**University of Waterloo**

**SENATE**

**Notice of Meeting**

**Date:** Monday 19 January 2015  
**Time:** 3:30 p.m.  
**Place:** Needles Hall, Room 3001

### OPEN SESSION

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda Item</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30</td>
<td>Conflict of Interest</td>
<td>Declaration</td>
</tr>
<tr>
<td>3:35</td>
<td><strong>Consent Agenda</strong></td>
<td></td>
</tr>
</tbody>
</table>
**Motion:** To approve or receive for information by consent items 2-7 below. |
| 3:35 | Minutes of the 17 November 2014 Meeting | Decision |
| 3:40 | Reports from Councils  
| | a. Graduate & Research | Information |
| | b. Undergraduate | Decision/Information |
| 3:45 | Report of the President  
| | a. Recognition and Commendation | Information |
| | b. Tenure and Promotion of Faculty Members | Information |
| 3:50 | Reports from the Faculties | Information |
| 3:55 | Committee Appointments | Decision |
| 4:00 | Report of the COU Academic Colleague | Information |

### Regular Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda Item</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:40</td>
<td>Business Arising from the Minutes</td>
<td></td>
</tr>
<tr>
<td>3:45</td>
<td>Games Institute Presentation – Neil Randall, Director</td>
<td>Information</td>
</tr>
</tbody>
</table>
| 4:05 | Reports from Committees and Councils  
| | a. University Appointments Review Committee | Information |
| | b. Executive Committee | Decision |
| 4:15 | c. Graduate & Research Council | Decision |
| 4:25 | d. Undergraduate Council | Decision/Information |
| 4:30 | Report of the President | Information |
| 4:45 | Q&A Period with the President | Information |
| 5:00 | Report of the Vice-President, Academic & Provost | Information |
| 5:10 | Report of the Vice-President, University Research | Information |
| 5:20 | Other Business |  

### CONFIDENTIAL SESSION

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda Item</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:25</td>
<td>Conflict of Interest</td>
<td>Declaration</td>
</tr>
<tr>
<td>Time</td>
<td>Agenda Item</td>
<td>Action</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>5:30</td>
<td>17. Minutes of the 17 November 2014 Meeting</td>
<td>Decision</td>
</tr>
<tr>
<td>5:35</td>
<td>18. Business Arising from the Minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19. Reports from Nominating Committees</td>
<td></td>
</tr>
<tr>
<td>5:40</td>
<td>a. Honorary Degrees</td>
<td>Decision</td>
</tr>
<tr>
<td>5:50</td>
<td>b. Dean of Science [to be distributed]</td>
<td>Decision</td>
</tr>
<tr>
<td>6:00</td>
<td>20. Other Business</td>
<td></td>
</tr>
</tbody>
</table>

JLA:ta

Logan Atkinson

9 January 2015

University Secretary & General Counsel

Secretary of Senate
University of Waterloo
SENATE
Minutes of the Monday 17 November 2014 Meeting


Guests: Steven Amirikah, Mario Coniglio, Donna Ellis, Peggy Jarvie, Jennifer Kieffer, Zhu Luhua, Kathryn Plaisance, Daniela Seskar-Hencic, Allan Starr, Marilyn Thompson, Bud Walker, Dave Wallace, Hong Ye, Jian Zhang

Secretariat & Office of General Counsel: Logan Atkinson, Tracy Dietrich


*regrets

Organization of Meeting: Feridun Hamdullahpur, chair of Senate, took the chair, and Logan Atkinson, secretary of Senate, acted as secretary. Atkinson advised that due notice of the meeting had been given, a quorum was present, and the meeting was properly constituted.

OPEN SESSION

1. DECLARATIONS OF CONFLICT OF INTEREST
Senators were asked to declare any interests they may have in relation to the items on the agenda in open session. No conflicts were declared.

Consent Agenda
Senate heard a motion to approve or receive for information the items on the consent agenda, subject to: noting that Freeman and not Dixon, as stated in the minutes, indicated that Senate ought to be proud “as it passes a model policy on research institutes and centres” [New Policy – Research Centres and Institutes, Graduate & Research Council]; removing motions 1 and 2 from the report from Undergraduate Council to the regular agenda; and removing the COU academic colleague report to the regular agenda.

2. MINUTES OF THE 20 OCTOBER 2014 MEETING
Senate approved the minutes of the meeting.

3. REPORTS FROM COMMITTEES AND COUNCILS
Executive Committee [report at senators’ places]. Senate received the report for information.

Graduate & Research Council. Senate received the report for information.
Undergraduate Council
- Honours Biomedical Sciences, Biology, Faculty of Science – motion moved to the regular agenda
- Faculty Information and Regulations, Faculty of Mathematics – motion moved to the regular agenda
- 2015-16 Calendar Dates. Senate approved the calendar dates as presented in the report.

Senate received the remaining items in the report for information.

4. REPORT OF THE PRESIDENT
   Recognition and Commendation. Senate received the report for information.

5. REPORTS FROM THE FACULTIES
   Senate received the reports for information.

6. REPORT OF THE COU ACADEMIC COLLEAGUE – report moved to the regular agenda

7. COMMITTEE AND COUNCIL APPOINTMENTS/REAPPOINTMENTS [revised report at senators’ places]
   Senate approved the following appointments/reappointments:
   - Amit and Meena Chakma Awards for Exceptional Teaching by a Student Committee:
     reappointment of Rohan Jayasundera as faculty representative, and appointment of
     Keemo Delos Santos, Charis Enns, Hadi Hosseini, Zahra Razavi and Junghee Seo as student
     representatives, terms to 31 December 2015.
   - Distinguished Teacher Awards Committee: reappointment of Monica Leoni and
     Wei-Chau Xie as faculty representatives, terms to 31 December 2016, and Tiffany Bradley as
     alumni representative, term to 31 December 2015; appointment of Maxwell Hartt, Hadi Hosseini,
     Bailey Jacobs, Junghee Seo and Kianna Wan as student representatives, terms to 31 December
     2015.
   - Undergraduate Council: appointment of Doug Cowan as the affiliated institutions faculty
     representative, term to 30 April 2015.

Hamdullahpur and Skidmore. Carried.

Regular Agenda

8. REPORT FROM UNDERGRADUATE COUNCIL – motions moved from the consent agenda
   - Honours Biomedical Sciences, Biology, Faculty of Science. Senate heard a motion to approve
     the changes to the Honours Biomedical Sciences plan as presented in the report.

McMahon and Richter.

A concern was expressed about reducing requirements in the honours program and whether this
is becoming a pattern. Senate was advised that, even with the reduced requirements, students
still have a program that has a higher average set of requirements than other honours programs
at the university.

The question was called, and the motion carried.
• Faculty Information and Regulations, Faculty of Mathematics. Senate heard a motion to approve changes to regulations governing the English language proficiency requirement as presented in the report.

Richter and Goulden.

Freeman spoke to several points intending to demonstrate that the additional investment in English language courses in the Faculty of Mathematics is not well justified. Goulden spoke in defense of the proposal. Peers also spoke in support, and indicated that sessional lecturers will not be used ordinarily to deliver these courses. Coniglio advised that communications is identified as a significant issue in our strategic plan for improving our student experience and academic offerings. In response to a question as to whether the fee here effectively means that it adds to the amount students must pay for the English elective, Coniglio advised that the English course is a replacement for other courses and does not cost additional tuition. Wray suggested that the proposal would remove the opportunity to take some other course that might appeal more thoroughly to the student. It was further observed that we have no objective evidence that our students are in need of support in their communication skills. Jarvie indicated that the issue is one that has been identified across several reports generated by the Conference Board of Canada and others. Coniglio further advised that every Faculty will likely design its own plan to achieve similar outcomes.

The question was called, and the motion carried.

9. REPORT OF THE COU ACADEMIC COLLEAGUE – report moved from the consent agenda

Leat asked about work being done at the Council of Ontario Universities on university pension reform, and was advised that things are still in the exploratory stage and it will take at least a year to move the discussion forward. Wray asked how much Senate will know about negotiations going forward on the Strategic Mandate Agreement for the university. Hamdullahpur stated that Senate was fully involved in the development of the SMA, and will be involved again if changes are required.

10. TEACHING PRESENTATION [draft course syllabus at senators’ places]

Coniglio introduced Professor Kathryn Plaisance. Plaisance reported on her teaching in the area of interdisciplinary study in the Department of Knowledge Integration. She focused especially on ways to integrate students into course design and assessment design. Plaisance commented on the enhanced level of engagement demonstrated by students in the course, and attributed that to the collaborative nature of the course. The quality of the work and the ambition that students had for their projects was truly outstanding. The hope is that the idea will be transferable across faculties to promote an understanding of collaboration more broadly.

11. BUSINESS ARISING FROM THE MINUTES

Policy 44 – Research Centres and Institutes. Senate heard a motion to recommend the revised Policy 44 – Research Centres and Institutes to the president for approval.

Orchard and Freeman. Carried.

12. REPORT FROM UNDERGRADUATE COUNCIL

Language Certificate Plans, Faculty of Arts. Senate heard a consolidated motion to approve certificates in languages as follows:

• Certificate in Arabic Language. To approve the Certificate in Arabic Language as presented in the report.

• Certificate in Chinese Language. To approve the Certificate in Chinese Language as presented in the report.
Certificate in Croatian Language. To approve the Certificate in Croatian Language as presented in the report.

Certificate in Dutch Language. To approve the Certificate in Dutch Language as presented in the report.

Certificate in German Language. To approve the Certificate in German Language as presented in the report.


Certificate in Korean Language. To approve the Certificate in Korean Language as presented in the report.

Certificate in Russian Language. To approve the Certificate in Russian Language as presented in the report.

Richter and Wray. Carried.

Climate Change Specialization, Geography and Environmental Management, Faculty of Environment. Senate heard a motion to approve the Climate Change Specialization as presented in the report.

Andrey and Seasons. Carried.

Environment and Business Plan, Faculty of Environment. Senate heard a motion to approve the changes to the Environment and Business plan as presented in the report.

Andrey and Moos.

It was observed that there has been some dissatisfaction with certain courses in this program. Is there a plan to review the course load in this program? Andrey responded, saying that this represents an attempt to introduce some flexibility and to allow students to take courses in other faculties. Coniglio agreed to ensure that the various asterisks in the report are consistent. It was also observed that the proposed changes are intended to be taught by regular faculty and numbers will be controlled through adding sections if necessary.

The question was called, and the motion carried.

13. REPORT OF THE PRESIDENT

Hamdullahpur presented a wide-ranging report, including: welcoming new senators Kolentsis and Potter; congratulations to Professor Drew Bennett of the Department of Chemistry and Professor Eduardo Martin-Martinez of the Department of Applied Mathematics and the Institute of Quantum Computing, both of whom have received provincial Polanyi prizes. This represents two prizes to this university out of only five awarded in the province. Senate acknowledged this success with applause.

Hamdullahpur report on the recently held convocation, the last one for Chancellor Prem Watsa, and reminded senators of the importance of faculty presence at convocation for students and their supporters.

A report was provided on the president’s recent town hall meeting showing a high level of engagement by the community during both the town hall and the reception following.
There was some discussion of university rankings. The Maclean’s rankings came out two weeks ago, and the university was named the most innovative university for the 23rd successive year. There were other very strong indicators in the Maclean’s rankings that help to show the excellence of the academic experience here. The university was ranked first in Canada for attracting students with 95%+ entering averages. At the end of October Board of Governors meeting, there was a wide-ranging discussion about rankings, especially the Times Higher Education international ranking. Hamdullahpur was pleased with the depth and breadth of the conversation, and governors agreed that the objectives in the strategic plan ought to drive our behaviors, although rankings are of importance.

At that meeting, the board also approved the proposed new Engineering 7 buildings, and gave supplementary approval for a new student residence.

Hamdullahpur attended the recent Ontario Economic Summit. The focus was on growth, but there were few solid elements to indicate that growth is coming. However, the need for advanced level education was clearly expressed as a key to economic growth.

The university submitted its major capacity expansion proposals, related to both Engineering 7 and an additional Science building, and we now await outcomes. The process is not perfectly clear, but we are hopeful that our proposal will be well received.

Federally, there has been some clarity provided on the Canada First Research Excellence Program. The situation remains fluid, although we think that the fund will be divided into two, a smaller pool and a large one for more ambitious projects.

Hamdullahpur advised that many questions continue to be received on the proposed new budget model, and it remains in development stage.

With respect to retention rates among undergraduate, in 2007 our rate from first to second year was 87.6%. Among comparable universities in Ontario, this was merely average. Our 2012 rate is 91.9%, a significant improvement. We must continue to grow in this positive direction.

Hamdullahpur provided a brief report on his recent trip to South Korea, Hong Kong and Singapore. It enabled us to really engage with our alumni, government officials and great universities. On the alumni front, we had more than 300 people attend the dinner in Hong Kong, and several smaller events were also successful and promised a number of development opportunities.

14. Q&A PERIOD WITH THE PRESIDENT

The president was asked if there is a shift from bi-cameral governance to a tri-cameral system, where the government is functioning as the third decision-maker. Hamdullahpur advised that the sector is not shy in expressing its resistance to increased government interference in university decision-making.

