works from permanent collection

MAR 3 – APR 12 Maggie's Centres: A Blueprint for Cancer Care

CURATOR Carnegie Museum of Art

PARTICIPANTS Group exhibition of world renowned architects in collaboration with landscape designers

APR 20 – MAY 16 FORM & FLUX: Projects Review 2015

CURATOR Andrew Levitt

PARTICIPANTS University of Waterloo School of Architecture Undergraduate and Graduate Students

2015 (contd)

Modern Makers: Modern Design Meets Consummate Craft

MAY 30 – JUL 11

CURATOR Esther E. Shipman

PARTICIPANTS Group exhibition of established furniture and lighting designers/makers from across Canada

Here and Now: The Art of Gary Taxali

JUL 17 – SEP 20

CURATOR Esther E. Shipman

PARTICIPANTS Gary Taxali

Emerging Practices: Material Matters

SEP 28 – NOV 8

CURATOR Ila Berman

PARTICIPANTS Emerging Architecture Firms

At Home

NOV 16 – JAN 10

CURATOR Esther E. Shipman

PARTICIPANTS Group exhibition of outstanding designers for residential dwellings by leading architects across Canada

2016

JAN 16 – FEB 22 Contemporary Textile Collection: III

CURATOR Mark Schilling

PARTICIPANTS One of a three part exhibition providing access to the permanent collection by works of Canadian textile-based artists

FEB 29 – APR 20 Drawing Ambience: Alvin Boyarsky and the Architectural Association

CURATOR Igor Marjanovic and Jan Howard

PARTICIPANTS Various world-renowned architectures who have attended the Architectural Association School of Architecture

APR 18 – MAY 22 BEARING: Projects Review

CURATOR Andrew Levitt

PARTICIPANTS University of Waterloo School of Architecture Undergraduate and Graduate Students

JUN 24 – SEP 18 Ephemeral Frontiers

CURATOR Esther E. Shipman

PARTICIPANTS Hyang Cho; Andrew Macdonald; and molo

3.7 PHYSICAL RESOURCES

3.7.1 CURRENT RESOURCES

the school of architecture in cambridge

With financial support from the City of Cambridge and private donors the school of architecture acquired in 2001 and then renovated the Riverside Silk Mills building on the Grand River in the historic Galt core. The architects, Levitt Goodman from Toronto, worked hand-in-hand with faculty staff, students, the City of Cambridge, Cambridge Galleries and the Construction Manager, Alberici, to create a facility that fits the needs of the school and the citizens of Cambridge. The community link has become a defining aspect of the School's identity. In the planning process the partners established four primary principles on which to base the transformation of the Riverside building. These were carried through in the final design and are at the heart of the nature and spirit of the spaces and their use for educational, casual and public purposes.

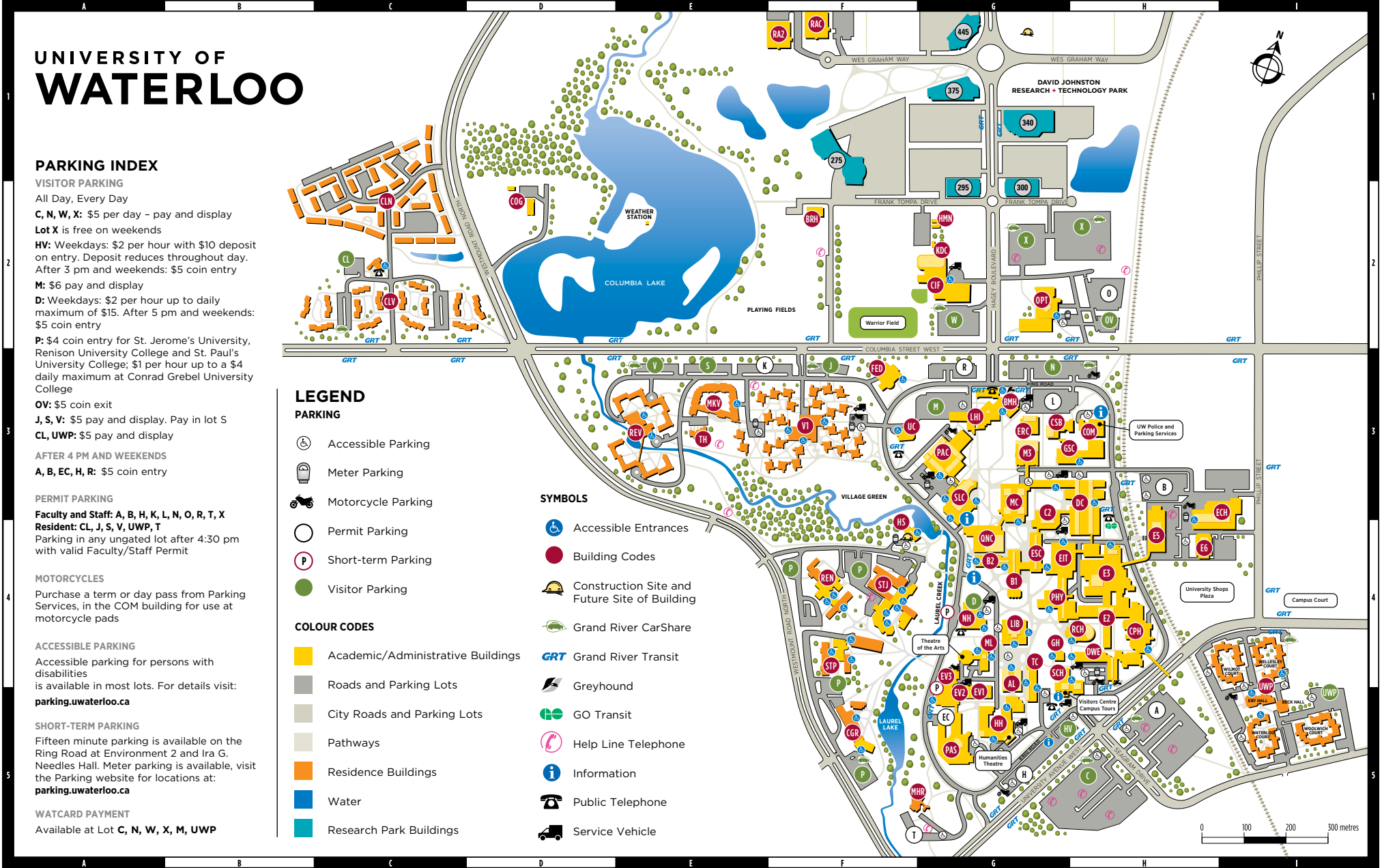
The entire community of the School of Architecture came together to establish three primary goals in creating the new facility.

maximum reuse

In light of the limited budget (\$100/sq. ft.) and the aspirations of the project in the areas of environmental performance and urban design, the plan could not waste any of resources embodied in the existing structure. Virtually no demolition took place and almost all of the material removed was reused. More importantly, the design attempted to take maximum advantage of the conditions of openness, light, view, structure, elemental form and materiality found in the original structure.

public building

The City and the people of Cambridge are largely responsible for the fact the School is now so well housed. The City's financial contribution, its application for SuperBuild funds from the province and the federal government as well as hundreds of contributions from private individuals, businesses, organizations and foundations provided virtually all of the funding. In this light there was no choice but to design a building that would have a civic presence and contribute to the community. It was designed to be open and accessible. Recently, there



BUILDING INDEX

CODE BUILDING - LOCATION

AL	Arts Lecture Hall - G4
B1	Biology 1 - G4
B2	Biology 2 - G4
BMH	B.C. Matthews Hall - G3
BRH	Brubacher House - F2
C2	Chemistry 2 - G3, G4
CGR	Conrad Grebel University College - F5
CIF	Columbia Icefield - G2
CLN	Columbia Lake Village North - B2, C1, C2
CLV	Columbia Lake Village - B2, C2, D2
COG	Columbia Greenhouses - D2

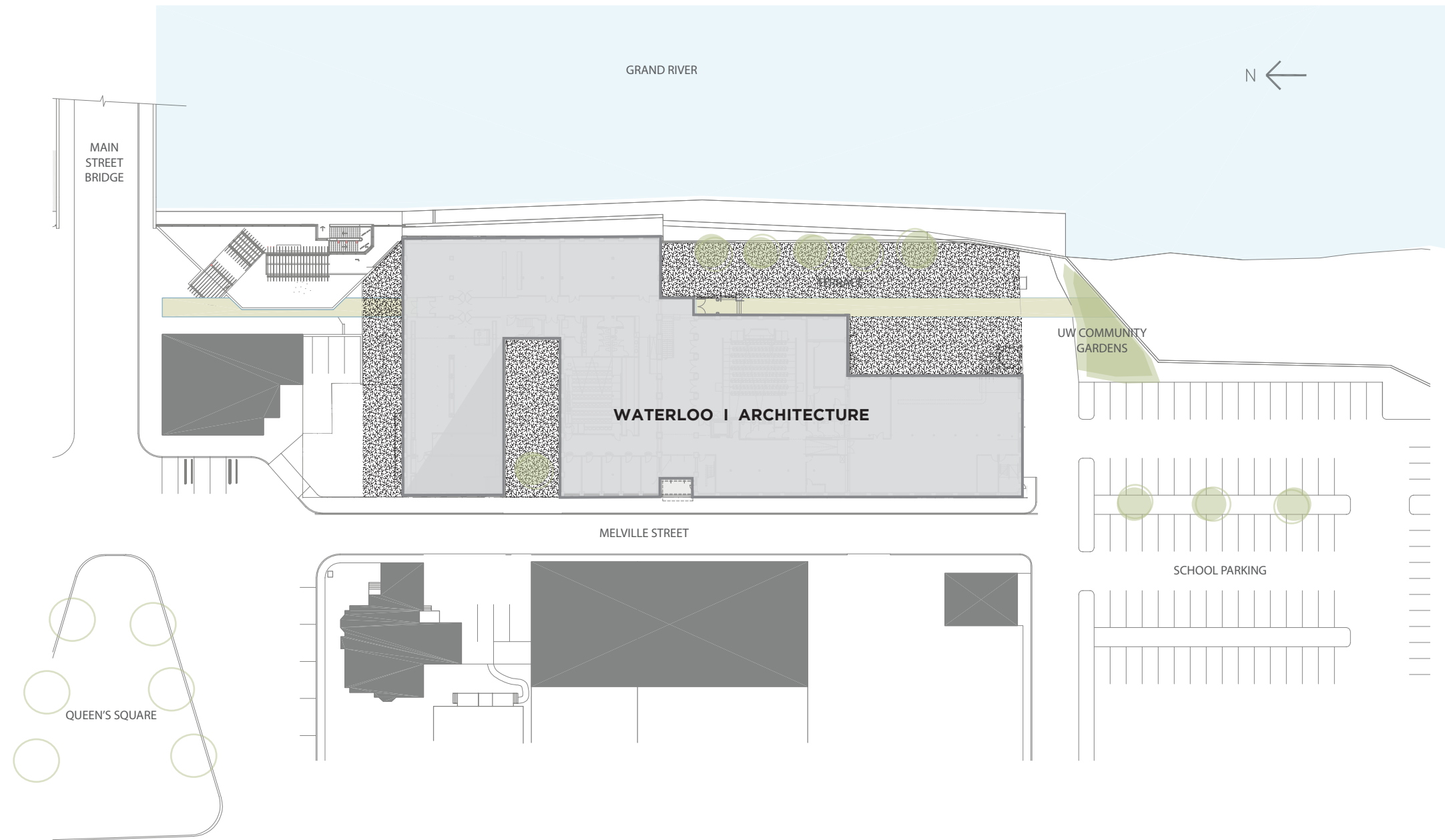
COM	Commissary - H3
CPH	Carl A. Pollock Hall - H4
CSB	Central Services Building - G3
DC	William G. Davis Computer Research Centre - H3, H4
DWE	Douglas Wright Engineering Building - H4
E2	Engineering 2 - H4
E3	Engineering 3 - H4
E5	Engineering 5 - H3, H4
E6	Engineering 6 - H4
ECH	East Campus Hall - H3, H4, I3, I4
EIT	Centre for Environmental & Information Technology - G4
ERC	Energy Research Centre - G3

EV1	Environment 1 - G5
EV2	Environment 2 - G5
EV3	Environment 3 - G5
ESC	Earth Sciences & Chemistry - G4
FED	Federation Hall - F3
GA	335 Gage Street - see back page
GH	Graduate House - G4
GSC	General Services Complex - G3, H3
HH	J.G. Hagey Hall of the Humanities - G5
HMN	Hildegard Marsden Nursery - G2
HS	Health Services - F4
KDC	Klemmer Day Care - G2
LHI	Lyle S. Hallman Institute for Health Promotion - G3
LIB	Dana Porter Library - G4

M3	Mathematics 3 - G3
MC	Mathematics & Computer Building - G3
MHR	Minota Hagey Residence - F5, G5
MKV	William Lyon Mackenzie King Village - E3
ML	Modern Languages - G4
NH	Ira G. Needles Hall - G4
OPT	School of Optometry - G2
PAS	Physical Activities Complex - G3
PAC	Psychology, Anthropology, Sociology - G5
PHR	School of Pharmacy - see back page
PHY	Physics - G4, H4
QNC	Quantum Nano Centre - G4
RAC	Research Advancement Centre - F1
RA2	Research Advancement Centre 2 - F1

RCH	J.R. Coutts Engineering Lecture Hall - H4
REN	Renison University College - F4
REV	Ron Eydt Village - E3
SCH	South Campus Hall - G4, G5, H5
SLC	Student Life Centre - G3
STJ	St. Jerome's University - F4
STP	St. Paul's University College - F4
TC	William M. Tatham Centre for Co-operative Education & Career Services - G4, G5
TH	Tutors' Houses - E3
UC	University Club - F3
UWP	University of Waterloo Place - I4, I5
VI	Student Village 1 - E3, F3

CAMPUS MAP + DIRECTIONS FROM MAIN CAMPUS



has been questions as to how open it should remain, and how to best weigh the safety of the students and the desire to offer a seamless transition from the community to the University. Public spaces predominate on the ground floor, outside of the locked school space. There is a café and a public art gallery. Originally, the internal circulation system was designed to extend a public walkway along the river, a walk that is now interrupted when the doors have to be locked.

students first

The building was designed to provide the best space and facilities possible for architectural education. From the beginning it was clear that the student spaces, studios especially and the library, should have the best orientation, light and views.

don't design too much

The project set out to reflect and support the culture of the University of Waterloo School of Architecture and to contribute to the vitality of the host community. The design strives to make the most out of the found conditions and to do so by being as straightforward and as self-evident as possible, extending the spirit of the original building. The magic of the spaces comes from the organization and the light above all.

The building has three floors and centres on an atrium space containing the main circulation. With the exception of the workshop, all the large spaces and main functional elements of the School open directly off the atrium. The ground floor has the main public spaces and lecture theatres. The second floor houses the institutional elements of the School: administration, faculty offices, Musag-etes Architecture Library, Computing and Media, research and meeting space. The third floor is the atelier; that is, graduate and undergraduate studios, several large multifunctional open spaces that are the centre of the creative community of the School.

Ground Floor

L.A. Cummings lecture theatre (2500 sq. ft.)

The main lecture theatre was named in honour of Dr. L. A. Cummings, one of the founders of the Waterloo School of Architecture. In April 1967, Dr. Cummings read the motion to create the School in the Senate of the University. He invented and launched the Cultural History program. The Cummings Lecture Theatre seats 134 people in theatre style seats with large pallet-arms that fold comfortably out of the way. The room is raked to provide excellent sight lines. The top of the rake is at ground floor level where handicapped seating is provided. A broad podium surrounds the raked area and provides additional capacity. The design of the balustrade allows notebooks and laptop computers to be placed on it. The intimacy of the space also provides excellent acoustics. A row of large wood doors forms the north wall of the space that can stand open, effectively expanding the atrium into the lecture room.

The room was designed to accommodate a variety of presentation media. Thanks to the generosity of Christie Digital of Kitchener, the digital projection facilities are outstanding. A subsequent extensive upgrade of the Lecture Theatre in 2013 involved a \$90,000 investment in two new projectors, a high-end recording system for visiting lecturers, upgraded lighting, and a new touch panel integrated into the speaker's podium. There is an excellent sound system and simple rigging for theatre lighting. The space, like the rest of the school is equipped with wireless Internet service. The Theatre hosts lectures and student presentations. It has also been used for concerts, municipal meetings, spelling bees, dramatic performances, a film festival, corporate events, conferences and public meetings of all kinds.

e-classroom (1500 sq. ft.)

A second lecture space was completed in the fall of 2005. It is equipped with rows of raked, fixed seating and tables for 82 individuals. Each seat has an electrical outlet and a hard network connection to allow for the use of laptop computers in instruction. A digital projector is mounted to

the ceiling. The entire projection wall is covered with a polymer film on which presenters can both project and write.

student lounge (1250 sq. ft.)

The student lounge area is located directly off the atrium near the main entrance to the building. It provides office and meeting space for the undergraduate and graduate student associations as well as casual seating and recreational opportunities such as foosball, ping-pong, a pool table and a piano. There is a large notice board and vending machines. The area is used for student events and displays during Open Houses.

the fabrication labs (4600 sq. ft.)

The Fabrication Labs provide equipment for students and faculty working mainly in wood and metal on course related and research projects. There are four main areas within the Fabrication Labs: the equipment area (wood shop), the assembly area, the Digital Fabrication Lab (DDFL) and a staff office. The shop is supervised by the Workshop Manager who is responsible for the safe operation of equipment and as well as maintenance of the facility. The Fabrication Labs are used for the design and construction of architectural and land contour models, large-scale installations, full size mock-ups, prototypes, furniture, sculpture and 3-D sketches. Students supply their own materials.

A comprehensive wood processing cabinet shop consists of the typical wood-working machine tools. While colloquially labeled woodshop, it really serves as a full service shop facilitating the fabrication using many materials including plastic, foam, composites, and metals. The equipment area provides saws, sanders, lathe, planer, joiner, and downdraft tables, as well as equipment for small-scale construction and shaping of acrylic sheets. The equipment in this area is powered off during non-supervised hours. The woodshop opens up directly to the east terrace facing the Grand River. Large-scale constructions can be easily done in the open air immediately outside the shop.

Located directly adjacent to the machining area of the wood shop is the assembly area, to which the students have 24-hour access, 7 days a week. Provided are 14 individual-use benches, each equipped with a vice and storage shelf, and two common-use benches for glue-up and finishing. The space is flooded with

natural light and is visible to the pedestrian traffic along Melville Street, allowing the public to observe activity in the shop.

The Digital Lab (D.Lab) is also part of the Fabrication Labs, and is an enclosed and lockable space of approximately 600 sq. ft. It contains the digital fabrication equipment and technologies associated with 3D printing and laser cutting. Though part of the School's digital tools, the CNC Router is located in the main area of the workshop, in the wood shop area.

fitness room (900 sq. ft.)

A space just north of the main atrium houses the Fitness Centre. The Athletics Department at the University of Waterloo constructed this facility in September 2005. The room contains exercise equipment and is supervised by a student life and fitness coordinator. The room has windows on the river and two large double doors that open on the east terrace and the Riverwalk. The provision of the fitness room is an integral part of student life. The space is available to students 24 hours a day and is monitored by video.

the 'founders' room (900 sq. ft.)

The 'Founders' Room' is located beside the Fitness Room. Until recently it was an unfinished space used for School storage. Today, it is used as a flexible space, housing small studios or seminar classes, and/or acting as a design review space, depending on the term requirements.

design at riverside gallery (4500 sq. ft.)

The School of Architecture had always planned to locate an exhibition gallery at the north end of the building facing Queen's Square. In late 2003, when it became apparent that there was not sufficient budget for the School to renovate the entire Riverside building, the north wing on the ground floor was set aside as an area that would be completed after the School opened. That decision prompted the Board of the Cambridge Libraries and Galleries to propose a collaboration, whereby the School of Architecture would provide the space and Cambridge Galleries (now IdeaExchange) would renovate and operate a professional gallery dedicated to architecture and design. The planning for the project was fully co-operative, as is the on-going operation. The Board paid for

the renovation, using the School's architects, Levitt Goodman of Toronto, and leases the space from the School for a nominal amount.

The gallery space is divided into three sections. The 2500 sq. ft. exhibition space opens off and is visible from the main north-south public passage through the building. The design provides large areas of hanging surface on three sides as well as movable reception/security booth and interior partitions. The rest of the space is dedicated to storage and curatorial and a 1000 sq. ft. Print Making Studio that is used for course offered specifically to architecture students and others given to the general public.

melville café (2400 sq. ft.)

When it was clear that University Food Services were not interested in being involved in the Cambridge project, the School and the Cambridge Consortium called for expressions of interest from local restaurateurs. Several proposals were received, but the best came from the operators of two of the finest restaurants in Waterloo Region, brothers John and Alec Cerny. The University negotiated a lease agreement. The Cernys renovated the space directly across the north-south public passage from the Design at Riverside Gallery to create Melville Café. The café provides excellent quality food and drink for student, faculty, staff and members of the general public. It is, in this sense, like Design at Riverside, a true bridge to the community that sustains community interest in the School of Architecture. The restaurant offers café fare – pizza, salads, soups, sandwiches and deserts – coffee, other beverages, wine and beer. There is seating for 70 in the café and a small terrace outside with seating for about 20.

exterior spaces

The School of Architecture fits tightly on an urban site located between Melville Street and the Grand River. For the most part the building envelope sits directly on the property line. There are, however, three open spaces adjacent to the building.

north terrace

The terrace connects the north entrance of the School to Melville Street and the head of the Main Street Bridge. Students and members of the public use these routes heavily as they give direct access from the main core area to the café and art gallery. The terrace is set up to allow for delivery vehicles to reach the north door. The City refurbished the adjacent Dalton Court Parquette to further enhance the public perception and use of the School and its facilities.

courtyard

Opening from Melville Street, the court provides light to the library and design studios. It also provides a space for School events. An informal raked section of the ground plane allows the space to be set up for classes, musical performances and film showings. The area is also much used for student installations.

BMO Financial Terrace

The building steps back from the river as it grew to the south. The BMO terrace thus provides a wonderful resource. The final landscaping was completed in September 2007. The terrace was designed to extend the public connection through the building to the "Riverwalk" - a trail system that follows the Grand River south of the School. The walkway follows the floodwall and is paved with the same stone as the north terrace and the court. In this case, the names of donors are etched in the stones. The walkway also includes seating with a view of the river. An outdoor seating area is located at the north end by the building entrance and the fitness facility. Further south, bicycle racks are provided. The widest area at the south end of the terrace is a multi-function space for outdoor events, construction and recreation, including pick-up basketball, ball hockey and canoeing.

Second Floor

the musagetes architecture library (13 000 sq. ft.)

The Library facilities are described in the section on Information Resources.

administrative area (1800 sq. ft.)