On activity based budgeting, Hamdullahpur was asked how faculties will be billed for space, and how we will account for “service teaching.” Orchard responded, and advised that, at the moment, we have a steering committee made up of the deans and some resource people. A set of guiding principles has been generated, including “hold harmless” and “teaching excellence – do it where it is best done.” The guiding principles then generate a set of drivers. It ought to be known as a resource allocation model, rather than an activity based budget. The budget will have to do with revenue generated by each faculty, and expenses charged to each for cross-university functions (library, president’s office, etc.). Many of the drivers are common across universities, typical and obvious. There may be some areas that have a choice of driver, depending on the character of the university. It is anticipated that the new model will lead to greater collaboration and collegiality. The value is its transparency. Deans
will have the ability to model various scenarios based on valid academic reasons. The communication plan will be developed as the details are outlined, and the Finance Committee will be consulted.

15. REPORT OF THE VICE-PRESIDENT, ACADEMIC & PROVOST

Enrolment Update. Darling presented a report on the status of undergraduate enrolments for the fall term 2014, and Frank presented a report on the status of graduate enrolments.

Senators had a number of questions about graduate enrolments in particular, including are we perpetually over-estimating our graduate enrolments for domestic students? Is it time to adjust our targets down? Frank responded by saying that it may be that we are seeing a flattening in the demand for PhD seats generally. Are we tracking how many of our master’s students are attracted out of our own undergraduate programs? Frank advised no, but those numbers can be made available. It was observed that, for future reports, it would be helpful to distinguish between research-based and professional master’s programs, and it would be useful to include retention rates and completion times. A senator asked how much we are actually spending to take additional graduate students. Orchard advised that the new budget model will actually address some of this question, and we should have the discussion to determine where we ought to go. Our focus ought to be on attracting the very best PhD students, no matter where they originate. And this university is actually the most generous to international PhD students in providing support.

Slides used in the presentations may be seen at https://uwaterloo.ca/secretariat-general-counsel/sites/ca.secretariat-general-counsel/files/uploads/files/enrolment_20141117.pdf

16. REPORT OF THE VICE-PRESIDENT, UNIVERSITY RESEARCH

Dixon advised that 140 NSERC discovery grant submissions and 60 SSHRC insight grant applications were submitted in the latest round. With respect to Canada Research Chairs, the university has been awarded four that can be publicly acknowledge: Professor John McPhee (Tier 1 – new); Professor Srim Narasimhan (Tier 2 – new); Professor Evan Risko (Tier 2 – new); and Professor Carolyn Ren (Tier 2 – renewal). Six additional applications have been successful, but we cannot talk about them till January. Associate Vice-President, External Research Bruce Muirhead has received a research chair for five years funded by the Egg Farmers of Ontario, related to his work in supply chain management. NSERC strategic grant results were announced three weeks ago – submitted 18 grant applications, and of those three were removed by NSERC in a pre-selection process as ineligible, and of the others, 11 were funded. In addition, the three removed were pre-approved for collaborative research and development grants.

In response to a question, Dixon advised that the U15 is the vehicle through which issues such as the return of the long-form census are pressed to government.

17. OTHER BUSINESS

Fall Term Break. Senate was advised that over 70% of students who voted in the referendum on the fall term break supported an earlier start to classes (Thursday after Labor Day) to allow for a fall term break.

Senate convened in confidential session.

18 November 2014

Logan Atkinson
University Secretary & General Counsel
Secretary to Senate
Senate Graduate & Research Council met on 10 November 2014 and on 8 December 2014, and agreed to forward the following items to Senate for information. These items are recommended for inclusion in the consent agenda.

Further details are available at:  https://uwaterloo.ca/secretariat/committees-and-councils/senate-graduate-research-council

FOR INFORMATION

________________________________________

CURRICULAR MODIFICATIONS
On behalf of Senate, council reviewed and approved course changes, new courses and minor plan changes for the faculties of applied health sciences (applied health sciences; social work), arts (French studies; Germanic and Slavic studies; global governance; philosophy; psychology), environment (master of development practice; planning), and mathematics (applied mathematics; computational mathematics; computer science; mathematics; pure mathematics; statistics).

PROGRAM REVIEWS

Aging, Health & Well-being
Council reviewed a report following up the two-year report on the collaborative doctoral program on aging, health and well-being offered by the Faculty of Applied Health Sciences. Based on the material presented in the report which provided additional information requested by council, the report was accepted by council with direction to forward it to Senate for information (Attachment 1).

Kinesiology
Council reviewed a report following up the two-year report on the bachelor’s, masters and doctoral plans in kinesiology offered by the Faculty of Applied Health Sciences. Based on the material presented in the report which provided additional information requested by council, the report was accepted by council with direction to forward it to Senate for information (Attachment 2).

Recreation & Leisure Studies
Council reviewed a report following up the two-year report on the bachelor’s, master’s and doctoral plans in recreation & leisure studies offered by the Faculty of Applied Health Sciences. Based on the material presented in the report which provided additional information requested by council, the report was accepted by council with direction to forward it to Senate for information (Attachment 3).

Work and Health
Council reviewed a report following up the two-year report on the collaborative doctoral program on work and health offered by the Faculty of Applied Health Sciences. Based on the material presented in the report which provided additional information requested by council, the report was accepted by council with direction to forward it to Senate for information (Attachment 4).

Taxation
Council reviewed a report following up the two-year report on the master of taxation program offered by the School of Accounting and Finance in the Faculty of Arts. Based on the material presented in the report which provided additional information requested by council, the report was accepted by council with direction to forward it to Senate for information (Attachment 5).
SCHOLARSHIPS AND AWARDS
On behalf of Senate, council approved the creation of the David Nimmo English Graduate Scholarship, the Lea Vogel-Nimmo English Graduate Professionalization Award, the Professor M.Z. Cohn Graduate Scholarship and the Statistics & Actuarial Science Doctoral Entrance Award.

Jim Frank          George Dixon
Associate Provost, Graduate Studies  Vice President, University Research
Two-Year Progress Report
Aging, Health and Well Being (PhD Collaborative)
September 2014

Prepared by the Aging, Health and Well-being Executive Committee:

Dr. Anita Myers (Lead) Dr. Sherry Dupuis Dr. Heather Keller
Professor Professor Professor
School of Public Health Department of Recreation and School of Public Health Department of Kinesiology,
and Health Systems Leisure Studies Schlegel Research Chair in
University of Waterloo University of Waterloo Nutrition & Aging
University of Waterloo

1. Background and Overview

The Aging, Health and Well-being (AHWB) program, which began in 2006, is one of two collaborative PhD programs (the other being Work & Health) housed within the Faculty of Applied Health Sciences (AHS). Both doctoral programs were designed to capitalize on the interdisciplinary nature and strengths of all three departments. In addition to meeting the requirements of their home department, students in AHWB are required to take a course entitled the “Fundamentals of Aging, Health and Well-being” (HSG/KIN/RLS 750) and a dedicated research seminar (HSG/KIN/RLS 751) throughout their degree. Further program details, including learning objectives, can be found in the 45-page self-study report prepared by the previous executive committee (Drs. Giangregorio, Mannell and Hirdes) in October 2011.

In the fall of 2011, both collaborative programs completed their first extensive self-study, followed by an independent joint external review. In their January 3, 2012 report, the reviewers recommended that the AHWB program should be continued, noting that this program “is positioned to be one of the best in the country”. They also recommended that the university provide “strategic support to ensure program growth and sustainability”, offering a number of specific suggestions in this regard. In response, the AHWB executive committee at that time proposed a number of changes to the program’s structure and resources. The proposed action/implementation plan, endorsed by the AHS Dean, is contained in the Final Assessment Report, Academic Review of the Collaborative PhD in AHWB prepared for the SGRC in March 2012.

The AHWB program is co-ordinated by an Executive Committee of three faculty members (one from each department). Historically, members have served for about two years with the leadership role rotating between departments. The present executive committee was constituted a year ago (summer 2013). In addition to delivering the required courses and monitoring student progress, our mandate is to continue the efforts of our predecessors in growing and sustaining the program,
working in collaboration with the Faculty Administrative Council, whose membership includes the Dean, Associate Deans, and Departmental Chairs.

This report details the progress made to date concerning each of the action items specified in the March 2012 AHWB Assessment Report. Additionally, we provide an update on the number of doctoral students who have enrolled in and completed the AHWB degree specialization, as well as other relevant information.

2. Action Plan (March, 2012) and Progress to Date

Prior to addressing the specifics of the action plan proposed in March 2012, it is important to describe what has transpired over the past two years. The Dean committed $15,000 to the AHWB program for the 2012-2013 fiscal year in order to sustain the program and develop a business plan. A draft business plan was started in 2012/2013 with extensive revisions undertaken by the current AHWB committee in 2013/2014, in collaboration with the departmental chairs, Associate Dean for Graduate Studies and AHS financial support personnel. When it became clear that a traditional business plan based on tuition revenues and projected growth in enrollment was not the best approach, an alternative “synergy” model was pursued.

The resulting Memorandum of Agreement concerning the Collaborative PhD program in Aging, Health & Well-being was approved by the Dean on March 3, 2014 and signed by all relevant parties (attached).

The objectives of this agreement are as follows:

1. to secure continuation and sustainability of the program for the next five years;
2. to foster stability and consistency in program administration, delivery and funding;
3. to maximize efficiencies;
4. to enhance accountability and recognition (of faculty and staff efforts); and
5. to enable growth (in student enrollment, faculty participation, program recognition) and ultimately, ensure the long-term sustainability of the AHWB program.

To achieve the above objectives, we developed a shared understanding to build on the collaborative history of the program and take advantage of new opportunities (e.g., the expansion of the RIA), while ensuring program stability and growth.

As the School of Public Health and Health Systems (SPHHS; formerly the Department of Health Studies & Gerontology) has consistently had the largest number of students enrolled in the AHWB program, it assumed administrative responsibility for the next five years. This is consistent with the recent external review of the School’s academic programs as a whole. In the report by the external reviewers (March 12, 2014), one of the recommendations was that: “the School and the Faculty of Applied Science continue to work together to profile and strengthen the area of Aging and Health as an area of excellence across the Faculty, with core critical mass in the SPHHS”.
As detailed further below, the 2014 synergy agreement addresses several of the suggestions by the external reviewers, while others are still a work in progress. The action items below pertaining to structure and resources, respectively, are excerpted directly from the 2012 final assessment report to SGRC. Progress to date for each item is shown in italics.

Proposed Structure for the AHWB program

- The acting AHWB Director will receive one course teaching relief to facilitate program development and student engagement, and to recognize the time spent in a teaching role as part of university teaching.

  Done. As stipulated in the 2014 agreement, the faculty member who leads the program will now be given a one-course teaching credit per year for delivering 750 and 751, as well as service credit for program promotion and administration. The contributions of the executive committee will also be formally acknowledged through their annual service assignments and performance reviews.

- The AHWB Executive Committee will have line authority regarding new and existing program resources and staff.

  Done. As shown in the 2014 agreement, the program now has dedicated resources and an annual budget of $12,000. Costs of the program are to be shared by the three departments proportionate to the number of students from each department registered in the program. Expenditures and growth (student enrollment, withdrawals and completions) will be monitored and reviewed on a regular (annual) basis.

- To reduce the burden of securing funding to support AHWB students, and to encourage program growth, the Faculty will provide funding, in the form of research assistant or teaching assistant stipends, to each of the three departments that can be allocated to support AHWB students. We have set enrollment targets, and specific funds allocated to the AHWB program will enable the program to reach those targets. Consistent enrollment from each department/school is integral to making it a faculty-wide interdisciplinary program. [page 2 of the final assessment report states that “The program aims to have 12 students per year in progress in steady state…equivalent to admitting about 1 student per year per department”]

  In the response to the external reviewers (March 19, 2012), the executive committee included a budget with expenses for additional TA/RA support. Additional TA/RA support was not included in the 2014 agreement as our AHWB Executive Committee and the present Faculty Administrative Council agreed that TA/RA support is already being provided through normal channels (refer to point # 4).
As shown in the next section, we have surpassed the 2012 target of 12 students as a steady-state complement. However, enrollment has not been equal across the three departments. As mentioned earlier, the majority of the students enrol in the SPHHS. Additional promotion efforts (both internal and external) are aimed at attracting more students in all three departments.

Proposed Resources for the AHWB program

- The Faculty has already begun to revise the AHWB program website (http://uwaterloo.ca/applied-health-sciences/current-graduates/aging-health-and-well-being-phd) and promotional materials to enhance program visibility. Further revisions of the website are pending and will include pictures and bios of featured students and faculty.

  Over the past year we have compiled up-to-date information on faculty members not only in AHS but across campus (e.g., Department of Psychology) who are engaging in research on aging. As stipulated in the 2014 agreement (point # 6), the Faculty has agreed to provide support for marketing (particularly web content). Additionally we are waiting for the GSO to finalize the standard branding they are developing for promotional materials across campus to ensure consistency with AHWB materials. Action pending.

- The AHWB program will need a budget for travel to conferences and promotional materials to increase program visibility. This budget will allow the AHWB Director to attend the Canadian Association on Gerontology Annual Meeting and a booth and promotional materials dedicated to increasing AHWB program visibility.

  Done. We agree with our predecessors that this is important to increase our visibility and attract new students. Therefore, we submitted a request (approved) to sponsor a booth at the upcoming Canadian Association on Gerontology (CAG) 2014 conference, as well as provide travel support for the AHWB faculty lead from our annual budget contained in the 2014 agreement. To minimize cost for both parties and foster collaboration, the booth at the CAG is being shared with the Partnerships in Dementia Care Alliance (PiDC).

  Consistent with recommendations by the external reviewers, we believe it is important to continue providing travel support for our students presenting at major conferences, particularly the annual CAG conference. With the 2014 agreement in place, we have allocated $1,200 to supplement AHWB student travel to the CAG2014 conference in Niagara Falls. A request will be submitted to the RIA for matching funds as the RIA is highly supportive of the program and has generously contributed student travel funds in prior years. It is important to note that students are expected to apply for other sources of travel support (e.g., from the GSO and CAG). However, many do not receive full coverage.
For instance, last year we received six requests for supplemental support. Each student received $200 from the RIA’s $1,200 contribution.

- The Faculty will identify an individual with responsibility to provide administrative support to the AHWB program director. The administrative support staff person will serve as the primary point of contact for prospective and current graduate students during their tenure at the University of Waterloo. This position will provide the necessary teaching and program management support for the AHWB Executive Committee to enable the successful day to day operation of the Graduate program. It is expected that this individual will assume these responsibilities as a part of other related duties in AHS, given that a full 1.0 FTE is not justified by the workload associated with a program of this size.

Done. As specified in the 2014 agreement, the SPHHS has agreed to take administrative responsibility for the program for the next five years and the Program Lead will be an SPHHS faculty member. Staff support will be provided by the School’s Graduate Coordinator, as well as the other departmental graduate coordinators, as part of their usual graduate student and administrative support functions.

A new SPHHS graduate support position was approved and the full-time Graduate Coordinator was hired in October 2012 for the MSc and PhD programs. Over the past year her assistance has been instrumental in tracking enrollment and completion in the AHWB program for planning purposes, helping us monitor student progress and completion of degree requirements, putting readings for the 750 course on reserve and organizing an orientation/social event for AHWB students and faculty. It is important to note that the graduate coordinators in each of the departments field inquiries from prospective students and assist current students in all of the graduate degree programs.

3. Update on Student Enrollment and Other Relevant Information

Student enrollment and completion. At the time the self-study report was written (October 2011), five students had completed the AHWB program or were close to completion. Five new students entered the program in 2006-2007 and in 2007-2008. Four were admitted in 2008-2009, but none in 2009-2010 and only one in 2010-2011. A total of five students withdrew from the program between 2006 and October 2011. Nonetheless, the student complement increased from 5 in the initial cohort to between 10 to15 per year.

The table below shows the number of doctoral students who have enrolled in the AHWB program for the last three academic years: 2011-12, 2012-13 and 2013-14. The program has allowed rolling admissions in each term to increase our complement. The program reached an all-time high of 17 students in Winter 2013, surpassing the target of 12 students as a steady state. With six new admissions in Fall 2014 (five from SPHHS and one from RLS), we will have a total complement of 22 students.
Since the program began (Fall 2006), a total of 11 students have completed their degree (9 from SPHHS, one from RLS and one from KIN). It is important to note that there are several other strong doctoral students (past and present) in all three departments who undertake aging research but have chosen not to formally enrol in the AHWB specialization. This is due, in large part, to having to fulfill both their home department and the AHWB requirements. The Executive Committee is working with the department graduate officers to streamline requirements and enhance consistency (e.g., with respect to timing and structure of comprehensive exams).
Faculty resources. As listed in the October, 2011 report (page 28), there were 27 faculty members in AHS with interests in aging research (11 in SPHHS, 10 in KIN and 5 in RLS). Two of these individuals were Schlegel Research Chairs (SRCs): George Heckman, SRC in Geriatric Medicine (SPHHS) and Richard Hughson, SRC in Vascular Aging & Brain Health (KIN). Subsequently, three SRCs have joined the university: Carlos Rojas-Fernandez, SRC in Geriatric Pharmacology (School of Pharmacy); Heather Keller, SRC in Nutrition & Aging (KIN); and Veronique Boscart, CIHR/Schlegel Industrial Chair (Conestoga College with an adjunct appointment in AHS). Last year, all the SRCs took part in the 750 course and/or the 751 seminar series. They also serve on comprehensive exam and dissertation committees. Although a few key faculty members have retired (e.g., Roger Mannell), several promising young scholars with active research programs in aging have since joined the faculty. As these individuals secure tenure and Approved Doctoral Dissertation Supervisor (ADDS) status, they will be able to supervise doctoral students in the AHWB program.

Research centres. As noted in the October 2011 self-study, University of Waterloo is home to several research centres providing opportunities for both faculty and students to undertake aging research. These include, but are not limited to, the Schlegel-UW Research Institute for Aging (RIA), the Murray Alzheimer Research and Education Program (MAREP), the RBC Retirement Research Center, the Partnerships in Dementia Care Alliance (PiDC), the Canadian Index of Well-being (CIW) network, and the InterRAI research group. The RIA in particular provides unique research opportunities through the Schlegel Villages (retirement, assisted living and long-term care) for both faculty and students, which will increase with the new facility (Centre of Excellence for Innovation in Aging) and integrated long-term care village being built on our north campus. Phase 1, which includes a 192-bed long-term care home and an adjacent 30,000 square foot research and education building, is scheduled for completion by August 2015. Moreover, the RIA has contributed to travel stipends for our AHWB students presenting at the annual CAG conference. The RIA and the Research Chairs should factor prominently in future promotion of the AHWB program and aid in attracting students from across Canada and beyond.
In its strategic plan, the university has identified aging as a key research area with potential for world leadership. AHS has been commissioned to develop a strategy to raise the profile of aging research campus-wide, and significant resources have been committed to this initiative, which will further enhance the research opportunities and environment for AHWB students.

Summary and Next Steps

In summary, most of the recommendations made by the external reviewers and endorsed by the AHWB executive committee and Dean as an implementation plan approximately two years ago (March 2012) have been acted upon. The memorandum of agreement reinforces the commitment of all three departments and the Faculty Administrative Council to the AHWB program.

One of our priorities is to promote the program more aggressively through both external (e.g., the booth at the CAG conference, student ambassadors, updating the website) and internal efforts (e.g., hosting a guest speaker, holding a mini, campus wide conference). As noted above, we are striving to increase admissions to the AHWB program with a more equitable distribution across the three departments. We continue to work with the graduate officers to better integrate departmental and AHWB program requirements and expectations. Further efforts to involve faculty and students from other departments across campus who are also engaged in aging research are another priority. This will enhance the experience of students in AHWB and in other Faculties and is in keeping with the university’s strategic priority on aging campus-wide.

As noted by the external reviewers in 2012, “the program in AHWB is positioned to be one of the best in the country”. We are one of only three gerontology doctoral programs in Canada; the others are at Simon Fraser University and the University of Sherbrooke (offered in French). Moreover, we are the only doctoral program that focuses specifically on health and well-being. The 2014 agreement constitutes a major step forward with respect to the stability, sustainability and growth of the AHWB program. With the continued support from the Faculty and the University of Waterloo as a whole, ultimately we hope to achieve the vision of becoming the best gerontology doctoral program in the country.
Two-Year Progress Report
Kinesiology (BSc, MSc, PhD)
September 2014

Preamble
Over the last two years there have been several major initiatives within the Department of Kinesiology that directly impact matters related to the recommendations provided by the review committee.

Space: Lack of space was identified as one of the most significant challenges. In that light, a new AHS expansion building has been in the planning stages over the last two years and was approved by University Senate in 2014. Construction on this ~56000 sq ft building will commence in Fall 2014 with targeted completion is Fall 2016. This space will have a significant positive impact on the teaching and research space for both undergraduate and graduate students in the Department of Kinesiology. The design of the space directly enhances the undergraduate student labs (~8000 sq ft) and brings the anatomy labs within the Department of Kinesiology. The space also provides some needed faculty research space as well as dedicated graduate seminar space (~1000 sq ft) and new student space (~2200 sq ft). Reception, social and dining space (total of ~5500 sq ft) is distributed throughout the building to enhance the environment from a student experience/student success perspective as well as to provide services and facilities for the entire Faculty and University community. In addition to the AHS expansion building, the University has also provided 20,000 square feet of space to the Department of Kinesiology linked to the donated Tech-Town building on the north campus. This space is currently under renovation with occupancy expected in Winter 2015. This space will provide essential clinical research space and associated workspace for trainees (graduate students, fellows). Complementing these new additions to space the Department has developed a space planning committee that has initiated planning for space optimization for research and teaching across the existing building, the new expansion building and the new Tech-Town facility.

Undergraduate curricular review: Kinesiology became a regulated health profession in 2013 and, in part, to ensure that students within Kinesiology are appropriately prepared to take the qualifying exams upon graduation, the Department has been undergoing a process of a curriculum review and renewal. This includes the development of new core courses, specialization areas as well as a capstone course to consolidate fundamental and applied understanding. An important part of the capstone will be the development of a streamlined research presentation course (currently KIN470) and the development of a Department of Kinesiology Research Day (undergraduate and graduate students). The development of the details of the links between the capstone course, research presentation course and research day are currently under review.
Course-based graduate program: On reflection of the career paths of many of undergraduates and graduates it was decided that a course-based graduate program option would be added within the current MSc. Over the last 2 years the graduate committee has been working on the development of a new course-based MSc what will be put forward for consideration for approval in Fall 2014.
Specific Recommendations and Responses

**Undergraduate program**

**Recommendation U-2:** That the Department considers establishing an annual “undergraduate student research day” in order to “showcase” student research projects and promote the accomplishments of students involved in “capstone” experience courses.

*Action pending:* The original 2-year plan identified the intent of offering the first “student research day” to occur in 2013-14. However in light of the significant ongoing curriculum review the plan to implement a research day is being delayed until we have restructured the core and capstone course components. While we continue to see the importance in this idea we are continuing the planning prior to implementation. As noted above, as part of the development is a new capstone course and revised KIN470 (student presentation course) which will serve as the background for a new student research day. We anticipate the first offering of a research day (linked to the curriculum) will rolled out for 2015/2016. The resources required for the delivery of this research day will be included into the budget planning for the 2015/2016 fiscal year.

**Recommendation U-4:** That the Department and Faculty conduct an in-depth analysis of the current and future research and teaching-lab space needs, with the generation of possible solutions.

*Action taken:* In Fall 2013 a Departmental space planning committee was assembled and they have completed the initial space ‘needs’ assessment to inform the planning process. In addition, the Faculty has also implemented a space planning committee to coordinate planning across the three departments within the faculty. This planning, at the Department and Faculty levels, will not only address the current space but has been conducting the planning for the new expansion building and the renovated Tech-town space (noted above).

**Recommendation U-5:** That the Department and Faculty investigate potential sources of funding for the acquisition and maintenance of new, dedicated lab-teaching equipment to enhance the quality of the student experience in research-based courses.

*Action taken:* As noted on the initial responses the teaching laboratory equipment maintenance and upgrades have been budgeted each year.

*Action pending:* Importantly, with the new laboratory space coming on line over the next two years a Department Equipment and Technology working group will be convened in Winter 2015 to begin the process of identifying new technologies and funding opportunities to upgrade the equipment to be used in the new facilities.

**Recommendation U-6:** That the Department and Faculty investigate allocating a small additional pool of funds to enable staff members pursue continuing education initiatives in order to maintain and expand their skill set.
Action taken: As noted in the initial response Departmental funds have been made available for specific continuing education opportunities/professional development of staff on an ad hoc basis over the years. Starting in 2012-13, the Department secured a budget line item specifically for this type of activity, from which funds have been allocated in response to specific requests that would be vetted by the Chair. It is noteworthy that the funds set aside have been able to support all the requests that have been made to date.

Recommendation U-8: That the Department undertakes discussions on the implications for the Department’s future course and program offerings as a result of the impending regulation of Kinesiology as a profession in Ontario.

Action taken (and ongoing): The Department agrees with this suggestion, and in fact discussions on this issue began long before the review. Following review of the competency profile produced by the Transitional Council of the College of Kinesiologists of Ontario the Department began the process of curriculum review (starting Fall 2013). While this process of review will continue for the next year the initial recommendations, including revised core courses in year 2B, are nearing completion and will be put forward for approval Fall 2014 for implementation in Fall 2015.

Graduate program

Recommendation G-1: That the Department consider clarifying/refining the stated objectives of the MSc and PhD programs, with the view to harmonizing the wording with the objectives of the Department and the University as a whole.

Action pending: In light of the pending addition of the new coursed-based option we are in the process of revising and clarifying the objectives for the graduate programs.

Recommendation G-2: That the Department be permitted to change the name of the field of study from “work Physiology” to “Physiology and Nutrition”.

Action taken: The changed field name was approved by Senate May 2012.

Recommendation G-3: That the Department address the issue of Kin 631, in order to ensure appropriate statistical training for graduate students in Kinesiology.

Action taken: The Department has assigned the statistics course to a new faculty member, who was to teach it first in Winter 2014 (since she has course reliefs in academic year 2012-2013). However she will be on maternity leave and the course offering will begin in Winter 2015.

Recommendation G-4: That the Department consider attempting to provide recognition to professors who provide research experiences for UG students.
Action taken: The Department has provided support for research costs associated with the supervision of undergraduate research projects within faculty performance evaluations, and provides a modest fund ($50/project) to support lab costs for these projects. The Department has added a description of availability of these funds, to the application forms for the research project courses.