Administration is housed in the north wing of the building immediately off the atrium. The main office houses the four administrative staff members most directly involved on a day-to-day basis with students and the public. The Resource Assistant is located in the open office area, while the Undergraduate and Graduate Coordinators have closed offices facing the courtyard. The offices of the Director, the General Manager, and the Administrative Manager are across the corridor with the Photocopy/Mail/Supply Room.

architecture computing and media (2600 sq. ft.)

The architecture computing facilities are described in detail in the section 4.3. The spaces administered by Architecture Computing and Media on the second floor include the general use computer lab, wet darkroom, video lab, printing and supply store, MakerLab, server room and staff work area.

river office (80 sq. ft.)

The River Office serves as the primary office for the Systems Manager. It is immediately adjacent to ACM.

faculty offices (second and third floors)

Each full-time faculty member is provided with an office. These vary slightly in size, but are all between 190 and 200 sq. ft. All have large windows facing west toward Dickson Hill. All have phone and network connections. The offices are large enough to allow faculty members to hold meetings and seminars with their graduate students. Adjunct faculty members are also provided with shared office space. Depending on the frequency of their presence the sharing can involve two or more individuals.

the wardroom (600 sq. ft.)

The Wardroom is a multi-purpose space with large meeting tables, a counter and kitchen facilities. It serves as a meeting room, lounge and kitchen for the faculty and staff.

arc 2019 multi-purpose classroom (900 sq. ft.)

This large multi-purpose classroom is located along the south hallway, adjacent to the Apple Computer lab. It is often used for seminar classes up to 25 students.

arc 2026 multi-purpose classroom (600 sq. ft.)

At the south end of the second floor a small, flexible classroom can accommodate classes of up to 25 people, seminars, meetings, and student presentations. It has large, south-facing windows with both shade and blackout blinds.

Third Floor**undergraduate design studios (13 000 sq. ft.)**

Undergraduate Studios take up the entire north wing of the building on the third floor. The space can accommodate 202 students at a time, hence the overall space allocation is 64 sq. ft. per student.

The studios are organized around the north courtyard creating three distinct spaces that each accommodates a class of students. In the Fall term, for example, the first year class is in the south studio between the atrium and the court, the second year class is in the north studio between the court and Queen's Square and the third year class is in the east studio facing the river.

The studio spaces are large and open. The workstations are fastened to the floor in order to provide equality of amenity and to meet health and fire safety requirements. Circulation occurs at the perimeter to provide equal access to light and view. The entire Undergraduate Studio can be turned to key access only during the night to provide additional security for students and their possessions.

Each student has a worktable made of maple on a steel frame. The work surface can easily be raised and lowered for comfort, convenience and variety. Each station also includes a backboard for that provides privacy and pin-up surface, but does not violate the sense of openness and luminosity in the studios. There is a rolling cabinet with a cutting surface on top, with a large drawer and a lockable storage closet.

Each student is provided with a stool and a bookshelf. The desks are equipped with storage for a drawing roll. Each station has an electrical outlet. The network connection in the undergraduate studio is wireless. The students purchase their own drawing surface and task lamps, but the attachments for the lamps are built into the backboard.

The studio area provides a small kitchen and a spray paint booth.

student counseling office (170 sq. ft.)

The School provides an office for a University Counselor who offers two days per week by appointment.

graduate design studios (600 sq. ft each)

There are seven graduate studios (two are on the second floor) each of which accommodates 12 to 15 students. The studios have two forms, but, in all cases, the rooms face east on the river. The “loggia studios” are located on the second and third floors off the atrium. They are long narrow spaces with a single row of workstations along the west wall and a long row of windows on the east. The second studio type is a 30x20 ft. rectangle opening off the south corridor with full height windows on the short side facing the river. In this case two rows of desks flank a central common space.

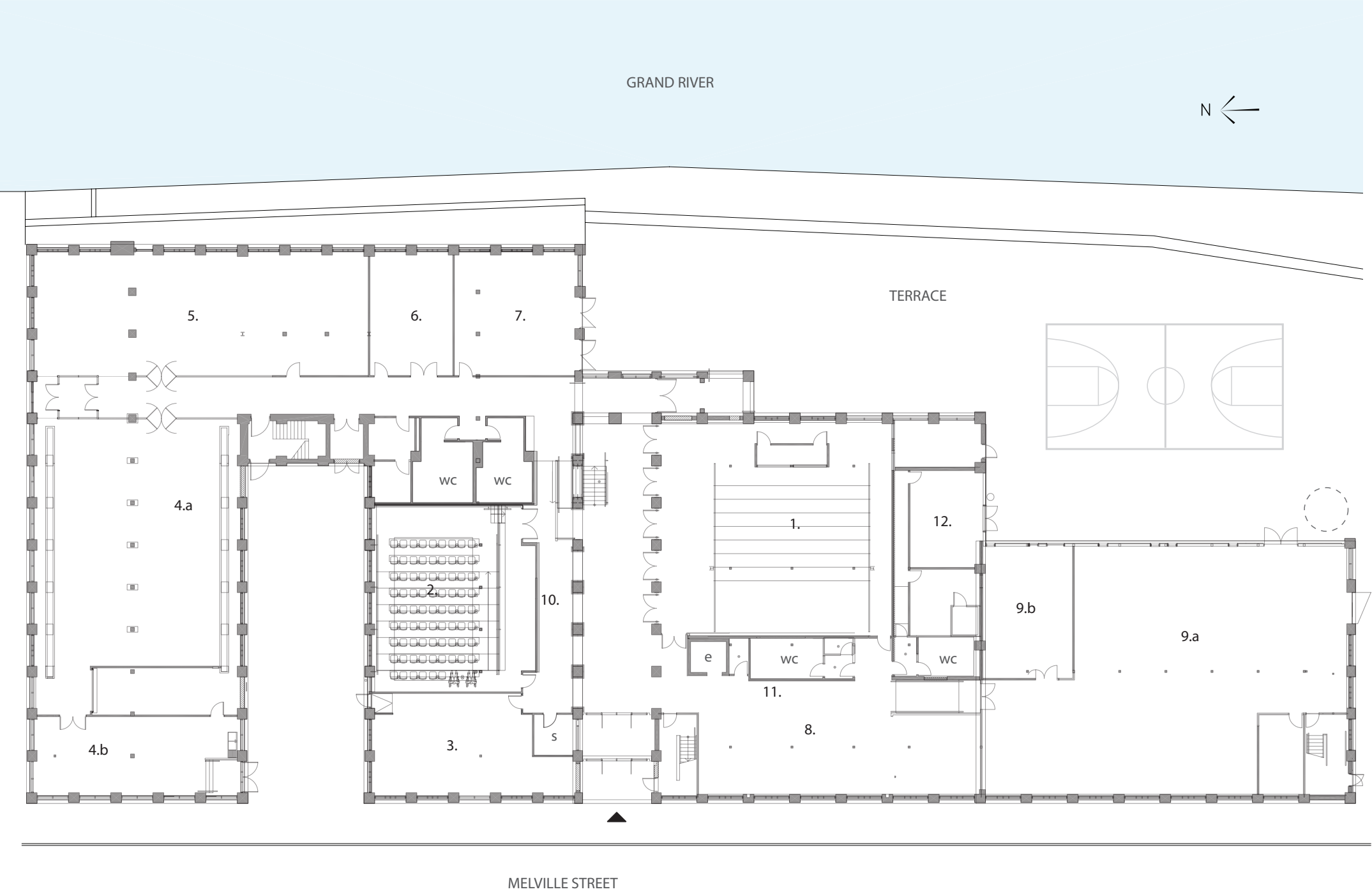
The graduate studios are all 600 sq. ft. giving students at least 60 sq. ft. each, usually more. The graduate students themselves chose the size and accommodation of the studios. The furniture provided to the grad students is identical to that given the undergrads with the exception of a larger bookcase.

the 'loft' (4000 sq. ft.)

Four 70 ft. long saw-tooth skylights light the area immediately south of the atrium. The design took full advantage of this source of natural light, creating two spaces divided by a small service core, leaving the skylights uninterrupted, creating a large open space (2800 sq. ft.), known as the 'Loft' in the centre of the third floor. It serves a wide variety of formal and informal functions – lectures, drawing classes, design reviews, school meetings, yoga classes, group meetings, formal dinners, exhibitions, receptions and performances. The light in the space is simply wonderful. It is a treasure shared by the entire school.

The flexibility of the 'Loft' is enhanced by the use of moving partitions that can subdivide the space or shut it off from outside view. Two of these rolling walls have pin-up surface on both sides; two have pin-up on one side and black-board on the other. The space has a built-in sound system and lighting rails that allow for a variety of lighting conditions. The main lighting is indirect so as to have the light come from the saw teeth even at night. The room is also equipped with folding tables and a portable stage platform.

There is a second space west of the washrooms (approximately 1200 sq. ft.), also under the skylights, that serves as an informal gallery, review and meeting space.

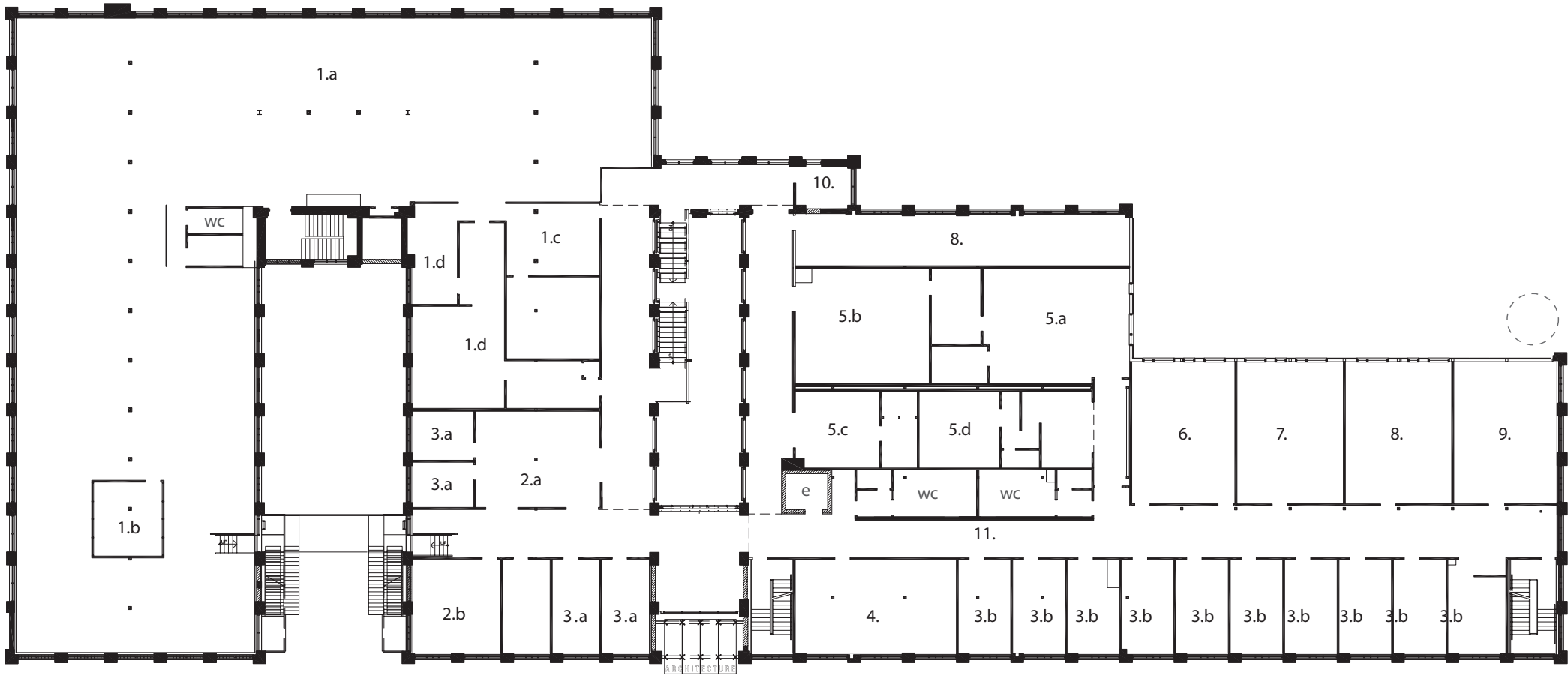


LEGEND

- 1. lecture hall
- 2. e-classroom
- 3. studio
- 4. design at riverside
 - a - gallery
 - b - print shop
- 5. melville cafe
- 6. founders' lounge
- 7. fitness room
- 8. student lounge
- 9. Fabrication Labs
 - a - wood + metal shop
 - b - digital fabrication lab
- 10. Stantec gallery wall
- 11. exhibit wall
- 12. storage + mechanical

GROUND FLOOR PLAN

WATERLOO | ARCHITECTURE

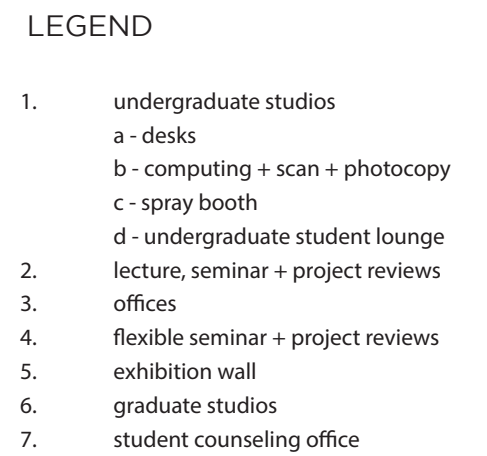


LEGEND

- 1. musagetes architecture library
 - a - stacks + study
 - b - seminar room
 - c - rare book room
 - d - library staff
- 2. administration
 - a - main office
 - b - O'Donovan director
- 3.
 - a - admin
 - b - faculty
- 4. ward room
- 5. Architecture Computing & Media
 - a - help desk + ACM staff
 - b - photo studio
 - c - M-Lab
- 6. computer lab
- 7. flexible classroom/studio
- 8. flexible classroom/studio
- 9. multi-purpose classroom
- 10. river office
- 11. exhibition wall

SECOND FLOOR PLAN

WATERLOO | ARCHITECTURE



WATERLOO | ARCHITECTURE

Additional Spaces Outside the Main Building

the rome studio

As of 2016 the Waterloo Rome Program has been in operation for 36 years. The Rome Studio is considered part of the School's physical resource base. The program moved to the current space in Piazza Santa Maria in Trastevere in 1986. Since that time Waterloo has shared an apartment with the Pratt Institute. Waterloo uses it in the Fall, Pratt in the Winter. During the summer, the space is rented to other foreign programs. In 1987 the Canada Council established the Prix de Rome and rented an apartment adjacent to the Waterloo/Pratt Studio to accommodate the holders of the prize. The three-way collaboration worked to the mutual benefit of all parties for almost two decades. After 2000 the enrolment in the Waterloo Rome Program grew considerably, from a norm of 45-48 to 60-75. The existing studio was not large enough to accommodate the group. For a short time, the School rented other spaces, but this arrangement was extremely unsatisfactory as it split our students. In 2004 the Canada Council announced that it was modifying the Prix de Rome. It would no longer be situated in Rome, but tenable anywhere in the world. The Prix de Rome Studio became available. Waterloo has now taken over the lease. In 2014, the studio was renovated again and the Prix de Rome Studio was left to rather expend on the floor above the larger studio space.

The new space provides ample studio accommodation for the entire fourth year class in the fall term. In the winter, when Pratt occupies the main studio, Waterloo uses the new space, one floor above, allowing the School to mount graduate studios in Rome in the winter term, enter more fully into the collaborations with the Italian universities (Roma Tre and Pescara) and provide accommodation for other researchers from the School, the Faculty of Engineering, and other universities in Canada. The facilities provided in Rome include six studios, a classroom, office space, a student lounge/computer area that, at times, doubles as a critique space. A book collection is available to students and is run out of the administrative office.

The entire studio is provided with wireless networking and facilities for printing, scanning and digital presentation. The studio is located on the piano nobile



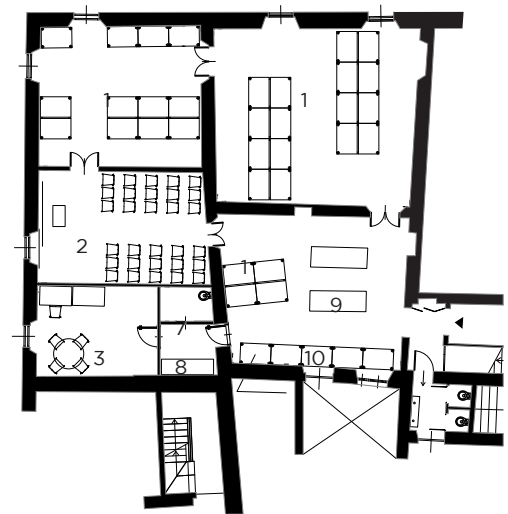
TRASTEVERE SITE PLAN

WATERLOO | ARCHITECTURE

FLOOR 1



FLOOR 2



LEGEND

1. studios
2. lecture rooms
3. Waterloo office
4. PRATT space
5. foyer
6. common space
7. cleaning + storage
8. printing + switch area
9. lounge/library

ROME STUDIO PLAN

N.T.S.

WATERLOO | ARCHITECTURE

of a seventeenth century palazzo, with sections on the second floor as well. All studio spaces have large windows overlooking the Piazza S. Maria in Trastevere or other smaller piazzas that surround the building. The condition is unique in Rome and provides wonderful light and view conditions in the spaces. Since 1993, Waterloo and Pratt have invested considerable sums of money in improving the conditions of the studio. The electrical system has been brought up to contemporary standards and a central heating system has been installed. In 2014, more renovations were undertaken when the space above was leased. The quality and safety of the working environment has now greatly improved. Windows and ceilings throughout the apartment have been restored.

There are no modifications to the physical facilities currently underway. However, we are in the process of preparing the proposal for a new program in Integrated Design. The new program calls for a new building of about 66,000 sq ft, with a workshop that can work as a hinge between the existing programs in Architecture, and the proposed programs in Architectural Engineering and Integrated Design. These facilities will double the area currently available for the workshop in architecture, enabling the better set up of new tools such as larger 3-d printers, 5-axis CNC, robotic arms, or a plot cutter. The space would also allow smaller controlled space for research that requires sound, temperature or humidity control.

In addition to the workshop, the new building will house 3 large studios, a large review room, 20 faculty offices (for Integrated Design and Architectural Engineering), staff offices, graduate studios, 2 large classrooms and 4 smaller seminar rooms. The City of Cambridge has been looking forward to this project and is a great supporter of the initiative.

3.7.2

ANTICIPATED CHANGES TO THE PHYSICAL FACILITIES

3.8 INFORMATION RESOURCES AND INFORMATION TECHNOLOGY

3.8.1 CURRENT RESOURCES: LIBRARY

1. Library Collections

Context

In 2004 the School of Architecture moved from the main campus of the University of Waterloo to its present location in Cambridge, Ontario. The school is located in a historic building situated along the Grand River – the former Riverside Silk Mill. In the same year, the School of Architecture opened the new Musagetes Architecture Library in a renovated space on the second floor. It is a full-service branch of the UW Library system offering all the same services available to patrons in main campus libraries. Its convenient location within the School of Architecture makes it easily accessible to students and faculty. The Library is open every day, excepting statutory holidays, and hours have been tailored to meet the needs of the community:

Monday – Thursday	9:00 am – 9:00 pm
Friday	9:00 am – 4:30 pm
Saturday	1:00 pm – 5:00 pm
Sunday	11:00 am – 7:00 pm

The Musagetes Architecture Library supports the research, teaching and learning of its students and faculty by acquiring, maintaining and curating a research level collection (both print and electronic resources) and a full range of information services in support of UW School of Architecture's interdisciplinary curriculum and training, and research needs of the community of students and faculty. The library holds essential monographs and serials supporting learning, teaching and research for the Honours Pre-Professional, Bachelor of Architectural Studies (B.A.S.), and the Master of Architecture (M.Arch) degrees. The initial collection was largely built out of materials from the now defunct Map and Design Library that was located in Environment 2 building on the main University of Waterloo campus. Over the last decade plus the collection has more than doubled in size primarily through new purchases, but donations as well.

The significant resources of the University of Waterloo Library system supplement the specialized collections of the Musagetes Library. Relevant related collections in the arts, humanities, social sciences are available at the Dana

Porter Library. The Dana Porter Library houses the Geospatial Centre (includes GIS, print maps, aerial photographs and atlases), the Government Publications Collection, and Special Collections and Archives, which includes the Doris Lewis Rare Book Room, and the University of Waterloo archives. Also of relevance is Davis Centre Library, which houses resources for engineering, mathematics, technology, and science. The UW Library system has 2.8 million items in print, 50,000 electronic serials, and ca. 100,000+ ebooks in the entire collection. The library provides access to ca. 500,000+ electronic serials, ebooks, and multimedia resources through subscriptions.

Reference and Information Services are available in person, by e-mail, telephone or through the [Contact Us](#) form located on the Musagetes Library website. Advanced reference support, consultation, and GIS assistance hours are generally 9 am–4:30 pm weekdays dependent upon the schedules of the Architecture Librarian and the Library Associate, Information Services and Resources. Depending on the knowledge and skill sets of student employees in the GIS co-op positions, more advanced GIS assistance may also be available in-person during weekday evenings, and Sundays during the fall and winter semesters.

Library instruction occurs at a variety of levels at the School of Architecture. Individual information literacy instruction and GIS classes are given at the request of faculty and integrated into the course schedule. The Architecture Librarian and the Library Associate, Information Services and Resources, work with faculty members to help students develop the information competencies that are vital for lifelong learning. In consultation with faculty, they develop and conduct class specific information literacy sessions for undergraduate and graduate students. Lectures, hands-on-instruction, and web pages support these activities.

During the 2015/16 academic year, the new Architecture Librarian developed and delivered two orientations, and ten embedded workshop sessions at the School of Architecture. These included a “first-year experience” program for incoming graduate students consisting of a series of four workshops embedded in ARCH692 Thesis Research and Design Studio I, ARCH610 Architecture Research and Analysis, and ARCH693 Thesis Research and Design Studio II, and delivered over the fall and winter semesters. Working closely with the graduate instructors, the Architecture Librarian developed the program to prepare

students for Master's level research. Informal instruction is also provided daily at the desk, and via consultations by appointment and walk-ins.