Recommendation G-5: That the Department and Faculty conduct an in-depth analysis of the current and future research and teaching-lab space needs, with the generation of possible solutions that might include the rental and/or construction of facilities.

Action taken: As detailed earlier, there are two significant advances that will transform availability of research and teaching space. The AHS expansion building (open Fall 2016) and the renovated tech-town space (available Winter 2015). In Fall 2013 a Departmental Space Planning committee was assembled and they have completed the initial space ‘needs’ assessment to inform the planning process. In addition, the Faculty has also implemented a space planning committee to coordinate planning across the three departments within the faculty. This planning, at the Department and Faculty levels, will not only address the current space but is planning to accommodate for the new expansion building and the renovated Tech-town space.

Recommendation G-6: That the Department and Faculty investigate potential sources of funding for the acquisition and maintenance of new, dedicated lab-teaching equipment in order to enhance the quality of the student experience in research-based courses.

Action taken: In the past, teaching laboratory needs were funded from carry forward. With the new budget model, these are now included as an ongoing budget line.

Action pending: Importantly, with the new laboratory space coming on line over the next two years a Department Equipment and Technology working group will be convened in Winter 2015 to begin the process of identifying new technologies and funding opportunities to upgrade the equipment to be used in the new facilities.

Recommendation G-7: That the Department and Faculty consider allocating a pool of funds to enable staff to pursue continued education initiatives in order to maintain and expand their skill set.

Action taken: As noted in the initial response Departmental funds have been made available for specific continuing education opportunities/professional development of staff on an ad hoc basis over the years. Starting in 2012-13, the Department secured a budget line item specifically for this type of activity, from which funds have been allocated in response to specific requests that would be vetted by the Chair.

Recommendation G-8: That the Department increase technical support in the IT area for departmental researchers.
Action taken: In the short term the Department, with support of the Faculty, has recruited and hired additional IT technical support (50% of technical support on a one-year contract (July 1, 2014- July , 2015).

Action pending: Long-term planning for technical support is presently under review in the Department as it is linked to space planning and planning for new teaching space and technologies. We anticipate a longer term strategy for technical support to be finalized in Winter 2015 in order to apply to the Provost, as mission critical, for a more permanent solution in 2015-2016.

Recommendation G-9: That the department obtain tracking data on the employment/further education outcomes of the masters and doctoral students.

Action pending: In concert with the development of the new course-based MSc option for the graduate program we are developing a mechanism to track employment options for MSc thesis, course-based and PhD students.
Two-Year Progress Report
Recreation and Leisure Studies (BA, MA, PhD)
September 2014

RLS Department student, faculty and staff overview for 2014-15: Undergraduate enrolment will approximate 540 students in fall 2014, an RLS record high. Graduate enrolment will approximate 65 to 70, also a historic high, but graduate intake levels have remained steady at target over the past two years. RLS enters fall 2014 with 18 faculty (an increase of 3 from the review period): 6 full professors (1 who will retire in October, 1 on 12-month sabbatical leave, 1 starting 6-month sabbatical leave in January), 3 associate professors (1 on unpaid leave for the duration of the academic year), 6 assistant professors, and 3 lecturers (1 continuing probationary and 2 definite term). Replacement of the retiring professor will be delayed at least until July 2015 given UW’s recent hiring moratorium. RLS has 2 permanent staff (an administrative assistant and an undergraduate advisor) and a 1-year contract academic assistant hired to assist with ever increasing numbers of undergraduate students and the complexities of undergraduate advising.

On-going Strategic Planning efforts: In response to ongoing retirement-driven faculty turnover (8 new faculty hires over the past 7 years), RLS initiated an Appreciative Inquiry (AI) planning process in fall 2012 with a goal of maintaining Departmental markers of excellence (e.g., top-ranked North American leisure studies research program from 2000 through 2010; unparalleled experiential education opportunities via Co-op, practicums and internships relative to other Ontarian recreation and leisure undergraduate programs), while upgrading our undergraduate and graduate programs to take advantage of emerging faculty strengths. The AI process concluded in summer 2013 and was followed by an extensive overhaul of the RLS undergraduate curriculum. Those changes are currently working their way through appropriate UW channels. Beginning fall 2014, again building upon the AI results, a similar process will be undertaken with respect to the graduate curriculum.

Undergraduate program response to review to date

Our Augmented Program Review requested that RLS consider course reductions in order to improve curriculum efficiency and effectiveness. Our ongoing strategic curriculum re-design process will ensure the RLS core and the core courses required of each of our four majors contribute to successful student learning experiences and efficient course delivery. Goals include:

a) Reduction of the number of undergraduate courses in the RLS calendar from 53 to between 35 and 40;
b) A policy whereby every course in the revised calendar will normally be taught every year;

c) An increase in the size of the RLS common core from 8 to 12 courses, 6 of which will be taught in students’ first 3 terms ensuring a stronger cohort experience for all RLS students;

d) A minimum of 4 major-specific courses in all four RLS majors, open only to those students for the purpose of creating major-specific cohort experiences;

e) Experiential-oriented field course in all four RLS majors (e.g., REC 253, 312, 356, 380), to be taken in 2nd or 3rd year, and a capstone course taken during students’ 4B term;

f) Re-focussing/re-naming two majors – from Tourism & Parks Management to Tourism Wellbeing & Community and from the catch-all Recreation & Leisure Studies to a moniker reflective of understanding leisure in contemporary society. The latter change will affect that major only. The Recreation and Leisure Studies Department name will remain intact. As well, our Recreation & Sport Business (RSB) and Therapeutic Recreation (TR) major names will remain intact.

Some of these changes have been approved at the Department level. The remainder will be approved during scheduled September and October meetings in order to work through the required votes needed to appear in the 2016 UW Calendar.

Other ongoing RLS undergraduate initiatives include:

a) Reaffirming our commitment to teaching quality and the student experience by putting our strongest instructors in 1st-year and 4th-year courses;

b) Creation of writing intensive initiatives in REC 101 with UW’s phasing out of the English Language Proficiency Exam to strengthen the English literacy skills of 1st-year students;

c) Exploring the process of converting students to their desired major upon arrival to the University to assist with decision making around course offers and sequencing. This would also help to facilitate the development of a 3-year teaching plan for faculty, staff, and students; RLS continues work in strengthening college articulation agreements with institutions that produce several dozen transfer students annually;

d) The Department is also in the process of creating two new articulation agreements with Mohawk College’s Recreation Therapy diploma program and Niagara College’s Recreation Therapy program. RLS will target colleges with tourism diploma programs once the new Tourism, Well-being and Community degree has been approved. All current articulation agreements are in the process of being reviewed to determine renewal date, whether or not there have been any changes to the programs, and if so, requesting course outlines to expedite the transfer credit assessment process;
e) Stronger communication between RLS and the Centre for Cooperative Education and Career Action has been established through monthly meetings. During the monthly meetings with the Associate Chairs of Undergraduate Studies, Assistant Registrar, and Associate Dean, the Faculty Relations Manager provides details on overall employment statistics for the Faculty and the RLS Department. Term data includes the total number of students scheduled for work, total number of students participating in the process, number of employed students, and number of unemployed students seeking employment. As a result, the undergraduate team can reach out to unemployed students and provide information on resources to increase their likelihood of securing employment. The Undergraduate Associate Chair has met with the Faculty Relations Manager to discuss skills and competencies of RLS students to ensure future job opportunities are relevant and valuable to the students’ academic career (see point c above). Additional ways to link co-op and academic content have also been explored, so students can further integrate co-op experiences with their academic major. The Faculty Relations Manager facilitates an information session for second-year RLS students at the beginning of the fall term. This session provides an overview of co-op processes and what students can expect with the upcoming job search, interview process, and securing employment. This session is tailored to the RLS students and provides opportunities to ask program-specific questions.

f) AHS has developed a Foundation Term to assist students who are academically at-risk in their first year or are required to withdraw from the program after their first year of study. A questionnaire has been designed by RLS to rule-out other potential reasons for the student’s lack of academic success, for example, mental health issues or lack of interest in the program. If the student lacks skills for academic success, a Foundation Term is offered consisting of UNIV 101 and two REC courses with clear requirements for this term. The Student Success Office officially opened October, 2011 to assist students with academic issues and to assist with the transition to university. This summer, AHS hired a Faculty Relations and Academic Support Specialist, who is shared with the Faculty of Arts. Through this new position, AHS will complement first-year orientation to ensure seamless transitions and development of a learning community. AHS is currently developing a common first-year course to target writing with feedback, building engagement, and developing English literacy and communication skills. This past academic year, RLS saw their first Bridge to Academic Success in English (BASE) students. This program is for students who have met the academic requirements for RLS, but their English language test scores have not been achieved. RLS is moving to a two-term BASE program, which allows students who have met English language requirements and course averages to move into degree studies. There is great potential to grow the RLS international student complement.
g) 2+2 programs have been explored but, as all options were specific to tourism partnerships, no further action will be undertaken until RLS tourism faculty numbers are at full complement and changes to the undergraduate degree implemented,

h) The RLS TR group has created a survey to be sent to key stakeholders (practicum and internship supervisors) for feedback on the existing TR curriculum to identify possible gaps in the curriculum and/or reinforce curriculum content to ensure graduates are competent and confident practitioners;

i) The Recreation Student Association (RSA) was regenerated as a part of AHSUM (Applied Health Sciences Undergraduate Members) and has had a healthy influence on students the past two years and going forward.

Graduate program response to review to date

During the 2013-14 year RLS fully implemented a process of assigning interim supervisors to incoming MA and PhD students to help address issues of supervisory load and to better facilitate student/supervisor connections.

Both AHS-wide collaborative Ph.D. programs (Aging Health and Well-being and Work and Health) underwent stringent review in 2013-14. AH&WB developed resource plans going forward that do not require teaching resources in the next five years from RLS, but will entail continued support through student supervision, committee members, and a small (proportionate) budget contribution. Admissions to the W&H program have been suspended given lack of faculty-wide resources to sustain it.

At request of the AHS Dean’s office, we took a lead role during the 2013-14 year developing an AHS-wide graduate course in qualitative research methodologies (AHS 600). This course has long-term potential to reduce enrolment pressure in REC 673 which was, to date, the only qualitative analysis course in the Faculty. It is anticipated that AHS 600, when fully on-board, may serve all 3 AHS academic units and enhance the learning experience by providing the necessary number of sections to effectively do that as well as serve graduate students from other faculties. If AHS 600 performs as envisioned, RLS will explore changing REC 673 to serve as an advanced-level qualitative methodologies course which would better serve student needs and create efficiencies by reducing the number of one-on-one REC 792 Advanced Research Methods courses that we currently mandate for doctoral students.

As part of the already described strategic planning process, RLS is progressing toward re-working all graduate courses with a long-term view to including no more than 12 in the UW Calendar and normally offering all graduate courses every year. This proposal will be fully discussed during the 2014-15 academic year. Our goals include better aligning elective graduate courses with our major areas of research: Leisure and a) community, b) environment, c) health and well-being, d) identity and diversity, and e) service and policy. It will also address student concerns regarding course availability and comply with the recommendation that we thin out
and streamline our graduate course offerings and further limit the number of independent studies courses offered (i.e., REC 696/697/698, REC 792).

RLS has made progress toward developing more stringent guidelines and requirements for doctoral students who teach undergraduate courses in our Department. These guidelines, which will include the completion of a minimum number of CTE instructor training courses, will likely reduce the number of students who teach courses and enhance the experience of those who do by ensuring they are better prepared. We will also be putting in place a more formal mentoring process for new instructors to give them better support as they develop their teaching skills. Last, it is now policy that doctoral students cannot normally teach RLS courses prior to completion of comprehensive exams. Two definite term lecturers have been hired (a 2-year term and a 1-year term) to reduce Departmental dependency on graduate students to teach courses. The 1-year DTL covers an aforementioned leave of absence whereas the 2-year DTL covers chronic shortages related to undergraduate growth and administrative course buyouts.²

RLS has given serious consideration to course-based MA programs over the past two years. The Masters in Therapeutic Recreation (MTR) proposal was approved through Department and Faculty channels as well as by UW Senate and the Ontario Ministry but was shelved by Provost McBoyle in 2013 on the basis of inadequate revenue projections. That proposal will remain dormant for the foreseeable future, at least until the current RLS therapeutic recreation faculty complement is fully replenished; RLS is currently down two lines in that area pending replacement of a retiring faculty member and permanent resolution an unpaid leave situation. Preliminary discussion of a course-based tourism MA was also introduced by the RLS Graduate Studies committee but that discussion is on indefinite hold until newly hired tourism faculty are fully on board. As a decision has been made to move one of our tourism faculty lines, via retirement and replacement, to the TR group, the Department will not likely move in this direction until if or when a new faculty tourism hire can be justified.

---

¹ This process includes reviewing courses that need to be deactivated or amalgamated as a result of the Department’s visioning process. Most of these changes involve only REC courses, however AHS is also exploring possibilities of amalgamating REC 203/SOC 210 – Sociology of Sport with HLTH 260 – Social Determinants of Health and KIN 250 – Sociology of Physical Activity to provide an inter-professional education opportunity for all AHS students. This course could provide all students an opportunity to share and integrate knowledge from their respective degree programs. The Department is also exploring viability of the Parks Option given the upcoming retirement of our park management specialist and a decision to re-assign that line in support of the burgeoning Therapeutic Recreation major.

² Current RLS faculty teaching buyouts include: Director, Canadian Index of Well Being (2 courses, ongoing); Director, P²ULSAR (1) and RBC Retirement Research Centre (1); Special Advisor to the President on Women’s and Gender Issues (1); PI, CURA project (1); and requisite reductions for Department Chair (2), Associate Dean (1.5), and 2 Associate Chairs (1 each).
Two-Year Progress Report
Work and Health (PhD Collaborative)
September 2014

Prepared by the Work and Health Steering Committee: Dr. R. Wells (Professor, Department of Kinesiology), Dr. P. Bigelow (Associate Professor, School of Public Health and Health Systems) and Dr. H. Mair (Associate Professor, Department of Recreation and Leisure Studies)

1. Background and Overview

The Collaborative PhD Program in Work and Health received final approval from the Ontario Council on Graduate Studies in the spring of 2007 and the first cohort of students was admitted in the fall of 2008. The program is unique in Canada as it considers the impacts of work on health from a broad, multidisciplinary perspective in contrast to other academic programs that focus on specific aspects such as ergonomics or occupational hygiene. The objectives of the Work and Health Program align perfectly with the mission of the Faculty of Applied Health Sciences (AHS), which stresses collaboration and partnership to create and apply knowledge “…to protect and promote health and well-being, prevent illness and injury, and optimize abilities across the life course for all”. The program is valued added to the three academic units of the Faculty--Departments of Kinesiology and Recreation and Leisure Studies, and the School of Public Health and Health Systems--as the multidisciplinary area of work and health is foundational to the missions of each unit.

The Collaborative Program leverages the resources of faculty across AHS to create a learning environment that facilitates the goal of producing scholars and researchers who will be successful in the multidisciplinary field of work and health. The program allows students to pursue the work and health program of study while also developing and strengthening specific methodological/disciplinary skills through meeting the academic requirements of their home academic unit. The Work and Health program has three core courses and students entering the program take HSG/KIN/REC 730 first as it is a foundations course that provides an examination of the major substantive topics in work and health from a multidisciplinary perspective. The “Approaches to Research in Work and Health” course (HSG/KIN/REC 731) focuses on contemporary research methodologies and methods along with their theoretical and epistemological underpinnings. The seminar courses (HSG/KIN/REC 732A & 732B) expose students to current research in the field through their engagement with guest speakers and Work and Health faculty, and by presenting their own research proposals and study findings.

The Work and Health Program is administered by a Steering Committee composed of faculty from each of the three academic units. Members of the Steering Committee have included R. Wells (Kinesiology), N. Theberge (Kinesiology), P. Bigelow (SPHHS), H. Mair (RLS), and M. Havitz
The Steering Committee oversees course administration; core course content planning; the administration of the comprehensive examinations; and, in collaboration with graduate officers from the academic units, admissions, student progress and advising. In the program’s self-study completed in 2011, six faculty members (2 from each unit) were identified as category 1 (core) faculty who either teach work and health courses or who supervise students in the Work and Health Program. Since that time, with one retirement and changes in the supervision of students in the program, that number has dropped to three. However, the complement of affiliated/adjunct faculty (categories 2 and 3) who participate in the program by participating on student committees and guest lecturing has increased to over 20.

The self-study for the Work and Health program was completed in the fall of 2011 and reviewers recommended that the program be continued. In response to the comments and recommendations from the external reviewers, the Work and Health Steering Committee met on numerous occasions to provide a response to the review team and develop an action plan. The action plan was presented to the AHS Administrative Council on March 14, 2012. The action plan as well as program activities completed and underway since the self-study are described below.

2. Action Plan and Progress

The reviewers’ report noted that the Work and Health program has added considerable value to the University of Waterloo and should be continued. They commented that:

The program in Work and Health has effectively used strong existing faculty and resources at AHS to create a unique program that has the potential to attract students from across Canada and elsewhere. It certainly builds on the strengths at UW in biomechanics/ergonomics and public health. However, by taking a very broad perspective on work and health it has taken a unique position in Canada. For example, I know of no other program that emphasizes quality of life issues, such as work-home balance and the health issues of non-traditional work arrangements. These are some of the major future issues for the field of work and health. The program is still rather new, but it is gaining visibility in the Canadian Association for Research on Work and Health and if it continues to grow it will become one of the leading programs in the country.

The reviewers recommended that the university provide strategic support to ensure the growth and sustainability of the program. Additionally, recommendations were made to develop program structures that would address issues of teaching credit, release time, and dedicated recourses for the programs. In the action plan presented to the AHS Administrative Council, the Work and Health Steering Committee proposed a number of action items:

1. Formalize the commitment, on a continuing basis, of teaching resources to cover teaching assignments for the three core courses.
2. Ensure that dedicated assistance is provided for marketing and recruitment
3. Ensure that resources are available to support visiting speakers and teleconferencing
The Work and Health Steering Committee developed a draft business plan that was presented to the AHS Administrative Council on January 22, 2014 but has not yet finalized the program’s Synergy and Sustainability Plan. The draft plan proposes a structure that formalizes the role of the Program Coordinator, makeup of an Executive Committee (comprising the Program Coordinator and one faculty member from each of the other units), support from the Departments/School to provide instructors for the two 0.5 credit courses (HSG/KIN/REC 730 and 731), and financial support for visiting speakers. The AHS Administrative Council was fully supportive of the draft plan.

Although all core faculty in the Work and Health program are committed to the program’s growth and development, progress in moving forward with the Synergy and Sustainability Plan was delayed due to the retirement of the Program Coordinator (N. Theberge) and added administrative responsibilities of two other members of the Steering Committee (P. Bigelow and H. Mair – both Graduate Officers). However, as both Bigelow and Mair are nearing the end of their administrative appointments and with an influx of new faculty with strong interests in work and health, the Steering Committee is moving forward with our action plans.

It is worth noting that two new faculty members in the School of Public Health and Health Systems are established researchers in work and health. Dr. Ellen MacEachen was a Senior Scientist at the Institute for Work & Health before joining the Faculty on July 1, 2014. Ellen is the co-director of the SSHRC-funded Centre for Research on Work Disability Policy. She is an executive committee member with the CIHR Strategic Training Program in Work Disability Prevention, an academic fellow with the Centre for Critical Qualitative Enquiry at the University of Toronto, and an academic council member with the Pacific Coast University for Workplace Health Sciences.

Dr. Craig Janes joined the School in July 2014 at its Director. Dr. Janes brings a global perspective to the Work and Health program. An anthropologist, Dr. Janes uses a variety of research methods, including ethnography, epidemiology, and spatial techniques, to examine the impacts of industrial development on rural populations. His research has extended from British Columbia to Tibet, China, and Mongolia. He is internationally known for his work on the impacts of mining and is the principal investigator of a recently funded project titled “Measuring the effects of mining on health: A new Canadian research initiative.”

The Department of Kinesiology is in the process of recruiting a faculty member who has expertise in physical ergonomics; when this individual is hired, he/she will be encouraged to become a core Work and Health faculty member. Additionally, the Department will replace the faculty position open because of N. Theberge’s requirement and that individual may have interests in work and health. These changes will increase the number of core Work and Heath faculty, raise awareness of the program, aid in the recruitment of students, and will allow the program to grow be the leading work and health program in the country.

1 The current Steering committee will sunset when the new Executive Committee is formed
3. Update on Student Enrolment and Accomplishments

An update on student enrolment as well as achievements and accomplishments of Work and Health program students is provided below.

**Student enrolment.** No students were admitted to the program in the 2012-2013 academic year because of lack of capacity of Work and Health faculty to take on new students. As noted in Table 1, a total of 3 students have withdrawn from the program since its inception. Two of those who withdrew did so because of difficulties balancing graduate school with full-time employment. The other student withdrew because his research interest shifted and plans for his dissertation research are now not related to work and health.

Table 1. Number of Doctoral Students in the Work and Health Program

<table>
<thead>
<tr>
<th>Year</th>
<th>New</th>
<th>Student Complement</th>
<th>Male</th>
<th>Visa</th>
<th>Withdrawals</th>
<th>Completions</th>
<th>Continuing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>2008-09</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>50.00%</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2009-10</td>
<td>5</td>
<td>9</td>
<td>4</td>
<td>44.40%</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2010-11</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>55.60%</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>2011-12</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>55.6%</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>2012-13</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>55.6%</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>2013-14</td>
<td>0</td>
<td>9</td>
<td>5</td>
<td>55.6%</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

**Accomplishments.**

All students in the program are performing well and all but the latest student admitted (Fall 2012) have completed their comprehensive exams; two students will have dissertation defenses in the fall of 2014. Full-time students have received support through TAs, RAs on work and health research projects, as well as through external scholarships and awards, including a Mustard Fellowship in Work and Health. Four students were accepted into the highly competitive Work Disability Prevention CIHR Strategic Training Program. One student successfully completed the OBEL Gender, Work and Health Summer School (a CIHR-funded training program). All students have published aspects of their research and all have attended one or more conferences or meetings with a scope that includes work and health (e.g., the Canadian Association for Research on Work and Health Conference, the Association of Canadian Ergonomists, AUTO21). A number of students have very strong track records with each of them having authored or co-authored over 4 peer-reviewed articles in the past two years.
4. Summary and Next Steps

The Work and Health Program Steering committee will be meeting this fall to finalize the Synergy and Sustainability Plan that was presented in draft form to the AHS Administrative Council in 2013 and January 2014. The plan will then be presented to the heads of the departments/school and the new acting AHS Dean for approvals. We plan to have a Memorandum of Agreement regarding the Collaborative Work and Health Program in place by December 2014. This agreement will allow a newly formed Executive Committee to move forward with strategic planning to ensure the program’s sustainability and growth.

Although the Work and Health program has an excellent reputation, student enrolment is less than ideal. The program reviewers noted “with greater visibility in marketing and recruitment, these programs could grow significantly in the coming years”. Efforts will be made to act on this recommendation by working with AHS recruitment specialists and by encouraging core and affiliated faculty to promote the program at conferences and scientific meetings. We will work to improve the visibility of the Work and Health program on webpages in the school/departments as well as AHS. This fall we will be contacting AHS faculty to encourage those with interests in work and health to become active members of the program. Additionally, we have a considerable number of new faculty with interests in the field and we will provide them with information about the program and encourage their participation. As supervisory capacity is a limiting factor, our efforts to promote the program in AHS will be helpful in increasing student enrolment.

In summary, the Steering Committee and all affiliated Work and Health faculty are committed to the growth and vitality of the program. We will have two alumni of the program this year and they will be ambassadors with their future work and successes further enhancing our reputation. Although we have experienced some challenges in student recruitment and with faculty retirements, with new faculty and increased visibility and outreach, we will be well-positioned to grow into the leading doctoral program in work and health in Canada.
Two-Year Progress Report
Academic Review of Master of Taxation
For September 1, 2014

Actions taken as planned in the 2-year plan

Coming out of the 2011 program review, a series of action plans were set out in the final report. All of the plans for the short and medium term have been implemented and are either completed or represent an ongoing initiative.

A. Tax Faculty Advisory Group

2011 Plan: *It is our intention to formalize the current consultative process where input is frequently sought from tax faculty within the School of Accounting and Finance.*

Completed: The consultative process where input is frequently sought from the tax faculty group has been combined with a formalized process. For the first year, separate meetings of the tax faculty group were implemented to seek formalized input through at least two meetings annually. Subsequent to that period, the tax faculty group established formal, regular meetings and the MTax program has been added as a regular item on the group’s agenda. This integration provides the opportunity for regular input and has created the formalized process that we were seeking.

B. Succession Planning

2011 Plan: *While there is no immediate urgency, we agree that a plan to address longer term succession needs will be helpful and we will begin the process of developing a succession plan for full-time faculty who are currently teaching in the MTax program.*

Progress to date: In 2012 the tax advisory group began to consider the issue of succession planning for full-time faculty within the MTax program. There was agreement that there was no imminent concern as the current faculty complement was robust and was doing an excellent job in meeting the academic needs of the program.

The program director works closely with program faculty, school faculty and Tom Scott, the Director of the School of Accounting and Finance, to ensure a smooth transition when changes in faculty complement occur. To address the medium and longer term faculty complement, Professor Ken Klassen, who taught in the program previously, is returning to the program. Professor Klassen is currently working with the program director on a transition plan for his return.

Long term full-time faculty plans and hires are the accountability of Tom Scott who is in regular touch with the tax team to address broad needs on an ongoing basis. The anticipated retirement of one of the current full-time faculty members in 2018 is being addressed through the long term staffing plan and remains an ongoing item.
C. Major Course Changes

2011 Plan: *Major course changes will continue to work within the pre-defined process.*

**Progress to date:** There is a well-defined process for making significant course changes within the School of Accounting and Finance. This involves preliminary discussion with the tax faculty prior to developing any recommendations. A review of the program courses occurs on a regular basis, and all are current and meeting the program needs. As such, there has been no significant course change over the past two years.

D. Scholarship Review

2011 Plan: *Review student awards and recognition within the MTax program.*

**Completed:** A review of the program’s award and recognition elements was undertaken in 2012 with input sought from the tax faculty and other stakeholders. The outcome of the review included a redesign of the Entrance Scholarship which was implemented in 2013, along with the formalization of a new mid-program award for two students with a financial need.