Access to Print Resources

Musagetes Architecture Library houses the primary print resources for architecture. Patrons may charge out materials during the hours that the Library is open and renew items online anytime. UW Library, including the affiliated collage libraries at Renison, Conrad Grebel, and St. Jerome's, along with the libraries of the University of Guelph (UG) and Wilfrid Laurier University (WLU), is a member of the Tri-University Group of Libraries (TUG) consortium. Collections from Wilfrid Laurier University and the University of Guelph, particularly titles purchased on behalf of Landscape Architecture program, enhance the depth and breadth of local materials available in subject areas of interest to the UW School of Architecture community. Faculty and students can request books and copies of print journal articles from any UW Library location as well as from of UG and WLU for pickup at the Musagetes public services desk. Delivery time is within three working days. The cost of these services is absorbed by the Library. Access to the entire library collection, as well materials held by UG and WLU, is available through the online library catalogue.

The Interlibrary Loan/Document Delivery (ILL) service provides faculty, students, and staff with books, copies of journal articles, theses, and government documents from libraries within Canada and abroad. The Library uses OCUL's RACER Web based interlibrary loan system (<https://racer2.scholarsportal.info/>) to facilitate ILL access and service for users. With minor exceptions, the cost for this service is absorbed by the Library.

Most Canadian university libraries extend, at no charge, in-person borrowing privileges to faculty, students and staff from across the country. Faculty, students and staff are entitled to borrowing privileges at participating libraries (<http://www.curba.ca/>).

Journals

The Architecture serials fund supports the cost of 88 current print and electronic journal subscriptions relating to architecture, design, interior design, and landscape architecture to architecture students (titles available upon request). Suggestions for new titles are welcomed at any time. Additional titles of interest to architecture researchers on art, building sciences and technologies, planning, et cetera, are available electronically, or in print at other UW and TUG partner libraries.

Rare Book Room Collection

A separate, environmentally controlled Rare Book Room in the Musagetes Library houses one of Canada's most outstanding collections of rare books and periodicals on architecture and design. The total size of the collection is 5,931 items, of which 5,399 are books, and 532 are individual periodicals. The Rare Book Room collection features landmark titles in the history and theory of architecture, exemplary treatises from the sixteenth to the twenty-first century supportive of the School of Architecture's cultural history emphasis, and texts outlining architectural developments in Northern Europe and on the North American frontier, which have had a profound effect on architectural theory and urban development in Canada. All rare book and periodical materials are listed in the Library Catalogue and are available for viewing upon request from Monday to Friday, 9:00am to 4:30pm. Access to the collection outside of these hours is available by appointment.

The Architecture book budget does not support the regular purchase of titles for additions to the Rare Book collection. Its growth largely depends on donations, donations-in-kind, or the transfer of older, out-of-print titles from the stacks in need of additional protection.

Funds in 2015 allowed for the acquisition of *Town of tomorrow and home building center: World's Fair of 1940 in New York*, a rare set of pamphlets from the "The Town of Tomorrow" exhibition at the 1940 World's Fair air which showcased 15 single-family home designed in the modern style by invited architects.

The pamphlets are of research interest to historians of prefabrication, the domestic house and the modern movement in the 20th century, as well as town planning.

Visual Resources Collections

While the Musagetes Library does not house a physical visual resources collection, UW Library subscribes to ARTstor, an online licensed image collection. In addition, both the Architecture (<http://subjectguides.uwaterloo.ca/content.php?pid=107995&sid=812472>), and Fine Art Research Guides (<http://subjectguides.uwaterloo.ca/content.php?pid=94038&sid=702183>) identify and link to free online image resources of interest to architecture and design researchers. Musagetes does have a small collection of architectural drawings of some key buildings in the Kitchener-Waterloo region, such as Kitchener City Hall. These were donated by a past Director of the School of Architecture to support a course on local architectural history.

Electronic Resources

The UW Library system provides access to substantial electronic resources including research databases, full text journals, e-books, numeric data, and government publications. UW supports open access to scholarly communication through its institutional research repository (known as UWSpace), and subscriptions to open access publications. All UW dissertations, and thesis, including those produced by graduate architecture students from 2006 onwards are available electronically through UWSpace. In addition, UW Library identifies and provides access to select material freely available through the Internet. Such material include catalogues of libraries around the world, dictionaries, encyclopedias, and style guides.

The primary tool for accessing electronic resources selected by the Library is its website (<http://www.lib.uwaterloo.ca/>). This site organizes and provides access to licensed resources available to only University of Waterloo faculty, students and staff, as well as select Internet resources freely available to anyone. University of Waterloo faculty, students and staff may access electronic research databases and full text electronic journals from off-campus via the Library's

Proxy Server / Connect from Home feature. The Library also provides access to bibliographic management software (RefWorks). The Musagetes Library also has its own website (<https://uwaterloo.ca/library/musagetes/>) that has been developed to specifically support research for architecture patrons with an emphasis on specialized resources and library services relevant to architectural research.

Publishers of architecture materials have been slow to produce electronic equivalents of their print resources. As a result, there are limited electronic titles in the collection that directly relate to architecture. While the offerings of electronic books on architecture subjects is growing each year, students and researchers at the School of Architecture still prefer the print copy over electronic. At this writing, only five of the total print journal titles to which Musagetes Library subscribes have been replicated online in their entirety.

The following are some of the electronic resources of particular interest to the B.A.S and M.Arch programs:

ARTstor
Avery Index to Architecture Periodicals
Building Green
JSTOR
Proquest Digital Dissertations and Theses
RIBA: British Architectural Library Catalogue Online
Scholar's Portal
Worldcat

Most of the electronic resources are purchased from the Electronic Resources library fund.

Geographic Information Systems

The Musagetes Architecture Library provides direct access to the same licensed digital datasets available to campus patrons from the Geospatial Centre. The Library Associate, Information Services and Resources, who is responsible for providing GIS assistance, has prepared an online research guide (<http://>

subjectguides.uwaterloo.ca/GIS-for-Architecture) describing the software and mapping data available, both licensed and freely available. The guide is updated regularly. The Geospatial Centre, in the Dana Porter Library on the main campus, provides support and expertise for advanced GIS questions and GIS research support as well as student training.

Student Film Collection

Representatives from the School of Architecture student body launched the Student Film Collection based on a large donation of DVDs from a faculty member. Films from the 494 title collection are available to borrow by members of the School of Architecture community. Academically-oriented titles on architecture and design sit beside commercial hits and obscure art films in a designated section of the Musagetes Library. While the collection is owned and administered by the students, the library circulates titles through normal circulation procedures on their behalf.

Subject Coverage

The development of the Musagetes Library collection reflects the curriculum and changes over the years to the programs offered at the School of Architecture. It is critical to ensure that information and research needs of students and faculty are met, and as such Musagetes Library does title-by-title selection. These selections are made by the Architecture Librarian and closely reflect the curriculum and research interests of faculty members, and include titles that are useful in the studios as well as unique and interesting scholarly material not captured by standard approval plans.

The collection includes titles on architectural design, theory, history and criticism, historic preservation, building technology, professional practice, industrial design, landscape architecture, interior design, and urban design. Titles purchased on behalf of other departments, such as Classical Studies, Anthropology, Fine Arts, Philosophy, Engineering, and Planning supplement the Musagetes collection. Materials essential to the architecture discipline can be found in a range of Library of Congress classifications which include GF (Human Ecology and Anthropogeography), HD (Land Use), HT (Communities, Classes, Races, including cities, towns and regional planning), NA (Architecture), SB (Landscape

Architecture, Gardens, Parks) and TA (Engineering (General). Civil engineering (General)). The entire Musagetes Library collection numbers ca. 47,176 volumes, of which 19,125 books (all types) are classed in NA alone. The collection includes 2,413 books in the remaining classification mentioned above. The combined total in all these classifications across the whole of the UW Library system is ca. 124,744 books.

The UW Library system has active subscriptions to all the key databases that support research and study in architecture. The Musagetes Library has over 9455 volumes of current and bound periodicals and dating from the 1930s onwards. Select individual journals predating the 1930s can be found in the Musagetes Rare Book Room. Other titles of relevance to architectural researchers are located at Dana Porter Library. In addition to print, there is access to full text e-journals via databases such as JSTOR, Scholars Porter, et cetera. All e-resources are available to all UW faculty, staff, and students and can be accessed from on-campus, as well as any location with an internet connection via the virtual proxy network (VPN).

Policy Statements

All policies are reviewed to ensure that they continue to reflect the changing nature of the School's programs, the curriculum and the emerging areas of research in the architectural discipline as a whole. The effectiveness of policies are continuously monitored by the librarian in consultation with Musagetes Library staff. Selection is guided by the *Architecture Collection Development Policy*, and the Approval Plan subject profile (both available upon request). In 2015, the Architecture Librarian decided to drop Musagetes' physical book plan with World Wide Books, and adopted a virtual approval plan with Yankee Book Peddler (YBP). This resulted in reduced expenses, increased purchase discounts and more control of selection.

The library's Borrowing Policy is available on the UW Library website (<https://uwaterloo.ca/library/services/borrowing-privileges>), and the Musagetes Library website (<https://uwaterloo.ca/library/musagetes/services/borrowing>). Graduate students, faculty and staff members can sign most books out for term loan. For undergraduate students books normally circulate for two weeks. Course re-

serves can circulate 1-hour, 3-hours, 1 day or 3 days – the faculty member teaching that specific course makes the decision on the borrowing period. All journals, whether current or bound, can be borrowed for 3 days with two renewals.

In 2015 the Musagetes Library initiated changes to borrowing privileges, which have served our students researchers especially well. Most books (excluding course reserves and theses) can now be renewed an unlimited number of times, provided there are no holds or recalls on the items. As well, a limit of 25 items borrowed from the Musagetes Library was lifted for students, faculty and staff from the School of Architecture. The Circulation Policy for undergraduates will be monitored and reviewed as the undergraduate program develops within the UW School of Architecture.

2. Staff

Structure

The Architecture Librarian, at the Musagetes Library reports to the Head, Information Resources and Resources at Dana Porter Library. Full time staff report to the Architecture Librarian. Though Musagetes Library staff are employees of University of Waterloo Library system, they regularly collaborate with the faculty, administrative, and IT staff at the School of Architecture. The Architecture Librarian attends the bi-weekly Faculty Meetings, and all three library staff participate in staff and school-wide meetings and events, and staff training at the School of Architecture. In addition to her liaison duties, the Architecture Librarian manages the Musagetes Library.

Architecture Librarian:

- Oversees the library operations
- Liaises with School of Architecture faculty and students
- Supervises both Library Associates and hires full-time staff
- Provides reference assistance, research consultations, and information literacy workshops
- Selects library resources, developing the general and Rare Book collections

Numbers

As branch library located some distance from the main university campus, Musagetes Library handles all aspects of library service except cataloguing, which is done by the central library system at Dana Porter. If the current staff complement is maintained, we can continue our current hours of operation and offer adequate circulation, reference, and GIS service to support the architecture curriculum, and successfully manage the library collection and services. If the School of Architecture expands the programs they offer, or significantly increases enrolment, the library may need to revisit their staffing numbers.

Professional status

The Architecture Librarian has a Bachelor of Environmental Studies (Pre-Professional Architecture) from the University of Waterloo (1998), Bachelor of Architecture from Pratt Institute in New York (2001), and an American Library Association accredited Master of Information with a specialization in Library and Information Science from the University of Toronto (2011). The librarian's years of professional experience includes Concordia University as a Reference Librarian, the University of Toronto as their Interim Architecture Librarian, the Department of Family Medicine at McGill University as a freelance researcher, and the Canadian Centre for Architecture where she was a cataloguer describing and organizing architecture print collections and archives. Prior to entering librarianship, she was a practicing architect for nearly a decade, which imparted her with deep subject knowledge of the architecture discipline, and first-hand understanding of the needs of architecture researchers.

To be informed and involved with other libraries on campus, the librarian attends the bi-monthly meetings for staff of Information Services and Resources department at Dana Porter Library, and also monitors information discussed via the various committee list-servs. The librarian also participates in library-wide working groups and projects. The librarian is active in ARLIS/NA (Art Libraries Society of North America) at both the national and local chapter level, and in AASL (Association of Architecture School Librarians).

At the University of Waterloo librarians are members of the Staff Association, and are eligible to be voting members of the Librarians' Association of the University of Waterloo (LAUW), though membership is voluntary. There are position descriptions for all librarian positions.

Support staff

The Musagetes Library employs two full-time paraprofessionals both at the Library Associate level.

Library Associate, Information Services and Resources:

- Provides GIS assistance/workshops to faculty and students
- Provides general reference at the Public Services Desk and virtually
- Responsible for the promotional planning including web communications via the Musagetes Library website and various social media channels, displays, and signage
- Develops and leads outreach activities and events for students and the public

The Library Associate, Information Services and Resources, has a B.A. in English and several years of increasingly responsible positions in various university libraries. She has been with the Musagetes Library since 2006. She attends conferences and workshops to maintain and upgrade her GIS knowledge, and web design skills, and has received subject training to support reference. The Library Associate is a member of the Outreach Committee, the Joint Health and Safety Committee, and is a Safety Officer for the School of Architecture.

Library Associate, Service Desk and Collection Maintenance:

- Provides circulation assistance and information services at the Public Services Desk
- Processes course-related materials for the reserve collection
- Ensures the book and journal collection is maintained and accessible
- Deals with patron accounts, cash handling, and manages and tracks staff budgets
- Supervises and hires co-op student and casual staff to assist at the Public Service Desk and with collection maintenance efforts

The Library Associate, Service Desk and Collection Maintenance, has a Health Care Aide diploma from a community college. For a decade prior to being transferred to the Musagetes Library in 2012, she worked in increasingly responsible positions, including in a supervisory capacity, at main campus UW libraries. She attends staff conference and workshops to maintain and upgrade her financial, technical, and supervisory skills, and has received enhanced directional training to support information services. The Library Associate is a member

of the TUG Circulation Committee, and the Circulation Training Committee, and attends the Circulation Department meetings.

In addition to the three permanent full-time staff, Musagetes employs one regular and one GIS co-op student that provide 73 hours of assistance per week during the fall and winter semesters, and in the summer hires one GIS co-op for 35 hours of assistance per week. Casual student staff also play a vital role at Musagetes – they provide back-up during staff absences due to meetings on main campus, vacations, conferences, and unforeseen circumstances, provide additional support during peak usage periods, and staff the desk during weekends and evenings during various times of the year. Student assistants are hired for their knowledge and ability to help library users. If we maintain our current staff contingent and budget, the Musagetes Library does have sufficient paraprofessional, and student staff to support our current services and hours of operation.

Complete job descriptions for all full-time and student staff are available upon request.

3. Facilities

Space

Musagetes Library is a warm, inviting space featuring scenic views of the Grand River, and historic downtown Galt. In addition to being a popular study space, students find the library environment a place of respite from the stress of studio and coursework. Its convenient location within the School of Architecture makes it easily accessible to students and faculty. Undergraduate studios, and graduate and faculty offices are steps away.

The 12,000 sq. ft. Musagetes Library was designed to meet the diverse needs of its research community, and support a wide variety of activities from lounging to individual quiet study to group work. Computer workstations, situated opposite the public services desk, and tables near the Reference collection, create an area in which students can search the library catalogue, consult with library staff, or talk amongst themselves without worrying about noise levels. Corner window areas hold comfy chairs for relaxing and sleeping when required. The lounge areas on the Grand River side of the building, and the group study tables in the rear of the North wing can accommodate a range of activities including student group meetings and events such as panel discussions and meditation sessions, and have served as classroom space.

The TUG Annex is a co-operative project of the University of Waterloo, Wilfrid Laurier University, and the University of Guelph libraries. The Annex serves as a repository for the TUG libraries' less-used library resources, i.e. materials with little or no circulation rates. In keeping with the University's research intensive status, the TUG libraries ensure that a last copy is maintained in perpetuity, through the [Preservation of Last Copy Agreement](#). Items can be requested from the remote storage facility. Items housed in the Annex will be delivered to the Musagetes Library within three working days. The cost of these services is absorbed by the UW Library system.

The library is equipped with a security gate, and a security alarm system to minimize theft of materials in the open library stacks, and the library has sufficient heating, cooling and ventilation. To ensure the continued protection and

preservation of materials in the Rare Book Room, it is equipped with separate security, environmental controls, a perimeter water detector and fire protection systems. Over the years, there have been issues with environmental controls in the Rare Book Room – primarily humidity levels exceeding the accepted range in the summer months (June to August). UW Library and the Waterloo School of Architecture worked together to find solutions, and the issue has largely been resolved. During extreme heat waves, Musagetes Library still uses a stand-alone dehumidifier unit to ensure the relative humidity levels within the Rare Book Room remain consistent, and within the recommended range.

Equipment

The Musagetes Library was designed to accommodate 15-years of projected collection growth. The shelving situation is monitored continuously, and the library is nowhere near capacity. To ensure currency and relevance of both the reference collection and the circulating collection upcoming collection reviews to are planned in 2016-2017.

At present, the Library has seven public computer workstations for users, which have proven sufficient, as students are required to have their own laptops. The Musagetes Library's has a GIS workstation equipped with a variety of programs to help students with their mapping and project site development, including ArcGIS, Google Earth Pro, Lizard Tech GeoViewer, and Python. The workstation is accessible during library hours. In January 2016, ArcGIS and Google Earth were installed on the remaining six public library computers. The wireless network includes the Musagetes Library. We are served by eduroam, University of Waterloo's wireless network (which is restricted to the UW community).

There are two multi-function devices (combined scanner/printer/copier) located in the Musagetes Library – one dedicated for public use, and the other located in the staff workroom. The publicly accessible scanner/printer/copier contributes significantly to the preservation and security of the collection, particularly for items such reference books, which are 'in library use only'.

A rare book scanner was purchased since the last accreditation visit to ensure the continued preservation of the rare book and periodicals collection. Unfortunately the model that was selected has proven problematic, and only intermittently works. As a temporary measure, the library has made arrangements with the Multi-Media Specialist, who oversees the School of Architecture's photography studio, to take digital photographs for researchers who need high-quality reproductions. Researchers are also permitted to take their own photographs of out-of-copyright items using their own digital cameras and smartphones. When funding allows, the library will move forward with obtaining a new scanning device.

The library conference room is equipped with whiteboards, pin-up boards, and a digital projector that can be used to watch movies from the student film collection, give presentations, for group presentations, or meetings. It can seat up to eight users. Patrons can book the room for individual or group use through the online room booking system. It is booked on a regular basis by students and faculty. The conference room also serves as the drop-in location at the School of Architecture for the Writing Centre where students can make appointments to get writing and assignment assistance. Since the last accreditation visit, the wood furniture in the room has been upgraded, and replaced with six ergonomic office chairs, and 2 movable study tables that can be reconfigured to meet user needs.

There are sufficient computer workstations for staff. There are also two computer terminals located at the Public Service Desk where staff can assist patrons with research, searching the catalogue, and for circulation tasks.

Furnishings

There is sufficient and appropriate workspace for staff. For users, the library has a seating capacity of over 60, spread amongst tatami mat window seats, over-size comfy chairs, group study tables, and individual study areas. The library is especially busy during the fall term, and operating at near full capacity at times, but all users are able to find a place to study.

The library was designed with careful consideration to electrical supply and lighting. Power outlets are incorporated into the group tables, and individual study stations. Since the last accreditation visit, individual task lights for the perimeter seating areas of the stacks were purchased. With its large expanses of windows, and the sunlight that reflects off the adjacent Grand River, the library receives an abundance of natural light. The overhead lighting is often turned off during the day reducing the library's environmental footprint

4. Musagetes Library Statistics

The Collection Development Policy for Architecture does not include the purchase of microfiche or microfilm, slides, drawings, or photographs. DVD's may be purchased upon request.

information technology infrastructure

Digital technology is the backbone of education at Waterloo Architecture. The School of Architecture provides wired and wireless networks that cover the entire facility allowing the students to use their own laptop computers everywhere in the building. The School operates its own servers for some of the printing and network functions and is linked to servers in the Faculty of Engineering and the University of Waterloo in order to provide high-speed connections, web support and e-mail. Hard wired network connections are available in all offices, graduate studios, and classrooms. The E-classroom also provides wired network connections at every seat. All technical facilities are networked and operate as a system of services supporting the academic, professional, creative, and community mandates of Waterloo Architecture.

The school website and the various e-groups that connect the school community form a crucial and heavily used element of the information infrastructure, especially given the fact that the students are never all in the building at the same time, distributed in cities around the world during co-op work terms. Each of the following facilities is, at least in part, digital and can be justifiably considered part of the information infrastructure.

The operation of the technical support system is in the hands of six full-time technical support staff. Part time assistants are also hired when necessary.

* These counts include both current and year and single issue, and bound copies of periodicals. In reality, the total number of single issues in the Musagetes collection is considerably higher. The number of periodicals can not be broken down by single item received for journals that have since been bound. The counts for periodicals are for item records, and if several or all issues of a volume year are bound together, it will count as only one item.

** The drop in book expenditures and approval plan support for 2015/16 was the result of a temporary, and partial freeze on monograph purchasing imposed because of the significant decline in the value of the Canadian dollar in the fall of 2015, and the consequent drop in UW Library's purchasing power. The freeze was lifted in May 2016. Musagetes Library had an additional \$9,172.21 USD (not reflected above in the 2015/16 budget expenditures) in a deposit account with the book vendor YBP that has gone to retroactive selection to purchase those 2015/16 titles that were missed due to the budget freeze. Expected delivery of these selections will begin in September 2016, and will add an additional 176 books to the collection, again not reflected above in the 2015/16 yearly acquisitions.

FIGURE 16 | MUSAGETES COLLECTION SIZE

<i>Type of Collection</i>	<i>No. of Volumes</i>
<i>Books</i>	30,111
<i>Rare Books</i>	5,399
<i>Reference Books</i>	563
<i>Theses</i>	369
<i>Periodicals</i>	9,455*
<i>Rare Periodicals</i>	532
<i>Audio/Visual</i>	28
<i>Non-Library</i>	719
Total Net Item Count	47,176

FIGURE 17 | MUSAGETES YEARLY ACQUISITIONS

<i>Year</i>	<i>Books</i>	<i>Rare Books</i>	<i>Periodicals</i>	<i>Rare Periodicals</i>	<i>Total</i>
<i>2010 - 11</i>	1,069	18	233	0	1,320
<i>2011 - 12</i>	1,079	25	255	0	1,359
<i>2012 - 13</i>	1,195	22	385	34	1,636
<i>2013 - 14</i>	896	5	244	0	1,217
<i>2014 - 15</i>	620	5	315	1	614
<i>2015 - 16</i>	476	11	507	1	994

FIGURE 18 | MUSAGETES BUDGET EXPENDITURES (CAD)

<i>Year</i>	<i>Books</i>	<i>Approvals</i>	<i>Serials</i>	<i>Total</i>
<i>2010 - 11</i>	20,256.05	26,010.89	11,994.86	58,261.80
<i>2011 - 12</i>	18,129.05	36,835.57	13,997.27	68,961.89
<i>2012 - 13</i>	12,479.07	29,030.95	12,131.23	53,641.25
<i>2013 - 14</i>	20,743.12	37,476.70	14,597.80	72,817.62
<i>2014 - 15</i>	10,666.14	23,582.25	13,331.75	47,580.14
<i>2015 - 16**</i>	12,248.96	6,473.16	10,595.06	29,317.18

Fabrication Labs

The Fabrication Labs are available to undergraduate students for course-related projects and graduate students and faculty for research projects. The Workshop occupies 4600 sq. ft. of space at the south end of the building on the ground floor. It is equipped with woodworking equipment: saws, sanders, lathe, planer, joiner, hand tools, etc. The Fabrication Labs are equipped for the design and construction of architectural and land contour models, large-scale installations, full size mock-ups, prototypes, furniture, sculpture and 3-D sketches, and architectural models. Digital fabrication equipment includes a CNC router, a 3D printer and 3 laser cutters. There is equipment for small-scale construction and shaping of acrylic sheets. The shop also provides literature on projects and methods.