E. MTax Learning Model

2011 Plan: *Ensure that the MTax Learning Model continues to be well integrated into our program philosophy and courses.*

**Progress to date:** During the past two years, input was sought from the faculty and key stakeholders to ensure that the MTax Learning Model continues to be well integrated into our program philosophy and courses. This is an ongoing process where we seek regular and ongoing input through surveys of employers, students and graduates. This allows us to monitor our success in meeting the expected outcomes of the MTax Learning Model and fine-tune activities to reflect changing needs.

F. Tax 638 Course

2011 Plan: *The advisory group will look at the delivery of this course to ensure the longer term plan continues to meet the needs of our students.*

**Completed:** Input was sought from the tax faculty on the hiring of an instructor for the Research Paper course as we want to ensure that we address the needs of our students. At the request of students who value the opportunity for greater access to faculty in this hands-on course, two faculty members now share teaching responsibilities. We believe we have achieved the right complement as the size of the class has grown significantly. We will continue to monitor the course and fine-tune as needed.
G.  Tax 625 Course

2011 Plan:  *Review placement of this course in the program stream.*

Progress to date:  The program review team suggested that the Tax 625 (Tax Policy) course be taught as early as possible in the program.  This course was moved from the first term to the second term beginning in the Spring 2012.  We are currently completing the second year of this course during the Spring (second) term.  With two years now complete, this issue will be a future agenda item.

H.  Monitoring Student Evaluations – “Instructor Availability”

2011 Plan:  *Monitor instructor availability through evaluations.*

Completed:  As noted in our response to the review team’s report, we believe that the student evaluations indicate a high level of satisfaction for the issue of “Instructor Availability” and that the results are consistent with an on-campus environment.  We continue to monitor course evaluations and achieve very positive results.

I.  Learning Model Outcome


Completed:  As discussed in item (E) above, we have initiated surveys of key stakeholders.  The surveys are designed to assess the skills and abilities of the students relative to employer expectations, skills utilized by students during successive work terms, and overall skills and abilities upon the completion of the program.
Senate Undergraduate Council met on 4 November 2014 and on 2 December 2014, and on behalf of Senate approved changes to academic plans, new courses, course changes and course inactivations. Council agreed to forward the following items to Senate for information. Council recommends that these items be included in the consent agenda. The items recommended for inclusion in the regular agenda are contained in a separate report. Further details are available at: uwwaterloo.ca/secretariat/committees-and-councils/senate-undergraduate-council

FOR APPROVAL

REGULATION CHANGES  [effective September 1, 2014]

Faculty of Arts
Transfer Credits

1. Motion: To approve changes to the faculty’s regulation on transfer credits as presented.  
(Note: deleted text = strikethrough.)

Admission from Other Accredited Post-Secondary Institutions

Transfer credits may be considered on a case-by-case basis. For further details, see Applicants from College or University in the Admissions section of this calendar.

College of Applied Arts and Technology (CAAT) and Bible College credits cannot be added to a student's record once s/he has accumulated a total of ten academic course units, from any or all sources, that may be counted towards a University of Waterloo Arts degree.

Rationale: This policy first appeared in 2001/2002 and was established to prevent a student from leaving his/her degree studies at Waterloo after completing two years or more, going to a CAAT for a diploma, and then asking to have some of the courses completed in the diploma transferred to “backfill” the degree, and as a result be eligible to graduate. However, the rules do allow a student to count college courses taken as part of a College Diploma program as transfer credits towards his/her degree, as long as the work was completed before admission to Waterloo. Given the current pathways initiatives, certain scenarios arise where this regulation will be of benefit to students and the university to allow transfer credits in this fashion. Due to an administrative error, this change to Arts’ admissions regulations was entered into the 2014-15 academic calendar without Senate approval, but was presented to Arts Faculty Council in February 2014. As it benefits students by allowing more flexibility for considering CAAT transfer credits upon admission, this recommendation is brought forward for retroactive approval.

REGULATION CHANGES  [effective September 1, 2015]

Co-operative Education and Career Action
Transfer of Work Term Credits

2. Motion: To approve amendments to the undergraduate calendar text as presented:  
(strikethrough = deleted text; underline = new text)

Co-operative Degree Designation

Graduates completing the Co-operative Education system requirements will receive a "Co-operative" degree designation. Co-operative registration, and work term requirements, and internal transfer of
work terms credits can be found in the Co-operative Education website. Work reports, also a requirement of a Co-operative degree designation, are administered by your faculty.

Inter-faculty Transfer of Co-op Work Term Credits

Credit for successfully completed co-op work terms may be transferred between programs in different faculties. Transfer of co-op work term credits normally occurs if the student’s new prescribed study/work sequence is sufficient to meet academic residency requirements and the student can attain the required number of study-relevant work terms for the co-op designation in the destination program. Depending on the destination program, this may be either an additional two work terms or otherwise half of the required number of work terms. The destination program/faculty may offer exceptional co-op credit transfer arrangements to students in unique situations or having special circumstances – such situations are considered on a case-by-case basis and normally involve consultation with Co-operative Education & Career Action.

Rationale: These changes will provide clarity to students on the transfer of co-op work term credits.

FOR INFORMATION

CURRICULAR MODIFICATIONS

Minor program changes and course changes were approved for global experience certificate program and for the faculties of arts (English language and literature; French studies; political science; religious studies), engineering (electrical & computer engineering; mechanical and mechatronics engineering), environment (environment & business), and science (aviation; chemistry; physics/electrical & computer engineering) effective 1 September 2015.

Minor changes to programs, new courses, course changes and course inactivations were approved for the faculties of arts (classical studies; East Asian studies; Jewish studies; management studies; religious studies; women’s studies), engineering (business, entrepreneurship and technology; electrical & computer engineering; nanotechnology engineering), and science (earth sciences; optometry; pharmacy; science) effective 1 September 2016.

Academic Program Review Reports

Two-Year Report – Bachelor of Architectural Studies – Please see Attachment #1

Mario Coniglio
Associate Vice-President, Academic
1. INTRODUCTION

As noted in the previous Report to the Senate Undergraduate Council of November 21, 2011, since the architectural accreditation process overlaps greatly with the undergraduate program review process, UW uses the accreditation program report together with an addendum to satisfy the requirements of the undergraduate program review process for the School of Architecture.

The program’s self-study—the Architecture Program Report (APR)—was submitted in January 2011, the last accreditation visit to the University of Waterloo School of Architecture took place in March 2011 and the visiting team report was received in June 2011. This accreditation process resulted in a six-year accreditation term with a focused review in 2013. This review was completed in May 2013.

The previous UW undergraduate report from Architecture noted two Areas of Concern and Opportunities for Improvement as defined below. These were two of the 46 conditions for accreditation that were considered to be “Not-Met”:

**Human Resource Development:** Although the nature and intensity of scholarly and creative activity has increased significantly since the previous accreditation visit, the general faculty profile in Architecture with respect to the university’s expectations and measure of scholarship has, however, changed little over this period. It would appear that most faculty members, by choice or circumstance, do not seek advancement.

**Accessibility:** Although accessibility is discussed and analysed in the Acts and Codes course, application of this criterion appears inconsistent in the comprehensive design projects 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 early years.

2. PROGRESS SINCE THE 2011 UNDERGRADUATE REPORT

The following is an outline of progress made in relation to the areas of concern defined above:

2.1 Human Resource Development

This concern was fully addressed in the Focused Evaluation of 2013, with specific reference to research productivity, research funding, performance evaluation and progress through rank. In all of these areas substantial progress has been made.

The Focused Evaluation of 2013 concentrated on the issues of volume and quality of research,
recognition of faculty accomplishments and progress through ranks. The School of Architecture recognizes a wide range of research and creative activity as legitimate in fulfilling the responsibilities of a regular faculty member. In the past three years, since the accreditation visit, the achievements of faculty members have been extraordinary. A listing of the highpoints in research, design and other forms of creative and professional was submitted in the Focused Evaluation review of 2013. It must be emphasized that the school does not measure its performance or its profile solely on the forms of research production that are common in other academic areas. Architecture is a professional school. It is a creative institution and must foster a culture in which the outputs are diverse and provocative. Waterloo Architecture—its ranking in 2012 as the top architecture school in Canada and one of the top architecture schools in North America—has been successful precisely because of the diversity and quality of scholarly, creative and critical work. The connection to practice is crucial for its success and in order to inspire graduate students in their work. It is recognized that it would be a huge detriment to the culture and energy of the School to limit the activity of faculty members to conventional forms of university research.

Faculty Promotion: At the time of the APR submission in 2011 only one faculty member held Full Professor Rank, considered a cause of concern by the accreditation team given the significance of research at the School and University, in particular, in relation to the importance of internationally respected research and graduate studies. By the time of the Focused Evaluation of 2013 two additional faculty members had been promoted to Full Professorship, one in 2011 and one in 2013. Since this time, one supplementary faculty member (the new Director) has been hired as a Full Professor, and in 2014 two additional faculty members were promoted to Full Professorship. There are currently six faculty holding the rank of Full Professor at the School of Architecture, an increase of five faculty since the initial accreditation visit of 2011.

In the report for the Focused Review the School provided a full account of the accomplishments of Architecture faculty members since March 2011. The list is 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. Faculty research and production as well as and the scale and recognition of awards have increased. In the past year, national and international awards of the faculty have included a Special Mention Award for Artic Adaptations, Canada’s national exhibition at the 14th International Architecture Venice Biennale, a Lifetime Achievement Award from CCUSA (Canadian Council of University Schools of Architecture) and a Creative Achievement Award for Architectural Education from ACSA (Association of Collegiate Schools of Architecture).
Leadership: The previous Director, Rick Haldenby, stepped down in December 2013 after a term of 26 years. The new Director is Dr. Ila Berman who previously held appointments as a Full Professor and Director of the School of Architecture at the California College of the Arts in San Francisco for six years, and before that was a Favrot Professor and the Associate Dean of Tulane University's School of Architecture. Professor Berman is an experienced and dynamic leader who is Canadian, but has a range of experience leading and teaching at schools of architecture in the United States. In addition to the above, these include the Illinois Institute of Technology (IIT) in Chicago, the Cooper Union in New York and Harvard University Graduate School of Design where she not only taught, but also completed her Masters and Doctorate degrees in Architecture. At Tulane University, Dr. Berman was a co-initiator of the Tulane City Center and was the founder and director of the URBANbuild program—a research and design program on the redevelopment of New Orleans post-Katrina that was published in her book URBANbuild local global. In 2013 she co-chaired the ACSA 101st National Conference: New Constellations New Ecologies that was focused on the future of architectural education. She is an active researcher and designer, has an excellent publication record and deep experience in academic leadership. The new Director has embarked on a number of initiatives for the renewal, expansion and development of the School moving forward.

Faculty: In 2013, Dr. Mona El Khafif also joined the full-time faculty as an Associate Professor. Professor El Khafif holds a professional architecture degree from the Faculty of Architecture RWTH in Aachen, Germany and a doctorate in Urban Design from the Technical University of Vienna. Professor El Khafif comes to the University of Waterloo with 14 years of teaching experience at prestigious academic institutions within Europe and North America and brings to the School of wealth of design knowledge and research in the area of urban design.

2.1 Accessibility

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

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.

When the last Visiting Team Report indicated the program did not meet Criterion B5 on accessibility the faculty teaching the Comprehensive Building Design Studio in the 4B term made a concerted effort to increase awareness and indeed to focus directly on issues of universal access and integrate these into the development of the studio. At that time, the program for the 4B CBD Studio substantially changed where universal access was not only addressed within the context of the studio, but was also the driver for the program—a center for the development, testing and fitting of wheel chairs—intended to increase awareness of the issues surrounding mobility and how support for differentially abled users needs to be integrated as a critical component of comprehensive design. Students themselves each spent several hours in a wheelchair navigating
the School of Architecture. The final designs each not only accommodated individuals with various physical and cognitive abilities, but made the issue of accessibility the center of the entire design from concept to detail.

3. CURRICULAR PLANNING

Although there have been no major changes to the core program in Architecture during the last two academic years, the new Director of Architecture, set up a visioning and strategic planning process for the School to take place during the 2014-15 year. As part of this planning process, the first of a series of faculty retreats was held in the spring of 2014 and a curriculum committee was developed that has undertaken an environmental scan of aspirant peer programs has moved forward with a full internal assessment of the School’s curriculum, policies, resources and culture. This process is intended to not only develop long term initiatives for the School of Architecture and its programs, but also to ensure that any future program modifications respond both to the CACB Accreditation Focus Visit and the MArch External Reviewers Report of 2013 and are consistent with the University of Waterloo’s Draft Strategic Plan, 2013-17 and the Vision 2015 Strategic Plan of the Faculty of Engineering.

3.1 Program Modifications Phase I

The planning and review process over the past year has lead to a series of proposed modifications to the BAS program to strengthen the structure of, and integration of coursework within the program, and to better prepare students for graduate study (MArch) to improve graduate retention and completion rates given that the MArch is the first professional degree to which the BAS leads. These modifications are consistent with three elements of the University’s strategic plan 2013-17, namely: research excellence and impact, educational quality, and student opportunities.