Students normally supply their own materials.

The Workshop Manager supervises the shop and is responsible for the safe operation and maintenance of the facility, assisted by a full-time Workshop Technician.

The large power tools in the Workshop are only available to students under proper supervision. Unless a qualified faculty member is present, these tools can only be operated during the Manager's working hours; that is, 9 to 5 Monday to Friday. When a staff member is not present, the electricity to these power tools is shut off. The model assembly area of the Workshop is available to students 24 hours a day.

architecture computing and multimedia (acm)

The Architecture Computing & Media (ACM) group consists of four highly qualified staff that provide a wide range of digital media, and computing support for students, faculty and staff. ACM supports the use of information technologies in learning, teaching, research and administration, including computing, digital imaging, digital video and audio production. There are two computing labs in the School. Wireless computing is available throughout the School. ACM provides

3.8.2

CURRENT RESOURCES:
COMPUTING AND OTHER
TECHNICAL FACILITIES

complete and full computing services in-house to provide e-mail, a 24-hour temporary disk space, portfolio space, web space, and network space, printing, user account creation and management.

The following labs and facilities fall under the aegis of Architecture Computing and Multimedia.

acm photo studio

Students, staff and faculty in Architecture can create their own images in the ACM Photo Studio. Lighting equipment, backdrops, cameras, and tripods used in the Photo Studio are provided free of charge to students, faculty and staff.

acm scanning facilities - second and third floor corridor access

There are five Xerox WorkCentre Multifunction devices equipped to scan, and print images. These devices are situated in convenient locations; two are outside of the Apple Lab, another two are in the Studio, and one located near the graduate student's offices.

acm printing facilities - second floor corridor access and third floor studios

There are five printers available for student use they are capable of both low cost black and white (draft printing) as well as photo-quality (photo printing). Printing is available from both computer labs as well as from wireless laptops and office computers. Large formatting plotting (Canon iPF8400S) is also available through the ACM supply store on the second floor.

general use and teaching apple lab

This lab provides facilities for basic computing such as word processing, spreadsheets, document production, and e-mail and internet access. As well, it has several advanced programs for graphic design and design presentation production. This facility is also used as a mid-range teaching lab for Computer Assisted Design. Presently, there are twenty-two Intel iMac computers running

the following software:

Adobe Creative Suite (Currently CS6), Microsoft Office 2016, Google Earth, Google SketchUp Pro 2016, AutoCAD Design Suite Ultimate 2017, Rhino 5 and Maxwell Render (Also Monkey Editor and Grasshopper).

M.Lab

The M.Lab (Makers Lab) is a jointly managed space (Workshop & ACM) but ultimately envisioned as a user run initiative, it is the students themselves who determine and cultivate the labs objectives.

The M.Lab is a resource for the students intended to expand and encourage the use of hands-on making and experimentation as an integrated component of the learning process. It provides an environment rich with possibilities combining old and new technologies with hands-on learning in an open and collaborative setting. The 400 sq. ft. space is more centrally located on the 2nd floor and closer to the student studios allowing more integration of making as a regular component of their design process.

acm supply store and helpdesk

The supply store stocks a wide range of items to accommodate student needs year round. Standard stock items include adhesive materials, templates and scales, writing materials, papers and boards, sketchbooks and basswood sheets and dowels. In addition, the store stocks paper, toner and ink for the printers and plotters and purchases supplies for specific student projects throughout the year. Each fall, the staff sources products and assembles a first year kit for incoming students. The store is open from 10 am to 6 pm Monday to Friday.

Staff members are also available to students for printing support, account management and technical assistance.

presentation technology

The School of Architecture is equipped with an impressive suite of presenta-

tion technology including at high quality cinema projector, 4 medium power fixed projectors, 6 portable digital projectors, 4 LCD televisions on media carts equipped with Mac minis, and 20 Microtiles (high-resolution digital display units that can be arranged in any pattern or form).

other resources

The School of Architecture has had a formal relationship with the Engineering Machine Shops for over a decade. These shops accommodate modeling, prototyping, and construction in metals, predominantly steel and aluminum, and work in plastics. The School of Architecture maintains an informal relationship with the Department of Fine Arts.

Informal ties also exist between the Department of Computer Science and Architecture personnel and students involved in computer applications. Graphic reproduction and computational resources can be called upon for high-end projects carried out within Architecture. The Campus-wide services provided by the Audio Visual Centre are also available to the School of Architecture for special equipment needs and for visual teaching materials to faculty.

With the exception of some of the large pieces of equipment in the Workshop, the School of Architecture was re-equipped completely when it moved to Cambridge in 2004. Networks, computers, hand tools, photographic equipment, audio-visual equipment and presentation technology.

This complete refit of the School set a new standard and supported the activity of the School well. All along, however, it was clear that this would present a burden when all the new equipment had to be replaced. A plan for the renewal of digital resources was put in place in 2009. The first action was the replacement of the original computers in the General Use Apple Lab. The server and memory capacity of the computers in the Video Lab was also increased.

Currently, the school has 22 Mac computers in the General Use Apple Lab, each loaded with Autodesk, Rhino, Maxwell Rendering, ArcGIS, SketchUp, Adobe CS6 and Microsoft Office. Microsoft Windows Operating System is made available on each of these computers as well in addition to the standard Mac Operating System. Additionally, the school now has 6 Mac computers in the Maker Lab with a complete suite of software that includes RhinoCam; 6 Mac computers in the library now loaded with ArcGIS; 4 Mac computers available at 2 separate printing stations; and 2 PC computers in the Digital Lab for use with the laser cutters, both loaded with Autodesk and RhinoCam. The last time new computers were purchased for the Apple Lab was in 2011, with an addition of only 2 new computers. Most of the computers in the Lab date to 2009.

In order to help offset costs assumed by first-year students, the school now bulk-orders copies of Rhino to sell to students at a reduced cost. This software is taught in Arch 110 and 113 Visual & Digital Media classes, and is often used by students through their undergraduate degree for design visualization. The School recently transitioned from teaching V-Ray rendering software to Maxwell, which is available to students for free download. Through the University of Waterloo, undergraduate and graduate students can also download Windows Operating System for free, and graduate students can download Microsoft Office for free. Recent changes to the educational licensing model has allowed the library to expand their ArcGIS capacity from just 1 computer to at present 6 computers.

Funding from Engineering in the Spring of 2013 allowed for an extensive upgrade of the equipment in the Cummings Lecture Theatre. Approximately \$90,000 went towards 2 new projectors, a high-end recording system for visiting lectures (which are now uploaded to YouTube), upgraded lighting, and a new touch panel integrated into the speaker's podium. An upgrade of the school's E-Classroom was also completed recently. This was a special upgrade done through the regular operating budget. This upgrade included a new projector, a cabling system, and a permanent computer dedicated to the E-Classroom for lectures and presentation.

Currently, the School's approach to technology and its upgrade is dependent on three different initiatives, rather than built directly into the budget.

First, there is the opportunity to provide some on-going upgrade of computing and other equipment is financed from the Waterloo Engineering Endowment Fund (WEEF). This endowment has been built from student contributions and now provides Architecture with up to \$15,000 per year. Funds are granted based on successful proposals by students. Recent WEEF have grants have mostly gone towards Digital Fabrication equipment in the workshop, and have included digital cameras, sound recorders, and drawing tablets for Architecture & Computing Media.

Second, we are currently establishing a collaboration between Architecture Computing & Media and Engineering Computing. In the process, our architecture computing and media systems manager spends time both in Architecture and Engineering. The time spent in cross-training on Campus, which represents about \$30,000 annually, is returned in equipment. This collaboration will be especially helpful in purchasing new computers for the General Use Apple lab, which is due for upgraded hardware in the near future.

Third, we are looking at an increasing number of opportunities to acquire equipment that can benefit the School as well as specific research projects. In conversation with the workshop manager and the Architecture Computing & Media systems manager, we are working to identify purchases that can serve both research initiatives and the student population generally. In 2016, a \$60,000 laser etcher was acquired through these means, paid 50% from a

research fund and 50% from the School's budget. We are currently looking at purchasing other equipment in this way.

In short, we have been able to replace and upgrade the technological equipment in an adequate manner. Nevertheless, in the transition to a new resources allocation model, our intention is to work on a clear plan for upgrade and attribute a figure to what our minimum expenditure should be annually.

3.9 FINANCIAL RESOURCES

3.9.1 CURRENT RESOURCES + INSTITUTIONAL CONTEXT

The relocation to Cambridge disposed of previous deficiencies in space and facilities. The administrative realignment that brought architecture back to the Faculty of Engineering first appeared to have helped the school overcome most of its fiscal challenges. This assessment turned out not to be fully accurate as the funding for the extra staff needed to operate the school was not added to the budget. We also found that costs of the satellite location were higher. There were specific expenses that accrued in an off campus location. Growing class sizes required additional instructors. Some of the funds pledged in the campaign associated with the move to Cambridge were not actually donated. In short, the school's budget has continued to be challenging.

In 2012–2013, the longstanding deficit in the School's operating budget was substantially reduced. In addition to this, there was a further adjustment made on the School's base budget which will further help in alleviating the deficit. The School no longer carries the cost of the Rome Studio, though it maintains its administrative role for a campus that is now fully funded by the Provost's Office. There is now a full-time University of Waterloo employee in Rome who administers the program for the School of Architecture in addition to visiting internal (UW) and external scholars and students.

Overall, the situation is significantly more viable than it was at the time of the last visit. We are, however, moving towards the implementation of a new budget model (NRAM), a resource allocation model. As we negotiate our position within the faculty of Engineering and the University, we will have to carefully present the different particularities of the program – its identity as a satellite campus, the necessity to ensure a low faculty to student ratio in design studio, the foundational role of the design courses and the space needed to accommodate it, etc. Some of the gains already made will not be contested (for example, the budget for Rome and the maintenance of our building through the endowment), but it will be important to maintain funding for adjuncts, for cultural events and more generally to manage to retain or secure continuous funding for our undergraduate and graduate students.

With the addition of new elective courses at the graduate and undergraduate levels, so demands increase on financial and human resources. We will need to carefully consider how we want to approach the diversification of our curricu-

FIGURE 19 | BUDGET SUMMARY

	2005 - 2006	2010 - 2011	2015 - 2016
SALARIES			
<i>Staff Salaries - Full Time</i>	253,197	275,000	365,000
<i>Staff - Part Time and Casula (Co-op Students)</i>	0	30,000	50,000
<i>Teaching Assistants</i>	102,576	280,000	175,000
<i>Faculty Salaries - Full Time</i>	1,652,423	2,100,000	3,075,000
<i>Faculty Salaries - Part Time & per diem</i>	220,000	440,000	425,000
<i>Workshop Salary - Full Time</i>	29,995	60,000	143,000
<i>Workshop Salary - Part Time</i>	2,500	52,000	1,000
<i>Library Salaries - Full Time</i>	63,252	0	
<i>Library Salaries - Part Time</i>	26,000	0	
<i>ACM Staff Salaries - Full Time</i>	140,095	160,000	270,000
<i>ACM Salaries - Part Time</i>	20,000	18,500	10,000
TOTAL SALARIES	1,668,059	3,415,500	4,514,000
NON-SALARY ITEMS			
<i>Rome Programme</i>	113,500	123,000	200,000
<i>Entrance Scholarships</i>	25,000	0	0
<i>Memberships/CACB/AI</i>	17,500	9,500	20,000
<i>Advertising</i>	20,000	0	1,600
<i>Rental Space</i>	29,100	70,000	0
<i>Travel</i>	16,500	2,500	20,000
<i>Visitors</i>	25,000	28,000	32,750
<i>Supplies</i>	8,300	30,000	15,000
<i>Supplies - Workshop</i>	2,000	10,000	8,000
<i>Supplies - Teaching</i>	2,500	25,000	10,000
<i>Supplies - ACM</i>	6,400	9,450	2,000
<i>Supplies - Library</i>	5,400	15,000	1,500
<i>Maintenance</i>	0	366	2,000
<i>Computer Equipment</i>	2,000	8,500	13,000
<i>Equipment and Furnishings</i>	500	15,000	0
<i>Telephone</i>	8,800	16,000	20,000
<i>Printing</i>	7,000	8,400	0
<i>Postage</i>	2,050	2,400	600
<i>Discretionary</i>	500	500	500
<i>CURA</i>	69,516	0	0
<i>CSSRC</i>	11,845	0	0
TOTAL NON-SALARIES	373,411	373,616	376,950
ARCHITECTURE TOTAL	2,883,449	3,789,116	4,890,950

lum in a manner that we can comfortably support. At the same time, this seems to be a prime time to launch a fundraising campaign, not only to protect the quality of the program, but also to grow the presence of Waterloo in Cambridge through the addition of the degree in Integrated Design program.

The chart on the previous page compares the fiscal situation in 2006, 2011 and 2016 – the last two CACB accreditation visits and the present – indicating a substantial overall improvement.

The University is moving towards the implementation of a budget model predicated on the use of resources and their allocation to specific users according to a number of different drivers (number of graduate students, number of faculty members, number of full-time equivalent students, amount of research funding received, etc.).

With this shift, the University intends to connect revenues and support expenses to effort, to ensure a great level of central support, to enable long-term budget planning and strategic alignment, to plan for growth and the management of expense more generally. The intention is to get greater clarity, transparency, accountability, efficiency, all the while maintaining academic excellence and enabling support for strategic initiatives.

The University will be implementing the model in the redistribution of funds between the six Faculties. So far, it has been established that even after the redistribution of funds according to the new model, Engineering will be very close to the overall budget that it has traditionally been working with. This means that on the whole, the Faculty could continue to function as it has. However, because the Faculty of Engineering is interested in implementing the model at the departmental and school levels, there is pressure on establishing the efficiency of the School and whether it would be financial viable under a model based on income (i.e. tuition) and expenses (to be aligned to tuition income). The reality is that running a School of architecture is different from running a department in Engineering. We are currently assessing how the new model can account for our differences – whether we consider our lower tuition, studio teaching, faculty to students' ratio, graduate research and supervision, research funding eligibility, or the satellite location of the School.

The process in which we are currently moving through the implementation is open, discursive and transparent. While there is good will from the dean and the departmental chairs, this shift inevitably creates some anxiety that is not geared on improving the quality and strength of the academic programming, but rather on rendering it more financially independent and viable. We will be working hard to ensure that these two ambitions are not at odds. The advantage of the process is that it puts the School in a position wherein it has to very clearly consider the resources needed and carefully weigh the importance of each aspect of the program that we would deem fundamental to its health. We are hopeful that by the end of the process we will come out with a clear picture of the budget actually needed and whether all the needs of the School are currently appropriately met by both the Faculty and the University.

During the capital campaign to create the new school of architecture in Cambridge over \$6,000,000 was raised and placed in an endowment by the University of Waterloo to provide for operating and maintaining the facility, providing custodial services and security.

While other departments will be charged at a fixed rate for their use of net assignable square meter (nasm) under NRAM (the new budget model), Architecture will continue to rely on the endowment to cover plant operations.

Several modest endowments provide funds for graduate and undergraduate scholarships and awards. These include the Roberta and Lonsdale Schofield scholarship; Jo Beigelo Book Prize; Energy and Design Award; and the Smale Fellowship.

Undergraduate entrance scholarships

The University of Waterloo provides scholarships to all students entering directly from secondary school who have achieved an average of 85% or greater. Students who have averages in the range of 85% to 89.9% receive a \$1000

3.9.2 ENDOWMENTS

3.9.3 SCHOLARSHIPS

Merit Scholarship. Students with averages between 90% to 94.9% receive a President's Scholarship of \$2000. Finally, students with an average at or above 95% receive a President's Scholarship of Distinction, which includes a \$2000 entrance scholarship in addition to a \$1,500 International Experience Award and a \$1,500 Research Award available in their upper years should they choose to claim it and if the student completes their first year with an average of at least 80%.

Between 2011 and 2015, the proportion of students receiving entrance scholarships has increased from 72% to 92%.

The School of Architecture offers five internal entrance scholarships: The Elizabeth Alarie Scholarship, awarded to the most outstanding student entering the School from a High School in Waterloo Region. The award has a value of \$1,500.

The McPhie Family Scholarship, awarded to an outstanding student entering the School from an Ontario highschool, and is partially funded by the Ontario government. This award must be awarded to a candidate with demonstrated need and is valued at \$ 2, 500.

The Robert Kerr Scholarship alternates annually between the School of Architecture and the School of Planning. Valued at \$2500, this is awarded to the most outstanding student entering the School from a High School in Waterloo Region. The award has a value of \$1,500.

The WalterFedy Entrance Scholarship of \$1,500 each is awarded to one student in Chemical, Civil, Electrical or Mechanical Engineering and to one Architecture student. This award is reflective of the long-standing relationship between WalterFedy and the University of Waterloo, including the hiring of co-op students and graduates.

We also offer the Christopher Dean Moran Memorial Award for an undergraduate student entering first year with an outstanding portfolio. The value of the scholarship is \$1,000.

FIGURE 20 | UNDERGRADUATE ADMISSIONS SCHOLARSHIPS

ADMISSION YEAR	ENROL NO.	NO. MERIT SCHOLARSHIP	NO. PRESIDENT'S SCHOLARSHIP	NO. PRESIDENTS SCHOLARSHIP OF DISTINCTION	TOTAL VALUE
2011	76	19	32	4	\$91,000
2012	76	28	27	4	\$90,000
2013	76	26	30	7	\$100,000
2014	81	26	35	4	\$104,000
2015	76	36	26	8	\$104,000

FIGURE 21 | FINANCIAL SUPPORT FOR M.ARCH STUDENTS

FISCAL YEAR	FTEs (#) and AMOUNT OF SUPPORT (\$)						STUDENTS FUNDED	
	EXTERNAL SCHOLARSHIPS \$ (#)	UNIVERSITY SCHOLARSHIPS \$ (#)	TAs \$ (#)	RAs \$ (#)	OTHER \$ (#)	TOTAL \$	# (%)	AVG \$
2011	118,333 (6.7)	101,056 (19.3)	211,306 (19)	2531 (1)	90,443 (32.1)	523,669	46 (49)	11,384.00
2012	107,800 (7)	99,564 (17.7)	178,507 (17)	7000 (1.3)	128,542 (32.9)	521,413	42.6 (47)	12,240.00
2013	42,400 (3.4)	92,893 (19.7)	214,840 (18.5)	0 (0)	157,230 (30.2)	507,363	43.6 (55)	11,637.00
2014	77,860 (4.8)	117,000 (27.4)	160,738 (15)	0 (0)	175,130 (32.6)	530,728	49.8 (51)	10,657.00
2015	54,367 (3.7)	106,164 (22.7)	166,327 (14.6)	25,000 (0.7)	154,848 (32)	506,706	50.7 (56)	9,994.00

1. Data is reported on the fiscal year. Waterloo's fiscal year runs from May 1st to April 30th, thus the 2015/16 fiscal year runs from May 1st 2015 until April 30th 201, and includes three terms – Spring 2015, Fall 2015, and Winter 2016.
2. # of Funded Students is the number of Full Time Equivalents (FTEs) in the year of students that received some form of support. Specifically, in each term in which a full-time (or part-time) student receives support from any identified source a count of 1/3 (1/9 for part-time) is added to the funded FTE total for that source. Both supported students (FTEs) and \$ amount of support exclude inactive graduate students and non-degree students.
3. External Scholarships are the total funds recorded on the Student Record System as external as reported by external award agencies, or as declared by students for each Fiscal Year.

Additionally, the Faculty of Engineering extends one of their UW Internationals Student Scholarships each year, valued at \$10,000, to an outstanding international student admitted to Architecture with an average above 90%.

graduate scholarships and financial support

The Graduate Awards area of the Graduate Studies Office works closely with departments to advertise, adjudicate and administer a variety of awards for graduate students. Awards are based on academic performance, excellence in research, or financial need. The Graduate Awards area also maintains a Scholarship Information Database containing scholarship and award information for postgraduate studies.

Additionally, the Coordinator of Graduate Studies and Research in the School of Architecture maintains a file of relevant scholarship opportunities and assists students in the application process for scholarships, bursaries and research, and travel support.

Graduate Students can also receive Teaching Assistantships and Research Assistantships to assist them financially. Teaching assistantships provide the largest source of support for graduate students. Over the past six years, there have been an average of 50 TAships per year.

The overall level of support for grad students is indicated in the chart below, followed by comments on the specific sources. The average levels of support compare very favourably to other schools of architecture in Canada.

Ontario graduate scholarships

The Ministry of Training, Colleges and Universities have designed the OGS program to encourage excellence in graduate studies in Ontario Universities. At a value of \$5,000 per term, for two or three terms, the Province of Ontario provides two thirds of the value of the award, and the university at which the award is tenable provides one-third. The scholarship is awarded beginning in the spring term of each academic year.

The level of success of the graduate students in this competition rests largely on grades. Architecture students have been very successful in securing this award over the past few years:

2012 – 2013	6 students
2013 – 2014	3 students
2014 – 2015	3 students
2015 – 2016	2 students
2016 – 2017	3 students

Every year, on average three graduate students are successful in obtaining full-funding (\$25,000 min) through ontario graduate scholarships.

social sciences and humanities research council grad scholarships

Graduate students in Architecture are eligible to apply for SSHRC Graduate Scholarships that provide \$27,500 over the course of the M.Arch. The University has a limited allocation of SSHRC Scholarships and the competition rests on research performance that is largely based on papers published or delivered at conferences. The UW Committee has accepted that design awards and competition results are legitimate indications of quality in architecture. Recently, our graduate students have received on average one or two SSHRC per year.