The following are the objectives of the program modifications in the first phase:

- To maintain the strength of the undergraduate core curriculum, yet eliminate redundancies or disconnects within the curriculum, while enabling more flexibility and more opportunities for advanced research at the upper levels both to better prepare our undergraduate students for thesis, and enable a smoother transition into the grad program, while also expanding opportunities for faculty development by bringing faculty work and research into the curriculum. The expansion of upper level electives will also enable faculty to cover a broader range of topics that address critical issues in relation to the discipline of architecture and the future of architectural education.
• To supplement the existing curriculum in areas that have been less developed within the core curriculum, and to expand our capacity in areas such as digital design technologies, architectural analysis and research methodologies (in support of thesis), and urbanism, landscape and ecology.

• To provide expanded opportunities for global study abroad in addition to the Rome program both for undergraduate and graduate students.

• To ensure that the undergraduate program is geared toward retaining our students and encouraging them to continue to the graduate program so that they are completing their first professional degree (MArch) at Waterloo.

3.1.1 Core curricular consolidation, alignment and the introduction of upper level advanced coursework in Design Studio, Cultural/Architectural History and Theory, and Building Technology

The curricular sequences within design studio, cultural history and theory, and building technology and environmental systems represent core disciplinary streams within the BAS curriculum. The proposed modifications maintain the number of overall credits and courses within these streams yet adjusts the timing of their content delivery to enable better integration across coursework given within a single semester and to facilitate the introduction of a required elective (500 level) in each of these streams (cultural history/Theory and building technology/environmental systems) in the fifth year of the program in preparation for thesis research. These modifications for example, would allow the cultural history course in Modern Architecture to be taught one semester earlier, to enable it to align both with the design studio focused on large urban buildings and the technology course focused on the design of steel and concrete structures.

3.1.2 Expansion of coursework in underdeveloped curricular streams and the development of strategic focus areas within the curriculum in Digital Design Technologies and Urbanism, Landscape, and Ecology

The proposed modifications are focused on expanding and building the Visual/Digital Media sequence to recognize the significance of digital media in current and future practice, not simply as representational tools, but as important technologies that are changing the ways in which we research, analyze, design, fabricate and produce architecture. Two core courses are being proposed—one to introduce all students to digital fabrication so that they have both the knowledge and skills to work with CAD/CAM technologies and rapid prototyping equipment, and the second to introduce students to expanded methods of advanced visualization in support of architectural and urban analysis. In addition, the proposed sequence introduces a required upper level elective selected from a range of course offerings within areas such as...
parametric design and scripting/coding, fabrication, GIS, Building Information Modeling, advanced visualization, robotics, and interaction design. These courses would not only expand the curriculum in relation to technologies that are significantly impacting architectural practice but will also provide the groundwork for crossover courses between architecture and engineering and plan for the development of the proposed program in Integrated Design.

There are currently three existing courses in urbanism and landscape for architecture students. These courses would remain yet would be repositioned within the curriculum to better align this coursework within each semester and allow it to be rethought as a coherent curricular sequence. The expansion of the proposed Urban/Landscape sequence would primarily take place through a series of Global Cities electives that enable opportunities for the study of architecture and urbanism around the world in addition to a series of upper level elective courses specifically focused on urbanism, landscape and ecology that represent strategic areas of growth and development for the school both for advanced research and recruitment of graduate students.

3.2 Program Modifications Phase II: Integrated Design program

As a final phase to the strategic planning efforts, in the coming year the School of Architecture will be further developing its proposal for a new Integrated Design program with both undergraduate and graduate degrees that focuses on the need for design in the contemporary digital industry. The new design program will operate at the nexus of industrial design, communication design and interaction design as well as emerging fields in new digital design technologies. These degree programs will be grounded in coursework in relation to five parallel academic streams in: design, culture, technology, communication and entrepreneurship.
FOR INFORMATION

Recognition and Commendation

Ihab Ilyas, a professor in the David R. Cheriton School of Computer Science, has been named a distinguished scientist by the Association for Computing Machinery. “The award is well deserved recognition of Ihab’s excellent research contributions in database technology, in particular rank-aware query processing, uncertain data management, and data cleaning,” said Director Mark Giesbrecht and fellow ACM distinguished scientist, in an email to members of the school. Ilyas’s research interests are in database systems, with special interest in top-k and rank-aware query processing, managing uncertain and probabilistic databases, self-managing databases, indexing techniques, and spatial databases. His research is systems-oriented with an emphasis on prototype development and experimentation. The award recognizes ACM members with at least 15 years of professional experience (including some education experience) and five years of continuous professional membership who have achieved significant accomplishments or have made a significant impact on the computing field. Ilyas joins fellow ACM Distinguished Scientists Don Cowan, Mark Giesbrecht, Anna Lubiw and Jeffrey Shallit, and ACM Distinguished Fellows Frank Tompa, Tamer Ozsu, Srinivasan Keshav and Ian Munro. [6 November 2014 Daily Bulletin]

The Waterloo Black team finished first out of 140 teams at the East Central North America Association for Computing Machinery Regional Programming Contest held in Windsor, Ontario. The Waterloo Red and Gold teams, which are comprised of first and second year students, placed seventh and eighth respectively. The Waterloo Black team solved eight out of nine problems and provided the only correct solution to one of the questions. The teams are coached by Troy Vasiga, a lecturer in the David R. Cheriton School of Computer Science. Waterloo Black hopes to regain its position as a top competitor when attending the Association for Computing Machinery International Collegiate Programming Contest world finals in Morocco, 16-21 May 2015. The ACM-ICPC grand prize is $16,500. Waterloo Black qualified for the ACM-ICPC world finals annually from 1992 to 2012, and has brought home a medal 17 times, placing first in 1994 and 1999. [12 December 2014 Daily Bulletin]

Waterloo chemical engineering PhD candidate Drew Higgins has received the 2014 Dr. Bernard Baker Fuel Cell Research Student Award, a top award given internationally to graduate students conducting research on topics related to fuel cells. Higgins, in his fourth year as a PhD student, works in Professor Zhongwei Chen’s laboratory, carrying out research on the development of nanostructured catalysts for fuel cells. “By designing new catalysts, we aim to reduce the cost, while increasing the performance and durability of these systems,” Higgins writes. “As fuel cells are a clean operating, sustainable technology, this research will perpetuate their commercial success towards many important applications including transportation and backup power.” [27 November 2014 Daily Bulletin]

Akash Kapoor of Waterloo’s Master of Accounting program has won the prestigious Governor General’s Gold Medal and the Ontario Gold Medal for having achieved the highest standing in Canada on the Chartered Accountancy Uniform Final Examination. “The CPA designation is a passport to stepping into challenging roles and allows us to have the opportunity to perpetually learn,” Kapoor said. “I believe that the designation adds tangible credibility and opens doors to countless experiences.” Considered one of the most challenging professional examinations in the world, the UFE top mark comes with a cash prize of $5,000. George Nicholas Tsia (MAcc ’13), Juliana Yuen (MAcc ’11) and Vicky Au (MAcc ’10)
also reached the same high achievement in 2013, 2011, and 2010 respectively. Overall, 3,576 graduates from across the country passed the UFE. “Akash accumulated many honours during his time at Waterloo, but winning the UFE gold medal is his biggest accomplishment,” said Greg Berberich, director of the MAcc and Diploma programs. “The SAF is proud of his tremendous achievement and very pleased that he has joined George, Juliana, and Vicky as SAF graduates who have won the gold medal in the past five years.” The three-day examination is a critical component of the CPA qualification program. It assesses a person’s knowledge, ability to think analytically, and gauges their professional judgment and ethics.

[5 December 2014 Daily Bulletin]

The manager of the David Johnston Research + Technology Park, Carol Stewart, has been elected to sit on the International Association of University Research Parks Board of Directors during the annual general meeting at the AURP International Conference. Her three-year term began on 4 December. Stewart is the founder and immediate past-president of the Canadian chapter of the AURP. AURP Canada is partnered with Startup Canada, CANARIE, and the Department of Foreign Affairs, Trade and Development. The AURP is the world’s largest association of research and science parks. It fosters innovation, commercialization and economic growth in a global economy through university, industry and government partnerships. [9 December 2014 Daily Bulletin]
Tenure and Promotion of Faculty Members
The 2013-14 tenure and promotion cycle carried out under Policy 77 has resulted in the following individuals being awarded tenure and/or promoted, effective 1 July 2014.

Awarded Tenure and Promoted to Associate Professor
Mario BOIDO, Spanish & Latin American Studies
Kim CUDDINGTON, Biology
Robert DANISCH, Drama & Speech Communication
Andrea EDGINTON, Pharmacy
Maud GORBET, Systems Design Engineering
Frank GU, Chemical Engineering
Götz HOEPPE, Anthropology
Lilia KRIVODONOVA, Applied Mathematics
Dana KULIĆ, Electrical & Computer Engineering
Andrew LAING, Kinesiology
Geoffrey LEWIS, Planning
Pengfei LI, Statistics & Actuarial Science
Adrian LUPASCU, Physics & Astronomy
Juwen LIU, Chemistry
John MIELKE, Public Health & Health Systems
Marina MOURTZAKIS, Kinesiology
Christopher NIELSEN, Electrical & Computer Engineering
Jennifer ROBERTS-SMITH, Drama & Speech Communication
Kathleen RYBCZYNSKI, Economics
Simron SINGH, Environment, Enterprise & Development
Mark SMUCKER, Management Sciences
Mahesh TRIPUNITARA, Electrical & Computer Engineering
Michael WAITE, Applied Mathematics
John WEN, Mechanical & Mechatronics Engineering
Boxin ZHAO, Chemical Engineering

Awarded Tenure
Philip BIGELOW, Public Health & Health Systems

Promoted to Professor
Dayan BAN, Electrical & Computer Engineering
D. Ramona BOBOCEL, Psychology
Gary BRUCE, History
Duane CRONIN, Mechanical & Mechatronics Engineering
Bernard DUNCKER, Biology
Michael FOWLER, Chemical Engineering
Vincent GAUDET, Electrical & Computer Engineering
Bae-Yeun HA, Physics & Astronomy
Eric HALDENBY, Architecture
Michael HUDSON, Physics & Astronomy
Pin-Han HO, Electrical & Computer Engineering
Walter A. ILLMAN, Earth & Environmental Sciences
Ihab ILYAS, Computer Science
David JOHNSON, Mechanical & Mechatronics Engineering
Tim KENYON, Philosophy
Zoya LEONENKO, Physics & Astronomy
John MCMINN, Architecture
Sanjay NEPAL, Geography & Environmental Management
Martinus A.T.F. NOOIJEN, Chemistry
Barbara SCHMENK, Germanic & Slavic Studies
Daniel SCOTT, Geography & Environmental Management
Anindya SEN, Economics
Richard STAINES, Kinesiology
Ehsan TOYSERKANI, Mechanical & Mechatronics Engineering
Russell TUPLING, Kinesiology
Nancy M. WAITE, Pharmacy
Alan WEBB, Accounting & Finance
Mu ZHU, Statistics & Actuarial Science
FOR INFORMATION

APPOINTMENTS/REAPPOINTMENTS

Definite-Term Appointment

FORTUNE, Darla, Research Associate, Department of Recreation and Leisure Studies, September 1, 2014 – December 31, 2015. BA, Saint Mary’s University, 1993; BA, University of Alberta, 1999; MA, 2006, PhD, 2011, University of Waterloo. Dr. Fortune is one of the lead researchers in two of the culture change coalitions on a collaborative research project and will be conducting data collection and analysis and presenting at academic and professional conferences as well as teaching courses at the undergraduate and graduate levels.

Adjunct Reappointments

Graduate Supervision

COSTA, Andrew, Assistant Professor, School of Public Health and Health Systems, January 1, 2015 – December 31, 2015.

HOBIN, Erin, Assistant Professor, School of Public Health and Health Systems, February 1, 2015 – June 30, 2016.

PEARCE, Nancy, Assistant Professor, School of Public Health and Health Systems, January 1, 2015 – December 31, 2015.

Graduate Supervision and Research

KENNEDY, Ryan, Assistant Professor, School of Public Health and Health Systems, January 1, 2015 – December 31, 2016.

Special Appointment

Undergraduate Instruction

SMITH, Alison, Lecturer, Department of Recreation and Leisure Studies, January 1, 2015 – April 30, 2015.

Cross Appointment

COOK, Richard, Professor, Department of Statistics and Actuarial Science to the School of Public Health and Health Systems, September 1, 2014 – June 30, 2017.
A. APPOINTMENTS/REAPPOINTMENTS

Definite-Term Appointments

DI RUZZA, Vince (BA 1993 University of Guelph), Lecturer, Department of Psychology, September 1, 2014 to August 31, 2015. Mr. Di Ruzza is the mainstay of the very successful undergraduate minor program in Human Resources Management, now with more than 400 students. He teaches several of the key courses, does extensive student advising, and establishes and maintains human resources connections in the community.

EULETTE, Lynette (PhD 1991 University of Waterloo), Lecturer, Department of Psychology, July 1, 2014 to December 31, 2015. Dr. Eulette plays a critical role in training graduate students in the Clinical Psychology program in conducting cognitive and psycho-education assessments. These skills are a key component of graduate students’ training as future clinical psychologists. In addition to teaching core graduate courses in assessment, Dr. Eulette supervises students in providing assessment services to the community.

Definite-Term Reappointment

REICHERT, Tetyana, Lecturer, Department of Germanic and Slavic Studies, September 1, 2014 to April 30, 2015.