2012 – 2013	None
2013 – 2014	None
2014 – 2015	1 student
2015 – 2016	2 students
2016 – 2017	1 student

entrance scholarships

The School of Architecture offers entrance scholarships to all first term graduate students with an overall entering average of 80% or higher. These funds are dependent on the University of Waterloo Scholarships and Faculty of Engineer-

ing Scholarships. Therefore the quantity of awards and amount, vary from term to term. Last year, we provided an entrance scholarship of \$1000 to all students who enter the program with an average of 80% or higher.

awards

In addition to these sources of funding there are 1 to 3 students who are funded \$5000 for the RBC's Water scholarship. The Urban Strategies Scholarship (\$2000) and the Barry Bell scholarship (\$1000) have been funded by private donations. The University provides an additional \$2000 from Senate Graduate Scholarship funds, and the School of Architecture up to \$1500 for Graduate Studies Travel Assistantships.

Like the undergraduate awards, funds are provided through various sources and are distributed at the Awards reception in April. The annual graduate awards accompanied by their value for the years since 2006 are listed in section 3.9. It should be noted that the amounts available are relatively small.

3.9.4 DEVELOPMENT ACTIVITIES

Between 2000 and 2004, the School of Architecture and the Cambridge Consortium carried out a large and very successful fundraising campaign to support the project for the new facility in Cambridge, Ontario. The campaign raised over \$20,000,000 for design, construction, furnishing and an endowment to maintain the building.

Architecture rejoined Engineering in 2005 just in time to be included in the Vision 2010 plan. The school quickly established a set of goals for fundraising: a Rome endowment, an addition to the new building, a Chaired Professorship and graduate student scholarships. Since the Cambridge campaign had just ended and Engineering's main efforts were directed to a very ambitious physical expansion, very little headway was made on the Architecture goals.

The situation is similar with the construction of E7 still ongoing. Nevertheless, there is support and openness for the integration of architecture's strategic plan within Engineering's current fundraising campaigns. In collaboration with the advancement office, the School of Architecture is currently working on a plan that integrates its strategic visions over the next three to five years. While the plan is in the making, it will of course be constructed around the three main poles of Architecture's strengths and visions – curriculum, collegiality and community – and it will of course involve the fundraising campaign to support the project of a new building to house a Program in Integrated Design in Cambridge.

In July 2016, the current director met with the mayor of Cambridge, Doug Craig, to discuss plans moving forward. Mayor Craig, for whom the construction of the School of Architecture was a first project, is looking forward to being involved in what he could call his last project, as he is now on his last mandate. The director of the Cambridge Consortium, Tom Watson, is also keen on participating in this new campaign. Other members of the community, including Mr. Hugh Thompson, have also been reaching out to express their support to the School's future initiatives. In short, it is clear that we will have support from the local community as soon as we will have obtained the University's approval on our plan for a new program in Integrated Design. Specifically, our intention is to present our proposal at the Faculty level this Fall so that we can move through the different levels of approval within and beyond the University by early 2017. This is also when we would hope to launch the campaign around Design. Tom Watson will be leading in the Community to raise \$4,000,000, while the City has pledged \$8,000,000. This would be completed with funds from the provincial and federal governments, to build the facility to house the new program, doubling the current workshop, as well as the student population in Cambridge.

As part of this Campaign, we would like to secure endowments that could benefit Architecture as well the enlarged student communities. We are envisioning endowments for a visiting professorship, internships as well as scholarships. In addition to this, we would like to secure additional recurrent funding towards lectures, symposia and dissemination to provide a more vibrant context for the students around additional international guest lecturers, annual symposia, and a School-run publication that could formalize the editorial approach to the

series of books published under Riverside Press. For this, it will be important to rekindle the relations with our alumni, and to put sustained efforts in communicate to our Waterloo Architecture alumni worldwide what our current initiatives are.

Ultimately, the intention is to build stronger links to different communities – here in Cambridge, academically with the University and internationally with practitioners and scholars worldwide.

In the meantime, development activities have mostly focused on the local community, bringing thousands of dollars each year to support student research and design activities in the Cambridge core area. The City of Cambridge, industrial partners, and local foundations such as Christie Digital and the Musagetes Foundation have provided on-going support in the form of finances, services, and equipment.

Otherwise, two of the more successful fundraising projects within the Architecture School since 2011 have been in support of exhibitions curated by the School's faculty. Building Waterloo Region raised \$118,980 in private donations for a program of eight exhibitions tracing the history of settlement in the Waterloo region from the first nations to the creation of the LRT. The project was led by Professor Rick Haldenby and Esther Shipman, Curator of the Design at Riverside Gallery. *The Evidence Room* was an exhibition held at the 15th International Architecture Venice Biennale led by Waterloo Professors Anne Bordeleau, Donald McKay, Robert Jan van Pelt, in addition to arts producer Sascha Hastings. *The Evidence Room* raised \$483,000 in private donations.

In 2013, money was also raised for the school when Professor Rick Haldenby stepped down as Director. Approximately \$37,500 was raised for the Rick Haldenby Rome Scholarship and \$35,500 for the Barry Bell Graduate Scholarship.

3.10 ADMINISTRATIVE STRUCTURE

3.10.1 ADMINISTRATIVE STRUCTURE

The University of Waterloo is incorporated as a post-secondary degree granting institution in Ontario by virtue of the University of Waterloo Act passed by the Legislative Assembly of the Province in March 1959. The School of Architecture is one of eight academic units within the Faculty of Engineering. The others are the Departments of Civil and Environmental Engineering, Mechanical and Mechatronics Engineering, Systems Design Engineering, Electrical and Computer Engineering, Chemical Engineering, Management Sciences, and the Conrad Centre (CBETC). These units all differ in size, ranging from 20 in architecture to about 90 faculty members in Electrics and Computer Engineering has 86 faculty members.

The heads of each of these units, the Director in the case of the School of Architecture and CBETC, and Chairs in the six academic departments, report to the Dean of the Faculty. Each operates with the same level of autonomy with control over the academic, financial and administrative aspects of their unit. Each also participates in the monthly meeting of Chairs and Associate Deans, the Academic Policy Committee, the Faculty Council and the Engineering Planning Committee. While the Dean has final authority on administrative and financial matters, each unit operates with its own budget and the full autonomy provided to School and Departments by university policy.

The School of Architecture relocated from the Faculty of Environmental Studies to the Faculty of Engineering in 2005. The support has been great in areas such as recruitment, development, marketing, alumni/ae relations, computer systems and technical services. New scholarship support for international students has come from the faculty. The Waterloo Engineering Endowment Fund has exceptional resources to assist in acquiring new computing and technical equipment for the School of Architecture and has served the school very well.

Within the School, the Director is supported by three Associate Directors, one responsible for Undergraduate Affairs, one for Graduate Studies and one for the Rome Program. In this way, administrative responsibility is divided among at least four faculty members. In addition, the fact that the School is located away from the main campus and follows a specific mandate of professional education, professional liaison and community engagement is reflected in the fact that there is a Administrative Officer, not found in other academic departments.

This lends substantial administrative and programming capacity.

O'Donovan Director

Anne Bordeleau

Associate Director of Undergraduate Affairs

(also referred to as Undergraduate Officer):

Lola Sheppard

Associate Co-Directors of Graduate Affairs

(also referred to as Co-Graduate Officers):

Adrian Blackwell and Valerio Rynnimeri

Associate Director of Rome Program

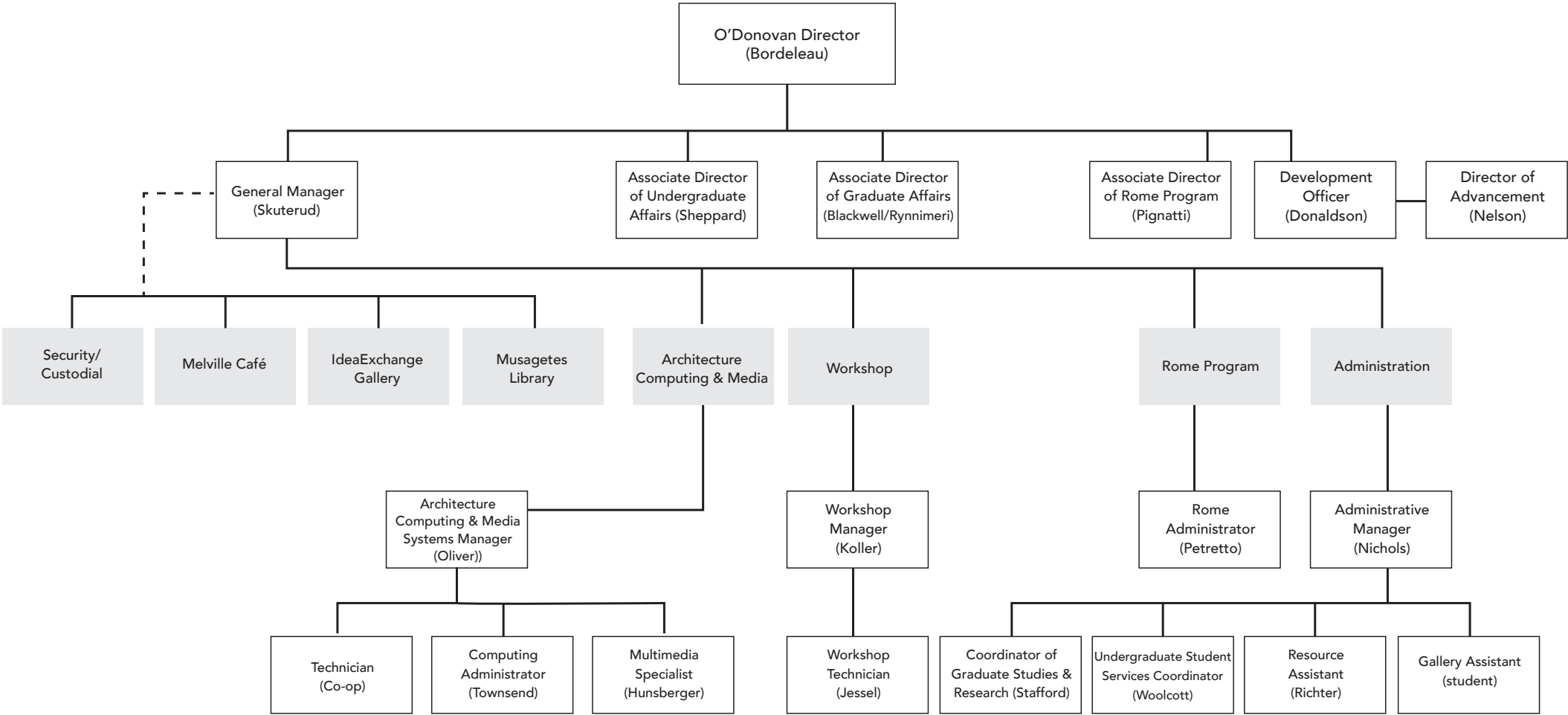
Lorenzo Pignatti

Administrative Officer

Mona Skuterud

FIGURE 22 | UWSA ORGANIZATIONAL CHART

The Chart below, prepared by the University of Waterloo Faculty of Engineering, outlines the organizational structure of the School's support staff.



Virtually all faculty and staff members assist in the School's administration and operation by serving on committees charged with overseeing specific parts

3.10.2 COMMITTEES

Accreditation Committee

Anne Bordeleau
Rick Haldenby
Andrew Levitt
Rick Andrichetti

Undergraduate Affairs Committee

Lola Sheppard (undergraduate officer/chair)
Rick Haldenby
Maya Przybylski
Terri Boake
Robert Jan van Pelt
Donna Woolcott

Graduate Affairs Committee

Valerio Rynnimeri (co-graduate officer/-co-chair)
Adrian Blackwell (co-graduate officer/co-chair)
Dereck Revington
Marie-Paule Macdonald
John McMinn
Robert Jan van Pelt
Emily Stafford

Admission Committee

Rick Andrichetti (chair)
Andrew Levitt
Anne Bordeleau
Rick Haldenby
Donna Woolcott

Tenure and Promotion Committee

Anne Bordeleau
Terri Boake
Rick Haldenby
John McMinn
Lola Sheppard
Maria Anna Polak (external)

Awards Committee

John McMinn
Terri Meyer Boake
Rick Andrighetti
Lola Sheppard
Donna Woolcott
Emily Stafford

Library Advisory Committee

Effie Patelos (Architecture librarian)
Anne Bordeleau
Robert Jan van Pelt
Marie-Paule Macdonald
Dereck Revington
Graduate Student (to be filled)
Undergraduate Student (to be filled)

Integrated Design Curriculum

Anne Bordeleau
Terri Boake
Rick Haldenby
Dereck Revington

Digital Hiring Committee

Anne Bordeleau
Ila Berman
John McMinn
Dereck Revington
Lola Sheppard
Wade Brown (grad student)
Jake Read (ugrad student)

Computing and Media Advisory Committee / Website and Communication Committee

Matthew Oliver
Amy Townsend
Terri Boake

Design at Riverside Advisory Committee

Helen Kelly (IdeaExchange, CEO)
Aidan Ware (Gallery Director)
Esther Shipman (Curator)
Anne Bordeleau, Director
Adrian Blackwell
Desire Geib (student representative)

New Resources Allocation Model Working Group

Anne Bordeleau
Lola Sheppard
Elizabeth English
Donald McKay

House Committee

Dereck Revington
John McMinn
Mona Skuterud

Health & Safety Committee

Sara Perkins

Heinz Koller

Colleen Richter

In relation to its ongoing operations, the School of Architecture is very autonomous. The Director, Associate Directors, Administrative Staff and various School Committees work effectively through the various administrative decisions. The different committees are tasked to review existing practices and make suggestions with regards to their improvement as necessary. Proposals from these various committees are discussed in faculty meetings prior to their adoption. When the impacts of the changes are internal to architecture, they can be implemented once adopted by faculty. When these changes require further approvals at the faculty levels, they are first approved at the School and then discussed in the appropriate Committees within Engineering. It is very rare for the Faculty to raise issues with any of the decisions that are brought forward by the School. The only questions that are asked pertain to the intentions behind proposed changes and simply insure that their implementation aligns with University Policy. What the administrative structure supports is a transparent and rigorous process that respect the autonomy of departments while preserving the integrity of the Institution and its mandate as a whole.

3.11 PROFESSIONAL DEGREE AND CURRICULUM

degrees offered

The professional program in architecture at the University of Waterloo is a single stream that consists of two parts: a pre-professional degree, Bachelor of Architectural Studies and a professional Master of Architecture. The overall structure of the curriculum is the reverse of many schools of architecture in that it has a clear focus on professional knowledge and skill in the early years in order to take full advantage of the co-operative learning opportunity, and becomes more open at the upper level undergraduate. The graduate program has only a very small core of required professional courses, and in general, students have significant choice and a high degree of independence. In the same way the program operates without a division between education and practice, or school and community, there is also a continuous overlap between professional and general education.

bachelor of architectural studies (honours, pre-professional, co-op)

The Bachelor of Architectural Studies has a dual focus, simultaneously providing a broadly based liberal education and, at the same time, a foundation of professional skills and knowledge that prepares students to succeed in their required co-op work experiences and future careers, to undertake independent research at the graduate level and to continue to learn throughout a careers in design.

Students interested in applying to the program in architecture are encouraged to pursue a broad based curriculum in high school, covering arts; humanities; social sciences; science and mathematics. Students coming from secondary school directly follow the admission requirements as outlined in the Undergraduate Calendar. Students who are in University are advised to include fine arts studio and humanities courses in their program. The School offers information to applicants on the web site, at the Ontario Universities Fair and through two open houses each year, one in November, one in March. These events provide detailed information on the program, tours of the facilities, and opportunities to speak with staff, faculty and students.

The admissions process weighs academic background in selecting the students who are invited for interviews, but the interview, portfolio review and précis writing exercise are used to probe the intellectual curiosity, critical ability, powers of observation and judgment, establishing as well effective admission criteria in visual, verbal and written communication. No student is admitted without performing at a high level in all three areas: interview, portfolio and précis.

The pre-professional architecture program consists of eight academic terms of study. To complete the four-year BAS, students must obtain 48 term course credits. A total of 14 credits are gained in the core courses in the culture theme area, and another 4.5 credits are free electives that may be selected from any faculty in the University. Hence, liberal studies courses make up 35% of the undergraduate program.

Each academic term in the BAS is conceived as a coherent learning opportunity in which the academic courses offered are related one to another and to the design studio. Each term includes elements of general education and professional studies. The interconnection of knowledge in our field is emphasized, as is the interrelation of practical skill and theoretical knowledge. In general, each term in the BAS consists of a Design Studio, a Cultural History and Theory course, and other courses in technology, environment, landscape, urbanism or representation.

From its foundation 50 years ago the University of Waterloo School of Architecture has been committed to viewing architecture in a comprehensive and integrated fashion as a humanistic discipline, and a field of social, cultural, technical, formal and aesthetic speculation. The curriculum includes a core sequence of courses in the Cultural History theme that present architecture and architectural history as an integral part of human accomplishment and cultural expression. The courses set an historical and conceptual framework that includes history, philosophy, visual art and urban studies. Between the 1B and 3A terms of the undergraduate program the Cultural History courses carry a credit weight that is double the normal term course and two-thirds the value of a Design Studio. This high weighting reflects the fundamental role in providing a comprehensive liberal education in the formation of professional architects.

HONOURS BAS DEGREE – TOTAL 30.5 CREDITS ¹

	TERM	DESIGN	CULTURAL HISTORY + THEORY	ENVIRONMENT + TECHNOLOGY	VISUAL + DIGITAL MEDIA	URBANISM + LANDSCAPE	ELECTIVES + PD ARCH/PD
1A 4.0 credits	FALL	Arch 192: Design Studio (1.50)	Arch 100: Introduction to Architecture (0.50) Arch 142: Intro to Cultural History (0.50)	Arch 125: Principles of Environmental Design (0.50) Arch 172: Building Construction I (0.50)	Arch 110: Visual and Digital Media I (0.50)		
1B 4.0 credits	WINTER	Arch 193: Design Studio (1.50)	Arch 143: Ancient Worlds & Foundations of Europe (1.00)	Arch 126: Environmental Building Design (0.50) Arch 173: Building Construction II (0.50)	Arch 113: Visual and Digital Media II (0.50)		
SPRING: vacation							PD Arch 1: Portfolio Development
2A 4.0 credits	FALL	Arch 292: Design Studio (1.50)	Arch 246: Pre-Renaissance to Reformation (1.00)	Arch 260: Principles of Structures (0.50) Arch 263: Integrated Environmental Systems (0.50)	Arch 212: Digital Fabrication (0.50)		PD Arch 2: Co-op Fundamentals for Architects
WINTER: co-op term 1							PD Arch 3: Electronic Communication & Web Design
2B 4.0 credits	SPRING	Arch 293: Design Studio (1.50)	Arch 248: Enlightenment to 19th Century (1.00)	Arch 264: Building Science (0.50) Arch 276: Timber Design & Construction (0.50)		Arch 225: Theory and Design of the Contemporary Landscape (0.50)	
FALL: co-op term 2							PD Arch 4: Writing, Editing and Research
3A 4.0 credits	WINTER	Arch 392: Design Studio (1.50)	Arch 342: Modernism to 21st Century (1.00)	Arch 362: Steel and Concrete: Design, Structure & Construction (0.50)	Arch 313: Advanced Visualization (0.50)		Elective: Any discipline (0.50)
SPRING: co-op term 3							One of: PD4, PD5, PD 7
3B 3.5 credits	FALL	Arch 393: Design Studio (1.50)		Arch 465: Advanced Structures (0.50)		Arch 327: Architecture of the Urban Environment (0.50)	Elective: Any discipline (0.50) Elective: Any discipline (0.50)
WINTER: co-op term 4							
SPRING: co-op term 5							
4A 3.0 credits	FALL	Arch 492: Design Studio (1.50)	Arch 446: Italian Urban History (0.50) Arch 449: Develop. of Modern Italian Architecture (0.50)			Arch 428: Rome and the Campagna (0.50)	Option to sub Arch 428, 446 OR 449 with Elective: Any discipline (0.50)
WINTER: co-op term 6							
4B 4.0 credits	SPRING	Arch 493: Design Studio/Comprehensive Building Design (1.50)	Arch 442: Modernisms: 20th Century Culture & Criticism (0.50)	Arch 473: Technical Report (0.50)			Elective: 5xx (0.50) Elective: 5xx (0.50) Elective: 5xx (0.50)

1. Changes have been approved to reduce the credit count to 29.0. This will include a reduction from 9 to 6 elective requirements over the course of the degree.

Taken in total the Cultural History courses (Arch 100, 142, 143, 246, 248, 342, 446, 449, 442) represent 13 term courses. With the addition of 4 free electives, 17 credits of the 42 that are required to obtain the BAS are dedicated to general education.

The Honours BAS Degree Table on the opposite page clarifies this information.

Students must satisfactorily complete all the core courses in a term to progress. It is possible to miss one course and still proceed, but not more and not Design Studio.

In addition to completion of this core academic curriculum, the co-operative education program requires students to complete the equivalent of at least 5 approved four-month co-op work terms. These terms are treated as credits that appear on the transcript. Accreditation of a term of work requires the submission of an evaluation report by the employer, which satisfies the standards of the co-operative program. The co-op timetable indicates the sequence of co-op Work Term opportunities. In total, students are required to submit three co-op Work Term Reports upon completion of the work term.

The completion of the BAS degree with a minimum cumulative average of 75% qualifies a student for admission to the Master of Architecture program. The BAS is an Honours degree and has been accepted by other programs and institutions as a basis for admission into professional programs such as law, education, engineering and business administration, or academic programs in philosophy, history and English.

master of architecture

At Waterloo, the difference between the two components of the architectural program - the Honours BAS and Master of Architecture - is clear, both in structure and in intent.

Undergraduate students learn the discipline, craft, skills, lore, science and culture of architecture - training in the conduct and practices of the profession and the challenges of architectural practice. Since the undergraduate program develops professional skills, students in the Masters program are able to undertake more speculative research and specialization.

The University of Waterloo Masters Program in Architecture has three objectives:

- professional qualification for students,
- the conduct of useful research in the field, and
- outreach into the community and beyond our field

The Masters program in Architecture combines elements of a professional Masters program and a research-oriented Masters program. It offers preparation for entry into the profession of architecture (together with an extension of the knowledge base required of practicing professionals, now and in years to come) to students with Waterloo's BAS degree, or an undergraduate degree in architecture equivalent that meets necessary CACB requirements. Though all external applicants come with an undergraduate background in architecture, only those that meet the specific CACB criteria addressed in Waterloo's undergraduate program can proceed directly into the Masters Thesis year.

Until recently, a Qualifying Year was mandatory for all external applicants applying with an undergraduate degree in architecture that did not meet all of the necessary CACB criteria. This was to ensure all applicants to the Masters program met the key components required by the CACB. Recent changes to the Masters program have eliminated this Qualifying Year.

The Masters program has become a new two-year degree program, with those coming from the Waterloo BAS (and those holding this equivalent pre-professional degree) admitted directly into the Second Year of study, also known as the Thesis Year. All other applicants enter into the First Year. This First Year contains transitional coursework that covers essential criteria taught during the Waterloo BAS, and includes a comprehensive design studio. Students also take advanced structure courses and cultural history and theory courses.

The MArch Co-Op is an additional degree option offered to all accepted Two-Year Masters students, that allows students to complete Co-operative Work in the summer term between the First and Second Years of the Masters program. These changes to the graduate program were all done to make it more accessible to students from other schools wishing to complete their MArch at Waterloo.

In addition, the MArch Water program was also recently implemented in 2015. Taking advantage of the fact that over 130 faculty members are involved in water research at the University of Waterloo, the collaborative program in Water is jointly offered by ten departments across the Faculties of Arts, Engineering, Environment, Mathematics and Science. It is intended to promote multidisciplinary as well as interdisciplinary perspectives related to water.

Overall, the MArch program is designed to develop the skills and intellectual curiosity required for a leadership role in the profession and in society, and for entry into doctoral studies.

The First Year of the MArch is composed of 7 core courses and an elective credit worth a total of 6.0 credits: a Modern Architecture course (0.50), Contemporary Theory, Culture, and Criticism (0.50), Science of the Building Envelope (0.50), a Steel & Concrete course (0.50), the Comprehensive Design Studio (1.50) and associated Technical Report (0.50), another Graduate studio (1.50), and an open graduate elective (0.50).

Though referred to as a Thesis Year, the Thesis project actually comprises a minimum of three and maximum of six academic terms of study to complete six term course credits. The Master's Thesis, the core academic component of the program, develops research and analytical/interpretive skills, as well as design skills - i.e., the synthetic skills of architecture.

A total of 2.0 credits are gained for the completion of the Thesis. During the first two terms of the Thesis Year, students are required to take two Thesis Research and Design Studios that each comprise 1.5 credits, for a total of 3.0 credits. They are also required to follow a course in methodology, Architecture Research and Analysis, for 0.5 credit. One credit is acquired through the

M.ARCH DEGREE – TOTAL 14.0 CREDITS

	TERM	DESIGN + RESEARCH STUDIOS	CORE CLASSES	ELECTIVES	MILESTONES
YEAR ONE 6.0 credits	FALL	Arch 691: Design Studio/Comprehensive Building Design (1.50)	Arch 642: Modern Architecture (0.50) Arch 671: Technical Report (0.50) Arch 673: Science of the Building Envelope (0.50)		
	WINTER	Arch 690: Design Studio (1.50)	Arch 640: Contemporary Theory, Culture, and Criticism (0.50) Arch 662: Steel & Concrete: Design, Structure & Construction (0.50)	Elective: Arch 6xx (0.50)	

SPRING: term off (M.Arch + M.Arch Water) OR co-op/graduate research assistantship (M.Arch Co-op)

YEAR TWO 8.0 credits	FALL	Arch 692: Thesis Research & Design Studio I (1.50)	Arch 610: Architectural Research Analysis (0.50)	Elective: Arch 5xx/Arch 6xx OR Any Discipline 5xx/6xx (0.50)	
	WINTER	Arch 693: Thesis Research & Design Studio II (1.50)	Arch 655: Architectural Professional Practice: Ethics, Business, Legal Issues and Contract Administration (1.00)	Elective: Arch 5xx/Arch 6xx OR Any Discipline 5xx/6xx (0.50)	
	SPRING			Elective: Arch 5xx/Arch 6xx OR Any Discipline 5xx/6xx (0.50)	Thesis: (2.00) [option to extend]

- Up to one half credit (0.50) may be an Arch 685: Independent Reading Course or Arch 686: Competitions in Architecture course.
- Up to one half credit (0.50) elective may be taken in other departments
- Students enrolled in M.Arch WATER are also required to take WATER 601: Integrated Water Management (0.50) and WATER 602: Integrated Mater Project (0.50). One half WATER credit (0.50) can be counted to fulfill one half (0.50) M.Arch elective requirement

completion of the Professional Practice core course. The remaining 1.5 credits are gained through the completion of three electives chosen from the available course selection to support their research. Some of these credits may be obtained outside the School of Architecture.

3.12 STUDENT PERFORMANCE CRITERIA

3.12.1 CURRICULAR GOALS + CONTENT

honours bachelor of architectural studies (pre-professional)

course curriculum descriptions

The detailed content of the core program in architecture is presented in the specific course descriptions in Supplemental Information Section 4.3, but certain aspects of the overall structure and intention of the program merit some discussion.

theme areas

Courses in the Honours Bachelor of Architectural Studies degree are arranged in five main thematic groups that run throughout the curriculum. Each of the academic streams presents a coherent body of knowledge following its own internal logic in respect of sequence and specific content areas.

Design is the dominant and synthetic piece of the program, to which all other streams are conceived as supporting.

The **Cultural History & Theory** stream has the largest number of courses amongst all supporting streams, beginning in the first two years with a sequence of broad and very demanding courses upon which base four more courses build throughout the degree program.

Visual & Digital Media introduces multiple methods of visualization that act as communicate, analytical, and generative tools for architecture.

Technology & Environment teaches students an understanding of materials and methods, building technologies, and environmental issues and systems critical to the making of architecture.

The new **Urbanism & Landscape** stream introduces students to urbanism and landscape and the organization of natural and human ecologies.

foundation skills and knowledge

The core curriculum is structured in the early years with dominant courses delivering fundamental knowledge and skills. In first and second years the emphasis is on basic knowledge, skill development, reflection and application, especially in the Technology & Environment stream. Throughout the program, Cultural History & Theory courses provide an historical background and treats architecture as a form of cultural expression and cultural praxis, thus equipping students to deal with the increasing complexity of successive design studio projects. Students enter their first Visual and Digital Media course in 1A and take a second in 1B, thus immediately teaching students the basics of architectural representation in both physical and digital form. Most of the courses relating to Urbanism & Landscape are offered in the upper years, and opportunities to take electives in specialized areas of any of the streams is available later on as well. The intention is to sustain more complex, synthetic and independent activity in the upper years of the program. Even at the introductory level, though, design problems are complex, intellectually challenging and open. The student curriculum is 'front-loaded' as students need to be prepared for their first work experience after the 2A school term.

a design curriculum

The Design Studio courses have a structure, sequence and deliberate content. General themes are well established and individual faculty members responsible for developing specific course outlines and problem statements must work within this framework. At the same time, the program is intended to foster independent thought, sophisticated judgment and creative ambition on the parts of both faculty and students. There are also deliberate cross-over's in theme and content between studio and academic courses. By tracing the outlines of the design studio sequence it is possible to demonstrate the weaving together of the content of the five streams.

The 1A first term studio deals with the development of basic technical, representational and conceptual skills. Through projects centred on the foundational design principles of site, structure and skin, students are introduced to two and

three-dimensional drawing techniques, principles of architectural interpretation, architectonic composition, and the properties and uses of materials and structures.

In 1B, students are introduced to basic issues of integrative architectural design through case studies of designed objects and buildings leading to the programming and design of residential space in an urban environment.

The 2A term examines the issues of design and construction. Exercises progress from studies of specific domestic conditions and the supports they require through unit studies, analysis of complex urban sites and, finally, to multiple unit building proposals, taking into account the urban, ethical and legal context of design.

The 2B studio expands the field of design speculation to engage larger social and environmental concerns. Investigations are sited in environmentally complex locations in order to invest the design activity with a sense of the vitality and fragility of natural systems. Students carry out site mapping exercises, investigate light and temporary forms of construction and examine the relationships of culture and tourism to issues of environment and culture. The studio can range from investigations of larger territories to opportunities to engage in design-build projects.

In 3A the problem of building becomes much more focused. Case studies examine the theme of the city in modern architecture. Students produce complete and comprehensive designs for a complex building in an urban setting. The projects are developed in detail, with articulated interior spaces and a critical examination of the environmental performance of large, mixed use, urban buildings.

In the 3B term students are able to select from a group of Option Studios in which faculty members lay out a theoretical proposition and invite students to explore the implications in studio groups of approximately 15 students. The 3B term sets students up to begin preparing for their Masters research.

The 4A Rome studio brings students with well-developed technical, formal and analytical abilities to a city and a country of incomparable architectural, historical, and cultural wealth. The curriculum addresses the culture of the city, modern interventions in culturally charged contexts, and the institution within the scope of western cultural and architectural history.

The 4B studio completes the Honours BAS program by asking students to synthesize and demonstrate skills and knowledge gained over the previous seven studio terms through the comprehensive elaboration of a building design proposal. Students produce an architecture project including detailed development of the material, structure, enclosure, assembly, systems and environmental sustainability.

honours bachelor of architectural studies summary

The design curriculum is a structure that deliberately weaves together cultural, theoretical, technical, environmental, urban, visual, and digital media themes. While design is never considered an instrumental or deterministic process, the studio curriculum at Waterloo does provide a measured sequence of experiences by which students acquire and apply the required skills, knowledge and critical ability.

The Comprehensive Building Design studio in 4B demonstrates the ability of students to resolve, in a complete, competent and responsible manner, the complex integration of technical, structural, legal and environmental concerns that is the ultimate professional testing grounds of an architectural proposal. Having the Comprehensive Building Design in the 4B term opens up possibilities for the self-directed, open and critical exploration of a particular aspect of architectural research and design within the Masters in which students conceive and develop their work on the same intellectual framework of the undergraduate program. Indeed the interweaving of theme areas and design studios appears across the entire educational experience at the School. In addition specific activities and skills are promoted in all courses and at all levels of the program.

3.12.2

CURRICULAR SUMMARIES

a) design across the curriculum

Design is the centre of an architect's activity and education. It is therefore reasonable that the studio should not be the only context in which knowledge and intuition are applied to architectural problems. At Waterloo design goes on in the academic support courses as well. More narrowly focused than the comprehensive projects assigned in studio, the design exercises required in other courses are concerned with specific application and synthesis of cultural, environmental and technical studies.

Design projects are given in all theme areas. Arch 126: Environmental Building Design requires students to develop a design proposal for a low energy research station set in a challenging climate region, including an energy analysis of the project. Arch 113: Visual and Digital Media 2 and Arch 173: Building Construction 2 combine their final assessment, with students required to submit a proposal to the design competition set out by the Steel Structures Education Foundation, involving the highly-developed design of a building whose materiality focuses on steel construction and expressed detailing.

Courses in the Environment (Arch 125, 126), Building Technology (Arch 172, 173, 263, 264, 570) and Structural Systems (Arch 260, 276, 362, 465) each set a crucial foundation for the Arch 493: Comprehensive Design studio. As courses primarily taken in the first and second years, they also give students the means to engage with real-world design issues throughout their Undergraduate studios. These courses add elements of practicality and technicality deeply tied to professional design practice.

b) writing across the curriculum

Waterloo graduates receive a liberal education as an integral part of the curriculum and culture of the School. Ideas that are expressed clearly in writing are of the greatest importance in the education of the architect. Waterloo's curriculum is rooted in the belief that ideas that are expressed clearly in writing are of the greatest importance in the education of the architect. Writing at Waterloo goes on in almost every course.

A prime objective of the introductory Cultural History courses is the teaching of skills in written expression, composition and argumentation. Across most of the School's thematic areas, written reports are required every term. These documents range from fictional texts (Arch 428) to programs of accommodation (Arch 193, 292, 293, 392) and include architectural analysis and critique (Arch 100, 446), a Technical Report (Arch 473), and short essays written in the context of quizzes or examinations (Arch 100, 125, 142, 143, 246, 248, 327, 342) as well as longer research papers, such as in Arch 442: Contemporary Architectural Theory or Independent Research Electives (Arch 385/485). In addition, the Arch 346/686: Competition Elective asks for essays on precedents and initiatives in the preparation and execution of a design project.

c) collaborative work across the curriculum

Architecture and architectural education are often criticized for their continual emphasis on individual creativity and genius. As an exclusive model and standard of value this is clearly inappropriate in a world where teamwork and interdisciplinary collaboration are the norm. The individual student at Waterloo, therefore, finds him or herself working in groups at least once in every term for varying lengths of time.

Teamwork begins in first year in the context of students working together on precedent case studies or producing their final Steel Design competition in pairs (as part of Arch 113 and Arch 173 combined final project). Through second and third year studios, students continue to work as teams in carrying out and presenting case studies and other analytical projects.

d) research across the curriculum

Architecture is profoundly in need of a broad and balanced knowledge base. Architects must be able to construct persuasive, well-researched arguments and evidence in order to reverse the tendency within economic, environmental and social discourse to ignore or debase design and aesthetic criteria.

At Waterloo research is treated as an element of all intellectual and creative activity. A workshop introducing research skills is given in the first year orienta-

tion program. Case studies are used repeatedly in design studios throughout the four years of the undergraduate program.

Core courses in second, third and fourth year form part of the curriculum of the iconography and environmental streams of study. In the iconography stream three courses focus on a critical analysis of the cultural ramifications of the Enlightenment, Romanticism and the Modern movement. They are intended to strengthen and complete the undergraduate student's ability to position their architectural proposals within a cultural framework. There is also a course that focuses in architectural criticism in the last term of undergraduate studies. In the environmental stream one course in second year traces the history of shifting cultural/social positions relative to the relationship with the landscape and the environment.

As part of the structure of the core curriculum, these courses are particularly intended to provide a foundation for the development of graduate thesis proposals and graduate theses. In this way the program seeks to avoid theses that are too narrow. Rather, they should be aware of and responsive to the range of cultural and environmental ramifications inherent in each student's particular area of research interest.

e) practice across the curriculum

The University of Waterloo School of Architecture offers a fully co-operative program in the BAS, placing students in offices once they have completed their 2A academic term; practice is a constant presence within the educational experience. But the need to provide students with skills in order to allow them to contribute to offices during their early work terms imposes an obligation to balance fundamental knowledge and design speculation with pragmatic and professional concerns in first and second year courses. It is especially important that first year studio, building construction and the visual communication courses, develop skills and awareness of the representational techniques that will serve students when they enter offices for the first time.

In the BAS program, the introductory Building Construction and Environmental Building Design courses are all scheduled in the first three terms of study.

This program structure is in recognition and response to the importance of an early development of an understanding of issues surrounding technical competence and environmental responsibility, and to prepare students for a meaningful and enriching co-operative placement experience in their first work term between 2A and 2B academic terms.

This emphasis on practice returns at higher levels once students have begun their work term placements. The Co-operative Education and Career Services Department provides workshops for second year and other students preparing for co-op employment interviews. Workshops cover resume writing, networking, international jobs, and interview skills. The School and CECS have set up the Paths to Practice event to bring the discussion of careers and career paths directly to the students while they are in school.

The Professional Development courses required during the first half of a student's degree enhance the overall work-integrated learning experience of co-op students by providing engaging and relevant online courses to improve students' employability and workplace productivity. With four required PD courses specific to architecture – portfolio development; co-op fundamentals; electronic communication and web design; and writing, editing, and research – and a choice of another Waterloo PD course, the program promotes the integration of what is learned at work with what is learned during the academic terms through critical reflection. The completion of three work reports near the end of the degree furthers students' awareness of the role of internship in professional development, and encourages students to take a critical position regarding their academic development as it relates to work term experiences.

The 4B Comprehensive Building Design provides a forum for assessing the student's ability to gather and synthesize knowledge and skills gained in the program through the comprehensive development of an architectural proposal.

master of architecture summary

As noted in the introduction to this section, the Master of Architecture program has three basic objectives:

- Professional qualification for students;
- The conduct of useful research in the field;
- Outreach into the community beyond our field

The following section discusses these aspects of structure and intention as they are elaborated within the second phase of the professional curriculum - the Master of Architecture graduate program.

Note on Graduate Admissions

The majority of students admitted to the M.Arch program are successful graduates of the BAS. These students go through a process of application and review, but they do not present portfolios or any written exercises. The minimum required average for internal applicants to be accepted into the M.Arch program is 75%, although accommodations to this requirements are occasionally made.

All external applicants are reviewed by the Graduate Studies Committee. To be considered, a student will need to have completed a four-year architecture program at an accredited university in Canada or the United States, or the equivalent in another jurisdiction. Applicants must meet the minimum University of Waterloo requirements for admission (75%) or the minimum equivalents based on the Country of study as outlined in the International Admissions placement guide. Any applicant who meets the minimum average (or equivalent country requirements), holds a pre-professional undergraduate Architecture degree and meets the ELP (English language proficiency) minimum test score will then be put forth to the admissions committee for reference review and portfolio evaluation. While a précis was previously required, this has since been removed. However, one of the issues that has been arising at times with students coming from different programs internationally is the fact they tend to have been less

exposed to cultural history and critical thinking. This is the reason why we now specify in our admissions requirements that the application process “may include a written exercise or interview.” Applicants are now asked to both send in a portfolio and to discuss one particular building. This small exercise is related to the expectation that students enrolled in our graduate program will be able to exercise critical thinking.

Until 2014, the School had implemented a qualifying year for students accepted to the MArch, but whose undergraduate architecture degree did not meet all CACB criteria of Waterloo’s BAS. The purpose of the qualifying year was to ensure that all students completed the Comprehensive Building Design requirement. In addition to this, the School was keen on ensuring that students who did not conduct their undergraduate studies at Waterloo could benefit from its strong characteristics and be exposed to the broad cultural framework within which architecture is approached in our program.

Since 2014, the Qualifying Year has been replaced with the implementation of a new 2 Year MArch program. Nearly all external applicants are now required to complete the First Year of study, which includes a Comprehensive Building Design studio. Applicants from the Waterloo BAS, and those applying with a degree deemed equivalent to the BAS, enter directly into the Second Year, also known as the Thesis Year.

theme areas: design, practice, and research

At the graduate level, all theme areas share the insight that architectural practice is marked by uncertainty and chance; students explore the unforeseen and unexpected circumstance as an occasion of opportunity and renewal, and develop the ability to make dependable predictions in uncertain situations and assess the moral implications of their stance.

a) design

Design studies form the major part of the core Masters curriculum, remaining the primary focus of the school, informed by the knowledge and skills developed in other theme areas.

The core design curriculum in the Masters program is structured with the dual intent of providing students with a critical and focused foundation for their thesis work by the end of their first four months of study in the Fall (Thesis Research + Design Studio 1). Students take a second TRD studio in the following Winter term to continue developing their core ideas. This provides the support and latitude necessary to the more independent development of their individual research interests in subsequent terms, to the completion of the Master's Thesis.

At the centre of the Master's program is this self-directed thesis. In this work, the School expects students to develop a critical, independent and fundamentally open-ended inquiry within the boundaries of the practical, theoretical and artistic issues of architectural conception.

b) practice

The professional practice course forms the second component of the core graduate curriculum. At the Masters level, the professional course focuses on acts and codes, specifications, and the financial, legal, ethical, and managerial aspects of professional practice. All the issues are presented in a critical context, with course exercises that prepare students for the conditions of practice and the experience of the licensing exams.

But the boundary between education and practice seems particularly insubstantial in the Waterloo graduate program as some students are involved with external 'clients' in their projects, some are involved in 'service learning', literally delivering design and designed products to the world outside and some carry out research and design projects for the University. While careful to respect the spirit and letter of the Architects Act, the graduate students are involved in a raft of activities that are, in essence, 'practice.' It is also true that some students engage in very speculative work that stretch the boundary of architectural practice as currently understood. Nevertheless, the questions they ask are always rooted – more or less deeply – in some dimensions of the practice of architecture.

c) research

Research is, like practice and design, at the core of the Masters' program. What students are guided through in their graduate degree is how to undertake research in architecture. This can mean pushing the boundaries of practice, engaging in material research, conducting surveys or testing models, etc. Whether in their "Thesis Research and Design" studio, in core courses such as Architectural Research and Analysis, or in their elective courses, students are supported in ability to frame a research question, document potential sites, speculate on programs and explore through iterative design.

While a course such as Arch 610 Architecture Research and Analysis provides students with a survey of disciplinary and cross-disciplinary research and methods, the electives enables students to gain knowledge of the range of fields of investigation. They may engage in design-build or digital fabrication, study the origins of ornamentation or consider architecture and representation. Over the past five years, students have had a broad selection of elective courses to choose from, including "Architecture in the Anthropocene", "Material Ecologies", "Ornament and its Discontents". There have been courses on memory, on books, on utopia, on amphibious architecture, on Russian avant-garde architectures, courses on building science or on the environment, on philosophers or urban theory. In short, research permeates the graduate curriculum, and cuts across all streams – design, cultural history and theory, landscape and urbanism, technology and environment or digital and visual media.

Technology offers elective courses in structure, construction, computer applications, and building systems/materials/ methods that engage the technical aspects of building. At the graduate level, Technology courses such as Arch 673: Science of the Building Envelope, Arch 570: Architecturally Exposed Structural Steel and Arch 570: Design Build Workshop are advanced seminars that take advantage of faculty specialties in response to students' interests and in support of particular research by graduate students. Cultural and theory courses, a unique strength of the architecture undergraduate program at Waterloo, are further developed at the Master's level. Here, the courses respond to the critical, self-directed and open-ended inquiry of the graduate thesis. Elective courses in this stream such as Arch 684: Architecture in the Anthropocene,

Arch 684: Ornaments and Its Discontents and Arch 684: Photographic Mediation of Architecture, encourage students to undertake original research and test personal and professional philosophies in order to both develop graduate thesis work and prepare them for future reflective activity and professional practice. Likewise, courses such as Arch 623 Ecosystem Design for Urban Landscapes and Arch 684 Material Ecologies, are intended to expose and negotiate the internal contradictions and opportunities that inevitably arise in the dialogue between architecture and its environment.

At the graduate level, all these themed courses are offered as advanced seminars driven by faculty research strengths and graduate student interest.

3.12.3

SPC THEMATIC SUMMARY

critical thinking and communication

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

These skills are established in first year and developed in each and every design studio, and, in the most elaborate form in the required Masters thesis. The key courses are Arch 192 and Arch 193 in which the projects are set up so as to require students to develop clear questions and their own interpretation of and approach to each design challenge. The team teaching approach in virtually every studio guarantees that students will receive and have to deal with diverse points of view. Students present their designs to critics and peers regularly requiring them to explain the criteria upon which their project is based.

A2. Research Skills

Ability to employ basic methods of data collection and analysis to inform all aspects of the programming and design process

Research is part of every design project. Site analysis, social factors, technical background and theoretical issues are ubiquitous. Case studies are undertaken in almost every studio, with the results of research and analysis clearly and publically presented. Methods of gathering data on environmental performance of buildings are presented in Arch 126: Environmental Building Design and Arch 264: Building Science. There is also a strong tradition of analyses of architectural and urban form in the curriculum. The methods involved are specifically presented in Arch 327: Architecture of the Urban Environment, a course in which the form of cities is interpreted as an expression of collective values, needs, behaviours and aspirations. In this course, students acquire essential skills that can be applied to the documentation, analysis and interpretation of urban form and society.

Students learn to use the various information resources available to them during their first weeks in the School. The Musagetes Architecture Library staff members run seminars on research methods, tools and techniques. These staff members are a tremendous research resource available to students throughout their careers. In the third and fourth years of the program, written assignments become more extensive and require traditional scholarly research, documentation and argumentation. Major reports or essay assignments are given in Arch 327: Architecture of the Urban Environment, Arch 342: Modernism to 21st Century and Arch 428: Rome and the Roman Campagna. Others are written in the 4B semester in Arch 442: Contemporary Architectural Theory.

Finally, the Masters Thesis is the product of a concerted research effort involving data gathering, analysis, argumentation, design and presentation. Methods are explored in particular in Arch 610: Architectural Research and Analysis.

A3. Graphic Skills

Ability to employ appropriate representational media to convey essential formal elements at each stage of the programming and design process

Introduction to drawing techniques and computer imaging (Arch 110: Visual and Digital Media I and Arch 113: Visual and Digital Media II) take place in the first year. In the first term, students explore conventional forms of representation: free hand drawing, formal perspective, graphic design and architectural photography. By the end of the term, students have begun exploration with computer-based tools. In the second term, computer-based forms of representation continue to be explored: concentrating on planar, orthographic, modeling and rendering. The courses are coordinated with the Design Studio to make the application of the techniques learned as direct as possible. This early introduction to the acquisition of skills in a range of visual communication is intended to both equip the students to make appropriate and creative decisions in presenting work in the upper year Design Studios, but also to prepare them for the co-op work placements that begin after the 2A term. Through the sequence of eight studio terms, students become increasingly skilled, sophisticated and discriminating in the selection of presentation techniques. In some cases, specific requirements are set for written submissions and visual representation of a design or case study project.

In this manner, students come to understand that there is an implicit relationship between descriptive technique and the subject of a design. In the 3B Option Studios, for example, students use both traditional and computer based techniques to explore issues of urban and environmental design.

The University of Waterloo is one of the leading centres of computer education and research on the continent. Computing activity by students in architecture is an integral part of the education. Our current facilities and teaching program support the use of student-owned computers, but the School still provides computer labs for student use. The profound influence of the technology in the practice of architecture has meant that the series of elective courses in upper years are heavily subscribed and that students, on their own initiative, use course assignments and design problems as an opportunity to extend their computing abilities. All students have access to output options in digital print-

ing, fabrication and projection. The recent addition of the M.Lab allows students access to select digital fabrication tools at any time, encouraging the use of hand-on making and experimentation in the design process.

The electives offered to students focus on graphic and a wide variety of presentation media: photography, graphic design, video production, and wood-working.

Two of the four PD ARCH courses are specifically designed to teach students digital web and graphic skills to create two portfolios of their work: the first, a physical architecture portfolio for job interviews, and the second, a living, interactive, digital online portfolio.

The presence of digital technology has not wiped out the art of drawing by hand. Students are required to keep sketchbooks in Rome, extending the principle that the experience of Italy includes a commitment to direct engagement through the creation of a graphic, rather than purely photographic, record.

In the graduate program students experiment widely with presentation techniques and must produce an expository document of their research and design, available in both hard copy and digital formats.

A4. Verbal and Writing Skills

Ability to speak and write effectively on subject matter contained in the professional curriculum

To gain admission to the School, applicants must be able to speak and write effectively. All successful applicants to the BAS pass a written précis test that involves reading a difficult discursive passage and rendering the argument of the passage in a cogent but reduced form and in their own words, maintaining the order and sense of the original. In addition, successful applicants have each been interviewed by a committee of two faculty members and two students. The applicant must present a portfolio of creative work and be capable of answering questions about and engaging in a discussion of their work.

Six core cultural history and theory courses further develop students' comprehension and writing skills. In first and second year students write short essay examinations on readings, films and lectures. They are carefully marked for grammar, spelling, clarity of language, composition and the quality and coherence of the argument. The rigorous grading of these tests establishes the expectation of a high level of literacy, an expectation that extends to all other lecture and design courses.

In each of the eight undergraduate studios, frequent formal and informal review sessions with studio faculty, graduate students and guest critics hone the students' abilities to express themselves clearly, and participate in discussions regarding both the strengths and weaknesses of their specific design proposals and the broader influences and implications of their work.

The fourth PD ARCH course is designed to assist students in building a foundation of skills for academic research, editing texts and designing a research program in preparation for higher studies, essay writing, and thesis development. The second of three compulsory Co-Op Work Reports requires each student to produce a written reflection on the organization and activity of the firm at which he or she was employed.

The Technical Report (Arch 473) carried out in conjunction with Comprehensive Building Design in 4B is an example of clear and concise professional communication.

Every graduate of the program must complete a written thesis. Though the amount of writing and the balance between graphic and written content varies, each and every document contains an extensive written component. Each and every graduate also defends the thesis in public, giving a 30 to 40 minute presentation and responding to questions from the examiners, who have read the thesis document and prepared questions in advance. This review is followed by a more informal discussion involving the audience of students and members of the public.

A5. Collaborative Skills

Ability to identify and assume divergent roles that maximize individual talents, and to co-operate with others when working as members of a design team and in other settings

Students work in teams for part of every term in the BAS program. Through this process they learn to collaborate successfully through coaching by faculty members.

Group work within and outside of Design Studio courses sets the foundation for the collaborative skills necessary within professional offices. The individual student at Waterloo finds him or herself working in groups at least once in every term, for varying lengths of time. Teamwork begins in first year, in the context of students working together on precedent case studies (Arch 192). They also work together on design-build projects (Arch 293), as well as when doing site research in some of their option studios (Arch 393).

A6. Human Behaviour

Understanding of the relationship between human behavior, the natural environment and the design of the built environment

The relationship between human behaviour and the physical environment is investigated through each of the core Cultural History & Theory courses. The approach is obviously rooted in the tradition of humanistic discourse more than the social sciences, though the approach to the social and environmental obligations of the designer is constantly reinforced. The Cultural History & Theory courses aim to provide a broad liberal education through the integrated study of literature, history, philosophy, visual art and architecture. Arch 143: Ancient World & Foundations of Europe, specifically examines the natural and built environments as cultural forms in the ancient world. The sequence continues into the modern world, directly addressing the relationship between the cultural upheavals of the past 300 years that frame the world in which we live and design.

Through the environment stream of courses students are exposed to complementary methods of inquiry. Arch 263: Integrated Environmental Systems require technical calculations. Similarly, Arch 126: Environmental Building Design

emphasizes technical research and detailed design as methods of investigating the effects of the physical environment on human behaviour.

Within the technology concentration, Arch 264: Building Science encourages students to investigate the impact of the built environment on the health and comfort of the human occupant through the analysis of the effectiveness of building envelope systems.

The methods of inquiry introduced in the various thematic streams of study are applied in the Design Studios where each design project proposes strategies to relate human behaviour and the physical environment.

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

The student body at the School of Architecture is the most culturally diverse academic group on campus, a true reflection of contemporary Canadian society and world culture. It is simply impossible to be unaware of the diversity of the human condition in this School.

In Arch 100: Introduction to Architecture students are engaged in a personal exploration of the cultural position of architecture and architects and the specific relationship between the personal and the societal.

The discussion of different values and notions of physical, political and spiritual order is central to the Cultural History & Theory stream. Art, architecture and the design of cities are used to explore the varieties of social/spatial patterns in history and contemporary societies. In the core curriculum the Cultural History courses provide a backdrop, starting from the discussion of the politics of difference in the holocaust in Arch 142, to the discussion of fundamental notions of individual and the state in Arch 143 through to the culture of cities and the artistic and cultural revolutions of the modern world. In Arch 246, lectures cover the medieval world by moving across religions as well as cultures, looking

at cultural exchanges between East and West, or the development of cartography in different parts of the world and to express different worldviews. These courses are specifically devoted to the exploration of the principles that underlie human culture and behaviour. The symbolic imagination is considered the root element of human consciousness.

Awareness of diversity in human culture and behaviour is promoted through extensive readings in the Iconography core. Later in the program by direct experience gained in international co-op work experience and international study in Rome and elsewhere.

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

The Cultural History & Theory stream presents history in an integrated fashion in the Waterloo curriculum. The School is rich in having a faculty that includes historians with strong credentials and research records. Virtually all of them also have undergraduate degrees in architecture. The result is a program in which architecture is presented as a form of cultural speculation, viewed in the context of history and other forms of artistic and cultural expression.

Architecture theory is introduced in Arch 100. The origins of western architectural thought are introduced in Arch 143. Arch 246: Pre-Renaissance to Reformation ties the history of architecture as a sequence of great 'events' to the formation of the emergent theories and ideas of the Renaissance and Counter-Reformation. Modernism is presented in phases, with the Arch 248: Enlightenment to the 19th Century providing the road map of change in the early modern world, followed by courses in 20th century Modernism and leading into Contemporary Culture and Criticism.

Around this core, students can develop their own suite of history and theory courses by choosing from a list of elective courses such as Arch 323: Approaches to Architecture and Urbanism, Arch 347: Philosophy in Architecture, Arch 385: Ecosystem Design for Urban Landscapes, Arch 540: Listening to Design and Arch 540: Architectural Imaginations, as well as others that have been of-

ferred on and off through past years, such as Active Media or Topologies of New Liberal Urbanization. All these courses offer openings into new areas of history and theory for the students.

The School's position is that history is central to the educational experience and to the acts of design and making. This is nowhere more clear than in the fact that Waterloo has maintained a Studio in Rome for more than three decades and that virtually every student has a four month term in Italy. In this sense History is not an academic subject, but quite literally, the context of architectural education and discourse, and a direct influence on the formation of the professional and personal lives of the graduates of Waterloo.

A9. Precedents

Ability to make a comprehensive analysis and evaluation of a building, building complex, or urban space

Students are shown how to use history and theory as critical rather than prescriptive tools in design. The utility of precedent is acknowledged in the use of the case study in the Design Studio and the universal practice of sharing the results. Students receive instruction on various analytical approaches in Arch: 192 and 193 and in subsequent design studios.

The historical development of urban form studied in Arch 327: Architecture of the Urban Environment. The relationship between analysis and design of buildings and cities is a central focus of the course

The tools of critical historical inquiry are applied most rigorously during Arch 492 Design Studio in Rome. The immediacy and unique richness of the Roman context poses an extraordinary challenge to the critical and interpretive skills developed by students in their earlier studios. All design projects done in Rome naturally locate themselves in relation to both an immediate physical context and a broad and historical context.

In Arch 493: Comprehensive Building Design the students must search out and elaborate on the use of precedent in their design development.

The Cultural History courses treat every architectural precedent within a larger cultural and critical context of the history of ideas. At the graduate level, the analysis of precedents is pushed further in Arch 610: Architectural Research and Analysis.

design and technical skills

B1. Design Skills

Ability to apply organizational, spatial, structural, and constructional principles to the conception and development of spaces, building elements, and tectonic components

The entire first year curriculum is dedicated to establishing design skills as a foundation for the later studios that progressively illuminate an increasingly complex range of theoretical and practical issues. Projects in Arch 192 and 193: Design Studios deal explicitly with formal order, spatial organization, structural performance, economy of means, interior design, building components, materials, details, program development, translation of program into organization and organization into built form, response to urban and natural context, public and private space, environmental performance, the concept of dwelling, issues of appropriateness and architectural representation.

The guidance which students receive during desk reviews and interim criticisms is directed towards a successful resolution of issues of programmatic development, spatial organization, structural, and constructional feasibility. The participation of visiting professional practitioners in reviewing work in progress ensures that matters of practical concern are considerations in students' design thinking. So, too, the recurrence of case studies in design studios and academic courses provides a basis for the understanding and evaluation of the fitness of buildings.

Issues of structural feasibility and building components arise in the earliest stages of the education through the general overview of building technology presented in the core first year courses, Arch 172 and 173.

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

Program preparation is taught in the design stream through the projects of the design studios.

In the first year of architectural education, students are introduced to the concept of architectural program. The Arch 192 final project is a live/work unit, the design of which requires the student to go through a process of client profiling and detailed program development. Through this simple program, students are encouraged to consider the social and functional implications of their designs.

In Arch 392, the 3A Design Studio, students are given a general outline description of a complex urban institution and must develop a specific list of programmatic requirements. Arch 393 Option Studios require students to develop a building program from a conceptual or theoretical foundation.

The final project of the Rome studio (Arch 492) involves the design of a multi-program building. Based on an analysis of a public space in Rome, the student determines a user and space requirements and creates a programmatic response to the existing conditions of the site. The student then designs according to the requirements he/she has created.

The Comprehensive Building Design studio at the end of the BAS program requires students to respond to an outline program. The program is refined according to the student's particular project aspirations.

B3. Site Design

Ability to respond to natural and built site characteristics in the development of a program and the design of a project

The relationship between site and building remains one of the strongest themes in the design program at Waterloo Architecture. Analysis of physical, ecological, historical and symbolic qualities of a site forms the basis of virtually all design projects. Between the 1A Design Fundamentals and 4B Comprehensive Building Design six studio terms specifically address “site characteristics in the development of a program and the design of a project”:

1B Studio (Arch 193)	Complex urban site for a live/work space
2A Studio (Arch 292)	Urban core site for a multiple residential dwelling
2B Studio (Arch 293)	Environmentally sensitive rural site for a small institution
3A Studio (Arch 392)	Metropolitan site for a programmatically complex building
3B Studio (Arch 393)	Speculative approaches to design, site, program, or material
4A Studio (Arch 492)	Culturally charged site (Rome) for an institution

The work of these studios specifically responds to site conditions as primary influences on program and determinants of design. The 1B and 2A Studios deal with confined urban sites whose constraints demand a clear response to issues of public and private space, orientation, access as well as building type and form. Then the 2B studio, Arch 293, begins by mapping sites of natural and cultural value in order to emphasize the profound responsibility of the built intervention to its site.

Site history is at the centre of the discussion in the design of public spaces and buildings in the Rome Studio.

Site development is part of the requirement in Arch 493 – Comprehensive Building Design.

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

Environmental consideration is a background habit of thought and action that underlies the entire education of the architect and practice as a designer. The School considers it part of its mission to produce graduates capable of being leaders in the new paradigm that is forming around concepts and labels such as environmental stewardship, sustainability, intensification, re-urbanization and responsive architecture.

The environment stream courses establish a canon of environmental concern within the curriculum. The approach to landscape and urban design is based on notions of ecosystem organization and the search for sustainability. The theme is introduced in Arch 125: Principles of Environmental Design. A section of the first year course Arch 172: Building Construction I is concerned with issues of energy and environment. Each subsequent course in the technology stream develops this environmental theme in its particular area: construction, structures, building envelopes, or building systems. The environmental impact of buildings clearly involves matters of energy and overall building performance, issues covered in Arch 264: Building Science and Arch 263: Integrated Environmental Systems, in the two core building construction courses Arch 172 and Arch 173, and in Arch 126: Environmental Building Design. Arch 225: Theory and Design of the Contemporary Landscape traces the history of the environmental movement in landscape and discusses the issue of sustainability within contemporary practice.

The environmental responsibility of the architect is explicitly addressed in three specific design studios: 2B, 3A and 4B. The first leads students to an understanding of the complexity of natural sites, requiring mapping exercises and casting the problem of architecture in terms of the relationship between natural and human order. In the 3A studio students learn the principles of urban design, tackling the problems of environmental responsibility in intense urban cores. A large amount of background information is provided to students in these two studios. These texts, handouts and documentation of course related symposia will be available to the visiting team as well as examples of design work produced. In Arch 493: Comprehensive Building Design and the parallel Arch 473: Technical Report, students must produce an integrated environmental solution as part of their design process and final presentation.

B5. Accessibility

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

Universal access continues to be an underlying requirement in all design projects. Students become acquainted with the concept and the areas of the building code pertaining to access in the building construction courses, Arch 172 and Arch 173. Specific provision for individuals with disabilities is required in the multiple dwellings designed in the 2A Studio program. The 3A studio addresses accessibility concerns related to multi-storey institutional buildings in an urban setting. Also, during practical office co-op experience students will have applied in practice the regulations and standards of design for site and building access. The Comprehensive Building Design Studio, Arch 493, requires all designs to be fully accessible. Finally, specific regulations relating to access are reviewed at the graduate level in the professional practice course, Arch 655 - Professional Practice.

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

Life safety requirements are introduced in first year Design Studio and in Arch 172 and 173, the Building Construction courses. Life safety issues relating to building systems and construction are covered in Timber (Arch 276) and Steel and Concrete Design (Arch 362). The connection with other systems is taught in Arch 126 and 263.

The issue is considered in particular in the 2A and 3A Design Studios where compliance with life safety sections of the Ontario Building Code is emphasized. Projects are reviewed for compliance. Finally, in Arch 493: Comprehensive Building Design Studio, concerns focus on ways in which technical, material, environmental and legal aspects of architecture support open speculation and innovative design.

The selection of construction materials and building equipment is dealt with in the technology courses, in particular the Building Construction and Building Systems courses.

Arch 263: Integrated Environmental Systems introduces students fire protection criteria and systems, with reference to building codes and standards. But by the time students reach the advanced stages of their co-operative education they will have experienced the process of regulated building design and encountered the application of life safety systems and the Building Code parameters for life safety design. The dialogue that develops between the exigencies of practice and the aspirations of studio design is, for the Waterloo architecture student, one of the most important aspects of the educational experience.

At the graduate level, the general framework of such selection and the responsibilities of the architect in the process are outlined in the Professional Practice

core course, in which students are taught Specifications. Beginning with an introduction to the conventions of the building divisions, this course systematically reviews each division in terms of the performance characteristics and conventional uses of materials, manufactured units, and equipment. Subsequently, it then identifies regulatory legislation and common sense experience that govern their applications in the building industry.

The Acts and Codes portion requires each student to prepare a project which demonstrates that she or he is conversant with code requirements for life safety in the design of buildings.

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

Introductory technical courses emphasize the intelligibility of the relationship between building methods and physical principles. Students first apply the laws of physics in 1A studio where they explore first-hand the intersection of basic architectural principles with the laws of gravity and force.

At the same time in Arch 172 and Arch 173, first-year students are introduced to the mathematical descriptions of static and dynamic principles, basic background knowledge which informs the basis of structural analysis.

Arch 172: Building Construction I introduces the basic theories of structures and the behaviour and applications of typical structural systems. Relationships between design development and building technique: materials, building science and construction practices, factors of climate and geology are among the principles introduced.

Arch 173: Building Construction II examines relationships between design development and the building science and construction practices of structural systems and enclosures. Case studies and projects investigate systems of structure and enclosure including: reinforced and pre-cast concrete; steel framing; build-

ing envelopes; fire protective design; and the relationship of these to mechanical and electrical systems.

The grounding for students' ability to analyze physical structures and to solve actual problems in the design of structural elements is established in these two Building Construction core courses. In Arch 260: Principles of Structures, students are introduced to descriptions of static and dynamic principles, developing the students' ability to analyze physical structures and to solve actual problems in the design of structural elements.

The principles taught in these earlier courses are expanded in two specialized structures courses: Arch 276: Timber: Design, Structure and Construction and Arch 362: Steel and Concrete: Design, Structure and Construction.

Arch 465: Advanced Structures builds on knowledge acquired in previous structural design courses, and includes the production of a comprehensive structural analysis report with detailed calculations that demonstrates students' mastery of the principles of structural behavior, analysis and design.

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

Two building services courses, Arch 126: Environmental Building Design and Arch 263: Integrated Environmental Systems, introduce students to the principles of the design of interior environments, the integration of building systems, and energy management. Lectures and presentations by members of trade and manufacturing councils introduce students to issues of theory and application while making them aware of the activities and services of consultants who specialize in these fields. Building services and matters of energy management, in particular, are introduced for the first time in the two building construction courses, Arch 172 and Arch 173.

Lectures in Arch 126 and Arch 263 deal with the energy performance of buildings and the options available to architects in order to improve performance in this area. Arch 126 focuses on sustainable and passive design principles and their translation into conceptual and practical architectural design. Topics include: solar geometry, climate/regional limitations, vernacular architecture, natural lighting, passive design and sustainability initiatives. Arch 263 focuses on the integrated environmental systems of buildings with an aim to develop the knowledge and skills appropriate to architectural practice. Subjects covered include environmental parameters, air and water systems, heating and cooling loads, energy conservation, ventilating and air conditioning systems, plumbing and waste systems, artificial source lighting and daylighting, and acoustics.

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

Principles underlying the design of building envelopes are covered in the two Building Construction courses (Arch 172 and 173) and the Environmental Design courses (Arch 125 and 126). Arch 264: Building Science places particular emphasis on envelope selection and appropriate detailing, explaining the science relating to the building envelope and the factors that influence design, performance, durability, rehabilitation, construction and operational aspects of buildings and building enclosure.

In the graduate program, students may further explore these issues in Arch 673: The Science of the Building Envelope.

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

The core course, Arch 263: Environmental Systems, synthesizes and elaborates upon the building systems material taught in earlier technology core courses,

Arch 172: Building Construction I and Arch 173: Building Construction II. Students are presented with a systematic overview of the organization and design of the mechanical, electrical, plumbing, fire, security, and vertical transportation facilities of a building.

This understanding is specifically applied in the Arch 493: Comprehensive Building Design 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

An ability to explore, select and resolve building materials and assemblies is required in all studio work. There are several particular instances in the curriculum when it becomes an explicit agenda. Arch 172: Building Construction I and Arch 173: Building Construction II deal explicitly with materials and assemblies.

These courses also require students to design small buildings in technical detail. A set of annotated construction documents clearly demonstrates a comprehensive level of research into materials and construction assembly.

Arch 570: Structural Design Build elective provides students with a direct encounter with materials and assemblies at a small scale. This elective is run in tandem with Arch 465: Advanced Structures, and asks students both to build a chair and simultaneously analyze the structural forces at work.

B12. Building Economics and Cost Control

Understanding of the fundamentals of development financing, building economics, construction cost control, and life-cycle cost accounting

Arch 655 - Professional Practice covers the financial structures of building contracts, real estate analysis, quantity surveying, and the integration of cost analysis into the process of design development. Examples of real projects are presented in order to demonstrate the importance of life-cycle costing, quantity surveying, and value assessment through the early stages of a project's

development. Emphasis is placed upon the professional protocol for appraisal and documentation of the client's and consultant's amendments to the agreed scope of work, both during the pre-tender stages and after the award of the construction contract. Materials are presented through case studies and other examples.

A careful review is made of the tendering process, concentrating upon the problems that arise from incomplete or ambiguous contract documentation. The continuing role of the professional quantity surveyor through the construction stages of a building and the contractual terms of building completion and transfer are discussed through case study examples.

comprehensive design

C1. Detailed Design Development

Ability to assess and detail as an integral part of the design, appropriate combinations of building materials, components, and assemblies

In the design projects produced in the Building Construction and Environmental Design courses, students are introduced to the importance of the design of details. Their projects present materials and assemblies in appropriate graphic forms.

Arch 493: Comprehensive Building Design studio requires students to complete detailed design development considering building materials, components and assemblies to satisfy the prescribed program and present appropriate drawings and models of project details.

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

Students design their first structure in the 1A term, based largely on intuition, direct observation and the process of trial and error. With increasing focus and complexity of the first three years of the Technology and Environment streams, they are introduced to the principles of structural, environmental, life-safety, building envelope and services systems.

Each of the Building Construction courses sets a term-end technical design project. The design must be developed in complete technical detail and presented in the form of plan, section, and structural axonometric. Arch 276: Timber Design, Structure and Construction, requires the design and structural calculation of a wood frame building.

By the end of third year, students are capable of analyzing and designing structures in masonry, timber, steel and concrete. The projects in the second and third year Design Studios reflect an increasing capacity to select and integrate systems drawn both from the academic program and co-op work experience. Finally, the fourth year Comprehensive Building Design Studio (Arch 493) requires students to demonstrate the ability to integrate the systems in a complex building project, developed to a high level of technical detail under the supervision of a team of practicing architects and engineers.

C3. Technical Documentation

Ability to make technically precise descriptions and documentation of a proposed design for purposes of review and construction

The ability to read and produce technical drawings is taught in the Arch 192, Arch 193 and Arch 292, first and second year Design Studios. Each student makes case studies of significant buildings. Emphasis is placed upon the student's ability to understand plan, section and elevation and to demonstrate that understanding through the construction of interpretive models and drawings. The discipline of producing complete and legible sets of drawings is then reinforced in second year by applying specific drawing requirements to design project submissions.

Technically precise drawing is specifically required at several other moments in the design curriculum. Arch 172: Building Construction I and Arch 173: Building

Construction II each require detailed and annotated technical drawings. Construction details are part of the submission requirements for the projects in 2A and 2B Studios. Finally, technically precise drawing is part of the requirement for Arch 493: Comprehensive Building Design.

Co-op experience in architectural offices also reinforce the students' appreciation of the need for accurate and legible building documents.

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

The undergraduate program is specifically configured to address this criterion. The academic program, in conjunction with the required Co-op work experience, prepares the student to complete a comprehensive design as the summative exercise in the pre-professional program. Throughout the curriculum the Design Studios normally include a variety of exercises that are speculative and experimental, but most terms call for a highly resolved architectural solution as the concluding project. By the end of Arch 192, the first term Design Studio, students design a programmatically challenging building, taking into account structure, skin and preliminary details. In Arch 293, more developed comprehensive design skills and detail work in construction and technology courses allow students to design a sustainable building in a landscape setting in considerable detail.

Arch 493: Comprehensive Building Design studio is the culmination of the Honours BAS. The requirements of this course were added to the degree structure to ensure that all students demonstrate the ability to develop an appropriate resolution of technical and programmatic design criteria. Students produce an architectural project from schematic design through detailed development and account for all spatial and systematic components of the project. For students in the Graduate program entering into the First Year, Arch 691 is run as a similar Comprehensive Design Studio, alongside the associated Technical Report course (Arch 671).

leadership and practice

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

The entire educational experience at Waterloo intends to plot the scope of the student's responsibilities and opportunities as a future professional, to provide the knowledge, confidence and experience to lead and to know when to seek outside advice and assistance. The discussion of the collective and individual role of the architect begins in Arch 100 and is carried on in design studios and in virtually every core and elective course in the curriculum. The specific legal definition of the role is first laid out in Arch 172 and 173.

The team building aspects of group projects in each of the first seven undergraduate studios is critical to lessons in the coordination and management of groups working toward a common goal.

One of the most challenging roles of the practicing architect is in the selection and coordination of allied disciplines. Showing an awareness of the associated professional disciplines that make contributions to the project process and its coordination and management methods, is a responsibility that the program addresses across the full range of the curriculum. Current practitioners teach many of the technology and practice courses in their own professional disciplines. The ambition of these courses is to provide architecture students with the fundamental principles of statics and materials analysis to give them a working understanding of the principles of structural design so that they can communicate productively with other consultants. The same is true of courses in the Technology and Environment stream.

In the core Professional Practice course offered in the graduate program, students gain an understanding of the roles and responsibilities of the architect. A comprehensive picture of the practice is provided, including new and emerging forms and alternate modes of delivery of services. The roles of the associated

professional disciplines in the context of architectural practice are examined. Specialists and representatives of trade and professional associations make presentations in order that students become aware of the consultation and information resources they offer to the architect. This experience builds on the significant practical experience the students have obtained in their Co-Op.

Given the way in which Arch 493 is run, with a number of consultants present throughout the term as well, students already have a reinforced understand of the collaborative nature of the architect's work.

In the graduate program, Thesis students draw strategically from a rich range of professional expertise from the School, the University, the profession and the community. This is reflected in the students' selection of their thesis committee members, some of whom come from other academic and professional disciplines, and external readers for the thesis defense who are often distinguished academics and professionals. The breadth of investigation and levels of engagement in the graduate program are displayed in the thesis documents. The leadership and outreach skills of the graduate students is also made clear in the roles they take on in the community and in the various non-traditional forms of the thesis outcomes – reports, installations, guidelines and actual built projects.

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

The Design Studio setting provides an opportunity to discuss matters of ethical and professional judgment as they are expressed in design approach and proposals. These discussions certainly touch on the more literal requirements of function and life safety, but also the less tangible aspects of professional judgment that must form in each student over the course of an education. Each and every design project requires students to make both practical and ethical judgments. The projects are framed in such a way as to inevitably lead students to confront social, political and cultural issues.

The supporting thematic streams implicitly and explicitly present ethical principles and draw attention to best practices. The Cultural History stream educates students in a rigorous and critical awareness of the ethical implications in the history of architectural and urban design and theory.

The main moral issues in architecture are raised directly in Arch 100: Introduction to Architecture. Years later, nearing the end of their education, in Arch 655: Professional Practice, students are confronted directly with real situations in which architects have been forced to make ethical judgments. The class carries on an open discussion and attempts to reach a conclusion that satisfies the majority.

Students are also presented with the ethical dimensions of research, typically twice through their education. First, in the context of one of their cultural history courses at the undergraduate level, and again in the context of Arch 610: Architectural Research and Analysis at the graduate level.

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

From first year students are made aware of the obligations to client and society taken on by the architect in matters of safety and accessibility. The broad issues of 'professional' responsibility are discussed in all five streams: Design; Visual and Digital Media; Cultural History and Theory; Technology and Environment; and Urbanism and Landscape.

In 2A and 3A studios students demonstrate that their final studio design project takes into account the relevant codes and standards for access and safety. The expectation is higher still in Arch 493: Comprehensive Building Design Studio. The final design must reflect a thorough understanding of codes and regulations.

Studio instructors take the responsibility to make students aware of possible issues with respect of safety and accessibility in their design work. In the co-op

work terms, students become increasingly familiar and comfortable with codes and standards through their involvement in actual building projects.

In Arch 655: Professional practice, the legal responsibilities of the architect are specifically and critically addressed. This involved a systematic review of the Architects Act, the Planning Act, and the various codes related to safety and access. A series of complex questions regarding the architect's responsibility to the client, the municipality, and society are also raised and discussed amongst students.

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

Project delivery methods, contracts and documentation required are thoroughly covered in the core Arch 655: Professional Practice course.

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

All of the topics listed in criteria D5 are introduced generally in Arch 100: Introduction to Architecture, and then comprehensively treated in Arch 655: Architectural Practice.

Arch 655 takes an engaging and innovative approach to the teaching of practice related subjects, relying on the fact that virtually all students have had a great deal of experience in professional offices. The instructor uses role-playing, short critical exercises and a large scale group project that are intended to promote peer to peer learning based on individual knowledge and experiences. This cross pollination is intensely moderated by the instructor to ensure accuracy and clarity of information being exchanged.

D6. Professional Internship

Understanding of the role of internship in professional development, and the reciprocal rights and responsibilities of interns and employers

Students are required to complete three Co-op Work Term Reports, two of which are directly relevant to establishing an understanding of the role of internship in professional development.

Work Report One encourages students to begin to record their professional experience – aiding them in becoming a registered Architect. Students will initiate an online record and assessment of their educational work experience, tracked against two sets of criteria: the Student Performance Criteria established by the CACB and the Canadian Experience Record used by provincial licensing bodies.

Work Report Three similarly asks to students to track their experience, but this is completed as students near the end of their degree. As students practice filling in the Experience Record Book, the student has the option of choosing a Mentor at his or her firm. This means the student may:

- Review the quality and range of practical experience being gained;
- Discuss career objectives;
- Discuss broader issues related to the architectural profession;
- Review the licensing process with a registered architect who can guide and assist the student in their professional development.

A detailed overview of the role of internship in professional development is covered with graduate students with Arch 655 - Professional Practice, in lecture from the perspective of the regulatory body responsible for internship matter, and from the perspective of the practicing architect.

The Tables on the following pages cross-reference each core and elective course offered with the performance criterion it fulfills.

3.12.4
GRAPHIC MATRIX

MATRIX 1
UNDERGRADUATE
CORE

I — Introductory Learning
RL — Reinforced Learning
P — Proficiency

CRITICAL THINKING AND
COMMUNICATION

DESIGN AND TECHNICAL SKILLS

COMPREHENSIVE
DESIGN

LEADERSHIP AND
PRACTICE

OFFERED WINTER - FALL 2016

DESIGN												CULTURAL HISTORY + THEORY							ENVIRONMENT + TECHNOLOGY										VISUAL + DIGITAL MEDIA				URBANISM + LANDSCAPE		PROFESSIONAL DEVELOPMENT + CO-OP											
ARCH 192 DESIGN STUDIO	ARCH 193 DESIGN STUDIO	ARCH 292 DESIGN STUDIO	ARCH 293 DESIGN STUDIO	ARCH 392 DESIGN STUDIO	ARCH 393 002 DESIGN STUDIO	ARCH 393 003 DESIGN STUDIO	ARCH 393 004 DESIGN STUDIO	ARCH 393 005 DESIGN STUDIO	ARCH 393 006 DESIGN STUDIO	ARCH 492 DESIGN STUDIO	ARCH 493 DESIGN STUDIO	ARCH 100 INTRODUCTION TO ARCHITECTURE	ARCH 142 INTRODUCTION TO CULTURAL HISTORY	ARCH 143 ANCIENT WORLDS & FOUNDATIONS OF EUROPE	ARCH 246 PRE-RENAISSANCE TO REFORMATION	ARCH 248 ENLIGHTENMENT TO 19th CENTURY	ARCH 342 MODERN ARCHITECTURE	ARCH 442 MODERNISMS: 20TH C. CULTURE AND CRITICISM	ARCH 125 PRINCIPLES OF ENVIRONMENTAL DESIGN	ARCH 126 ENVIRONMENTAL BUILDING DESIGN	ARCH 172 BUILDING CONSTRUCTION I	ARCH 173 BUILDING CONSTRUCTION II	ARCH 260 PRINCIPLES OF STRUCTURES	ARCH 263 INTEGRATED ENVIRONMENTAL SYSTEMS	ARCH 264 BUILDING SCIENCE	ARCH 276 TIMBER DESIGN & CONSTRUCTION	ARCH 362 STEEL AND CONCRETE: DESIGN & CONSTRUCTION	ARCH 465 ADVANCED STRUCTURES	ARCH 473 TECHNICAL REPORT	ARCH 110 VISUAL AND DIGITAL MEDIA I	ARCH 113 VISUAL AND DIGITAL MEDIA II	ARCH 212 DIGITAL FABRICATION	ARCH 313 ADVANCED VISUALIZATION	ARCH 225 THEORY AND DESIGN OF THE CONTEMPORARY LANDSCAPE	ARCH 327 ARCHITECTURE OF THE URBAN ENVIRONMENT	PD ARCH 1 PORTFOLIO DEVELOPMENT	PD ARCH 2 CO-OP FUNDAMENTALS FOR ARCHITECTS	PD ARCH 3 ELECTRONIC COMMUNICATION & WEB DESIGN	PD ARCH 4 WRITING, EDITING AND RESEARCH	CO-OP WORK REPORT ONE	CO-OP WORK REPORT TWO	CO-OP WORK REPORT THREE				
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MATRIX 2 UNDERGRADUATE ELECTIVE

I — Introductory Learning
RL — Reinforced Learning
P — Proficiency

MATRIX 2 UNDERGRADUATE ELECTIVE		OFFERED WINTER – FALL 2016	WINTER					FALL						ANY
			ARCH 328 APPROACHES TO ARCHITECTURE & URBANISM	ARCH 331 WORKING WITH WOOD	ARCH 347 PHILOSOPHY IN ARCHITECTURE	ARCH 385 ECOSYSTEM DESIGN FOR URBAN LANDSCAPES	ARCH 570 001 STEEL STRUCTURES	ARCH 428 ROME AND THE CAMPAGNA (ROME)	ARCH 446 ITALIAN URBAN HISTORY (ROME)	ARCH 449 DEV. OF MODERN ITALIAN ARCHITECTURE (ROME)	ARCH 540 001 LISTENING TO DESIGN	ARCH 540 002 Architectural Imaginations	ARCH 570 001 DESIGN BUILD WORKSHOP	ARCH 546 COMPETITIONS IN ARCHITECTURE
CRITICAL THINKING AND COMMUNICATION	A1. Critical Thinking Skills	RL/P		RL/P	RL	P	P	P	P	RL/P	P	RL	P	
	A2. Research Skills	RL/P		RL/P			P	P	P	RL/P	P	RL	P	
	A3. Graphic Skills	RL/P		RL/P	RL	P				RL/P	P	RL	P	
	A4. Verbal and Writing Skills	RL/P		RL/P	RL		P	P	P	RL/P	P		P	
	A5. Collaborative Skills	RL/P		RL/P	RL	P				RL/P	P	RL	P	
	A6. Human Behavior	RL/P		RL/P	RL		RL	P	P	RL/P				
	A7. Cultural Diversity	RL/P		RL/P	RL		RL	P	P	RL/P	P			
	A8. History and Theory	RL/P		RL/P	RL		P	P	P	RL/P	P			
	A9. Precedents	RL/P		RL/P	RL	RL	RL	P	P		P	RL	P	
DESIGN AND TECHNICAL SKILLS	B1. Design Skills	RL/P	RL	RL/P	RL	P						RL	P	
	B2. Program Preparation				RL	RL							RL	
	B3. Site Design	RL/P			RL	RL		P					RL	
	B4. Sustainable Design	RL			RL									
	B5. Accessibility	RL												
	B6. Building Code Codes and Standards					RL								
	B7. Structural Systems					P		RL					RL	
	B8. Environmental Systems													
	B9. Building Envelopes					RL							RL	
	B10. Building Service Systems													
	B11. Building Materials and Assemblies					P						RL	RL	
	B12. Building Economics and Cost Control											I		
COMPREHENSIVE DESIGN	C1. Detailed Design Development											RL		
	C2. Building Systems Integration													
	C3. Technical Documentation											RL		
	C4. Comprehensive Design													
LEADERSHIP AND PRACTICE	D1. Leadership and Advocacy	RL		RL/P										
	D2. Ethics and Professional Judgment	RL		RL/P				RL						
	D3. Legal Responsibilities													
	D4. Project Delivery													
	D5. Practice Organization													
	D6. Professional Internship													

MATRIX 3 **GRADUATE** **CORE**

I — Introductory Learning
RL — Reinforced Learning
P — Proficiency

MATRIX 3 GRADUATE CORE			OFFERED WINTER – FALL 2016	YEAR ONE						YEAR TWO				MILESTONES
				ARCH 640 CONTEMPORARY THEORY, CULTURE, & CRITICISM	ARCH 662 STEEL & CONCRETE DESIGN, STRUCTURE & CONSTRUCTION	ARCH 671 TECHNICAL REPORT	ARCH 673 SCIENCE OF THE BUILDING ENVELOPE	ARCH 690 DESIGN STUDIO	ARCH 691 DESIGN STUDIO	ARCH 610 ARCHITECTURAL RESEARCH ANALYSIS	ARCH 655 PROFESSIONAL PRACTICE	ARCH 692 THESIS RESEARCH & DESIGN STUDIO 1	ARCH 693 THESIS RESEARCH & DESIGN STUDIO 2	GRADUATE THESIS
I	—	Introductory Learning												
RL	—	Reinforced Learning												
P	—	Proficiency												
CRITICAL THINKING AND COMMUNICATION	A1. Critical Thinking Skills	RL	P	P	RL	RL	P	RL	RL	P	P	P		
	A2. Research Skills		P	RL	RL	RL	P	RL	P	P	P	P		
	A3. Graphic Skills		P	P	P	RL	P	RL	RL	P	P	P		
	A4. Verbal and Writing Skills	RL	P	P		RL	P	RL	P	P	P	P		
	A5. Collaborative Skills					RL	P		RL					
	A6. Human Behavior					RL	P		RL	RL	RL	RL		
	A7. Cultural Diversity	RL	P			RL	P			P	P	P		
	A8. History and Theory	RL				RL	P	RL		P	P	P		
	A9. Precedents	RL	P	RL		RL	P	RL	P	P	P	P		
DESIGN AND TECHNICAL SKILLS	B1. Design Skills		P	P	P	RL	P			P*	P*	P*		
	B2. Program Preparation		P	P		RL	P		RL	P*	P*	P*		
	B3. Site Design		P	P		RL	P			P*	P*	P*		
	B4. Sustainable Design			P	RL	RL	P			P*	P*	P*		
	B5. Accessibility			P		RL	P			P*	P*	P*		
	B6. Building Code Codes and Standards			P	RL		P			P*	P*	P*		
	B7. Structural Systems			P	RL	RL	P			P*	P*	P*		
	B8. Environmental Systems			P	RL	I	P			P*	P*	P*		
	B9. Building Envelopes			P	RL	RL	P			P*	P*	P*		
	B10. Building Service Systems			P	RL	RL	P			P*	P*	P*		
	B11. Building Materials and Assemblies			P	RL	RL	P			P*	P*	P*		
	B12. Building Economics and Cost Control				RL	I	RL		P	P*	P*	P*		
COMPREHENSIVE DESIGN	C1. Detailed Design Development			P	P	I	P			P*	P*	P*		
	C2. Building Systems Integration			P	RL	I	P			P*	P*	P*		
	C3. Technical Documentation			P	P		P			P*	P*	P*		
	C4. Comprehensive Design			P	RL	I	P		RL	P*	P*	P*		
LEADERSHIP AND PRACTICE	D1. Leadership and Advocacy		P			I			P	RL	RL	RL		
	D2. Ethics and Professional Judgment				RL	I			P	RL*	RL*	RL*		
	D3. Legal Responsibilities				RL				P					
	D4. Project Delivery								P					
	D5. Practice Organization								P					
	D6. Professional Internship								P					

MATRIX 4
GRADUATE
ELECTIVE

- I — Introductory Learning
- RL — Reinforced Learning
- P — Proficiency

		OFFERED WINTER – FALL 2016																
		WINTER								SPRING		FALL						
		ARCH 570 001 STRUCTURAL SYSTEMS	ARCH 623 ECOSYSTEM DESIGN FOR URBAN LANDSCAPES	ARCH 640 THEORY, CULTURE & CRITICISM	ARCH 641 THE INNER STUDIO	ARCH 684 001 DELEUZE & CONTEMPORARY ARCHITECTURE	ARCH 684 003 APPROACHES TO ARCHITECTURE & URBANISM	ARCH 684 004 PHILOSOPHY IN ARCHITECTURE	ARCH 684 003 RUSSIAN AVANT-GARDE	ARCH 684 004 COMPOSITE ASSEMBLIES	ARCH 570 002 DESIGN BUILD WINTER STATIONS	ARCH 673 SCIENCE OF THE BUILDING ENVELOPE	ARCH 684 001 ORNAMENTS AND ITS DISCONTENTS	ARCH 684 002 MATERIAL ECOLOGIES	ARCH 684 003 PHOTOGRAPHIC MEDIATION OF ARCHITECTURE	ARCH 684 004 ARCHITECTURE IN THE ANTHROPOCENE	ARCH 685 READINGS IN ARCHITECTURE	ARCH 686 COMPETITIONS IN ARCHITECTURE
CRITICAL THINKING AND COMMUNICATION	A1. Critical Thinking Skills	P	RL	RL	P	RL	RL/P	RL/P	P	RL		RL	P	P	RL	P	P	P
	A2. Research Skills				P	RL	RL/P	RL/P	P		RL	RL	P	P	RL	P	P	P
	A3. Graphic Skills	P	RL		P	RL	RL/P	RL/P			RL	P		RL	RL			P
	A4. Verbal and Writing Skills		RL	RL	P	RL	RL/P	RL/P	P		RL		P	P	RL	P	P	P
	A5. Collaborative Skills	P	RL		P	RL	RL/P	RL/P			RL		P	P	RL			P
	A6. Human Behavior		RL		P	RL	RL/P	RL/P			RL		RL		RL	P		
	A7. Cultural Diversity		RL	RL	P	RL	RL/P	RL/P	P				P	P	RL	P	P	
	A8. History and Theory		RL	RL	P	RL	RL/P	RL/P	P				P	RL	RL	P	P	
	A9. Precedents	RL	RL	RL		RL	RL/P	RL/P			RL		P	RL	RL		P	P
DESIGN AND TECHNICAL SKILLS	B1. Design Skills	P	RL			RL	RL/P	RL/P		RL/P	RL	P			RL			P
	B2. Program Preparation	RL	RL			RL												RL
	B3. Site Design	RL	RL			RL	RL/P				RL							RL
	B4. Sustainable Design		RL				RL				RL	RL		RL				
	B5. Accessibility						RL											
	B6. Building Code Codes and Standards	RL									RL	RL						
	B7. Structural Systems	P				RL					RL	RL						RL
	B8. Environmental Systems											RL						
	B9. Building Envelopes	RL				RL						RL						RL
	B10. Building Service Systems					RL						RL						
	B11. Building Materials and Assemblies	P								RL/P	RL	RL						RL
	B12. Building Economics and Cost Control											RL	RL					
COMPREHENSIVE DESIGN	C1. Detailed Design Development										RL	P						
	C2. Building Systems Integration											RL						
	C3. Technical Documentation											P						
	C4. Comprehensive Design										RL	RL						
LEADERSHIP AND PRACTICE	D1. Leadership and Advocacy						RL	RL/P										
	D2. Ethics and Professional Judgment							RL	RL/P				RL		RL			
	D3. Legal Responsibilities												RL					
	D4. Project Delivery																	
	D5. Practice Organization																	
	D6. Professional Internship																	

* Criteria depends on individual research and design pursuits

Indicates a core course for all 2-year graduate students and an elective option for all 1-year graduate students