Adjunct Appointments

Instruction

ELLIS-HALE, Kimberly, Lecturer, Department of Sociology and Legal Studies, January 1, 2015 to April 30, 2015.

JANETOS, John, Lecturer, Stratford Programs, Dean of Arts Office, January 1, 2015 to April 30, 2015.

MACINNIS, Matthew, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

MOISSEYKIN, Vlad, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

MORTAZAVI, Houman, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

RAJSIC, Predrag, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.

ROOPRA, Shaweta, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

Miscellaneous (research, consultations, etc.)

RICHARDS, Edward, Assistant Professor, Department of Philosophy, January 1, 2015 to December 31, 2018.

Adjunct Reappointments

Instruction

AL ETHARI, Lamees, Lecturer, Department of English Language and Literature, January 1, 2015 to April 30, 2015.
ADAMS, Russell, Assistant Professor, Department of Anthropology, January 1, 2015 to April 30, 2015.

ATOCHE, Cristina, Lecturer, Department of Spanish and Latin American Studies, January 1, 2015 to April 30, 2015.

BARR, Nathaniel, Lecturer, Department of Psychology, January 1, 2015 to April 30, 2015.

CAMPBELL, Patricia, Lecturer, Department of Religious Studies, January 1, 2015 to April 30, 2015.

DIGNAN, Paul, Lecturer, Department of Fine Arts, January 1, 2015 to April 30, 2015.

DUCHARME, Robert, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

ENNIS, Richard, Lecturer, Department of Psychology, January 1, 2015 to April 30, 2015.

EVERINGHAM, Scott, Lecturer, Department of Fine Arts, January 1, 2015 to April 30, 2015.

FATIMA, Nafeez, Lecturer, Departments of Economics and Political Science, January 1, 2015 to April 30, 2015.

GEWURTZ, Michelle, Lecturer, Women’s Studies, January 1, 2015 to April 30, 2015.

HE, Zhen, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.

HUNTER, Natalie, Lecturer, Department of Fine Arts, January 1, 2015 to April 30, 2015.

HUTTER, Daniel, Lecturer, Department of Classical Studies, January 1, 2015 to April 30, 2015.

JAIMES-DOMINGUEZ, Luis, Lecturer, Department of Spanish and Latin American Studies, January 1, 2015 to April 30, 2015.

KROEKER, Ronald, Assistant Professor, Department of Classical Studies, January 1, 2015 to April 30, 2015.

KUMASE, Wokia, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.

LAM, Ibis, Lecturer, Department of Spanish and Latin American Studies, January 1, 2015 to April 30, 2015.

LEVINSON, Daniel, Lecturer, Department of Drama and Speech Communication, January 1, 2015 to April 30, 2015.

LIAQAT, Zara, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.

LITTLE, Melinda, Lecturer, Department of Drama and Speech Communication, January 1, 2015 to April 30, 2015.

LOBANA, Jodie, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.
MACDONALD, Christy, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

MACKINNON, Ernie, Associate Professor, Department of Psychology, January 1, 2015 to April 30, 2015.

MAITRA, Srabani, Lecturer, Women’s Studies, January 1, 2015 to April 30, 2015.

MANNING, Thomas, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

MARSHALL, Alan, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

MCCAULEY, Eva, Lecturer, Department of Fine Arts, January 1, 2015 to April 30, 2015.

MORGAN, Derek, Lecturer, Department of Psychology, January 1, 2015 to August 31, 2015.

MORTON, Janet, Lecturer, Department of Fine Arts, January 1, 2015 to April 30, 2015.

NEEDHAM, Brent, Lecturer, Department of Political Science, January 1, 2015 to April 30, 2015.

RAHMAN, Fiona, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.

RAY, Nicholas, Lecturer, Department of Philosophy, January 1, 2015 to April 30, 2015.

RICHARDS, Edward, Assistant Professor, Department of Philosophy, January 1, 2015 to April 30, 2015.

ROGOZYNISKI, Daniel, Lecturer, School of Accounting and Finance, January 1, 2015 to April 30, 2015.

ROSE, David, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.

ROZOTTO, David, Lecturer, Department of Spanish and Latin American Studies, January 1, 2015 to April 30, 2015.

SHAKESPEARE, David, Lecturer, Dean of Arts Office, January 1, 2015 to April 30, 2015.

SLETHAUG, Gordon, Professor, Department of English Language and Literature, January 1, 2015 to April 30, 2015.

SIEBEL-ACHENBACH, Sebastian, Lecturer, Stratford Programs, Dean of Arts Office, January 1, 2015 to April 30, 2015.

STETTNER, Shannon, Lecturer, Women’s Studies, January 1, 2015 to April 30, 2015.

THARMALINGAM, Pirapa, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.

VAN BRUWAENE, David, Lecturer, Department of Philosophy, January 1, 2015 to April 30, 2015.

VIOLA, Maria, Lecturer, Department of Economics, January 1, 2015 to April 30, 2015.
Miscellaneous (research, consultations, etc.)

HOLMES, John, Professor, Department of Psychology, September 1, 2014 to August 31, 2015.

Graduate Student to Part-Time Lecturer Appointments

CHESSER, Stephanie, Women’s Studies, January 1, 2015 to April 30, 2015.

JORDAN, William, Department of Philosophy, January 1, 2015 to April 30, 2015.

MACDONALD, Ian, Department of Philosophy, January 1, 2015 to April 30, 2015.

MCCHESNEY, Dylon, Department of Philosophy, January 1, 2015 to April 30, 2015.

ROSALES, Antulio, Department of Political Science, January 1, 2015 to April 30, 2015.

SELI, Paul, Department of Psychology, January 1, 2015 to April 30, 2015.

Staff to Faculty Appointment

KOERNE, Stephanie, Lecturer, Stratford Programs, Dean of Arts Office, January 1, 2015 to April 30, 2015.

B. ADMINISTRATIVE APPOINTMENTS/APPOINTMENT CHANGES

ACHESON, Katherine, Acting Associate Dean, Graduate Studies, January 1, 2015 to June 30, 2015.

BLATHERWICK, David, Associate Chair, Graduate Studies, Department of Fine Arts, January 1, 2015 to June 30, 2015.

DANISCH, Robert, Associate Chair, Undergraduate Studies, Department of Drama and Speech Communication, January 1, 2015 to June 30, 2015.

INSLEY, Margaret, Chair, Department of Economics, January 1, 2016 to June 30, 2019.

KIRTON, Doug, Chair, Department of Fine Arts, July 1, 2015 to June 30, 2019.

TAYLOR, Bruce, Associate Chair, Undergraduate Studies, Department of Fine Arts, January 1, 2015 to June 30, 2015.

WARLEY, Linda, Associate Dean, Graduate Studies, change from July 1, 2012 to June 30, 2016 to July 1, 2012 to December 31, 2014.

WARLEY, Linda, Associate Dean, Graduate Studies, July 1, 2015 to December 31, 2016.

WILSON, Jeff, Associate Chair, Graduate Studies, Department of Religious Studies, change from September 1, 2014 to August 31, 2015 to September 1, 2014 to December 31, 2014.

Douglas M. Peers
Dean, Faculty of Arts
A. APPOINTMENTS/REAPPOINTMENTS

Tenured Appointment
LONG, John, Professor, Department of Electrical & Computer Engineering, January 1, 2015. PhD Carleton University 1996; MEng Carleton University 1992; BSc University of Calgary 1984. Dr. Long’s teaching and research expertise are in silicon IC implementations at mm-wave and sub-mm-wave frequencies – extending into the THz range.

Definite-Term Appointments
BRISTOW, Michele, Lecturer, Department of Systems Design Engineering, November 1, 2014 – October 31, 2017. PhD University of Waterloo 2013; MASc University of Waterloo 2008; BASc University of Waterloo 2006. Dr. Bristow recently completed a Post-doctoral Fellowship at Ryerson University. In addition to teaching both undergraduate and graduate level courses at Ryerson she was also involved in two projects related to the scholarship of teaching. One project focused on activating intelligence and teamwork skills when working on collaborative design activities in class. The other project focused on enhancing core engineering curriculum with the goal of having students learn user-centered design techniques.

KHALVATI, Farzad, Research Assistant Professor, Department of Systems Design Engineering, September 1, 2014 – July 31, 2015. PhD University of Waterloo 2009; MASc University of Waterloo 2003; BSc University of Tehran, Iran 1998. Dr Khalvati has previously worked as a research associate in the Imaging Research Department, Sunnybrook Research Institute, Toronto. His areas of expertise are biomedical image analysis, signal and image processing, high-performance medical image processing, machine learning, embedded systems, and FPGA design. He will be working with Professor Alexander Wong on intelligent clinical decision support systems using heterogeneous multi-parametric magnetic resonance imaging and clinical data.

Visiting Appointments
BARAJAS, John Raymond, Scholar, Department of Civil & Environmental Engineering, November 20, 2014 – April 30, 2015.

BAUTISTA, Ramer, Scholar, Department of Chemical Engineering, September 16, 2014 – September 15, 2015.


CAO, Yongfeng, Scholar, Department of Systems Design Engineering, October 7, 2014 – October 6, 2015.
CHEN, Yuyan, Scholar, Department of Chemical Engineering, February 1, 2015 – May 31, 2015.


GUO, Wei, Scholar, Department of Mechanical & Mechatronics Engineering, February 8, 2014 – February 7, 2015.

GUO, Xiaoming, Scholar, Department of Chemical Engineering, January 1, 2015 – December 31, 2015.

HAN, Adelina-Alina, Scholar, Department of Mechanical & Mechatronics Engineering, November 27, 2014 – March 11, 2015.

HONGBO, Bi, Researcher, Department of Systems Design Engineering, October 10, 2014 – October 9, 2015.


JOSHI, Abhishek, Scholar, Department of Chemical Engineering, September 1, 2014 – December 31, 2014.

MA, Xinlong, Scholar, Department of Chemical Engineering, October 14, 2014 – October 13, 2015.

MORTAZAVI, Nasim, Scholar, Department of Systems Design Engineering, October 1, 2014 – December 31, 2014.

MUTYALA, Prashant, Researcher, Department of Chemical Engineering, October 1, 2014 – September 30, 2015.

ONYU, Kannika, Scholar, Department of Chemical Engineering, January 12, 2015 – May 8, 2015.

REMES, Heikki, Scholar, Department of Mechanical & Mechatronics Engineering, November 12, 2014 – February 12, 2015.


WEN, Chao, Scholar, Department of Civil & Environmental Engineering, August 1, 2015 – July 31, 2016.
YUNXIA, Pan, Researcher, Department of Civil & Environmental Engineering, December 1, 2014 – November 30, 2015.

ZHANG, Mei, Researcher, Department of Civil & Environmental Engineering, October 1, 2014 – September 30, 2015.

ZHAO, Feiping, Scholar, Department of Chemical Engineering, June 1, 2015 – October 30, 2015.

ZHLIN, Jin, Scholar, Department of Mechanical & Mechatronics Engineering, November 24, 2014 – November 23, 2015.

Visiting Reappointments


Adjunct Appointments
Graduate Instruction
FARHAD, Siamak, Assistant Professor, Department of Mechanical & Mechatronics Engineering, November 1, 2014 – October 31, 2017.

Graduate Instruction, Supervision and Research
SHAKER, George, Assistant Professor, Department of Electrical & Computer Engineering, November 1, 2014 – October 31, 2016.

Graduate Supervision
BASSANI, Dario, Senior Scientist, Department of Chemical Engineering, November 1, 2014 – December 31, 2017.

Graduate Supervision and Research
ALRAKHIA, Mohamed, Medical Doctor, Department of Systems Design Engineering, November 15, 2014 – November 14, 2017.

BOUCHARD, Derrick, Associate Professor, Department of Electrical & Computer Engineering, September 1, 2014 – August 31, 2017.

RAITHBY, George, Professor, Department of Mechanical & Mechatronics Engineering, July 1, 2014 – June 30, 2017.

XIAO, Xingcheng, Assistant Professor, Department of Chemical Engineering, September 1, 2014 – August 31, 2017.

Adjunct Reappointments
Undergraduate Instruction
SCHNURR, Daryl, Associate Professor, Engineering Undergraduate Office, May 1, 2014 – April 30, 2015.
Research

CHAMBERLAIN, Savvas (Distinguished Professor Emeritus), Professor, Department of Electrical & Computer Engineering, November 1, 2014 – October 31, 2017.

DE, Mitali, Professor, Department of Systems Design Engineering, September 1, 2014 – August 31, 2017.

Special Appointments

Undergraduate Instruction

ALZAYAT, Ayman, Lecturer, Department of Management Sciences, January 1, 2015 – April 30, 2015.

AMBAIOWEL, Doubra Charles, Lecturer, Department of Civil & Environmental Engineering, January 1, 2015 – April 30, 2015.

BOWICK, David, Lecturer, School of Architecture, September 1, 2014 – December 31, 2014.

FLEMING, Kevin, Lecturer, School of Architecture, November 1, 2014 – December 31, 2014.


GOORTS, Kevin, Lecturer, Department of Civil & Environmental Engineering, January 1, 2015 – April 30, 2015.

GRIFFITHS-FULTON, Karl, Lecturer, Department of Systems Design Engineering, January 1, 2015 – April 30, 2015.

KHAMIS, Alaa, Lecturer, Department of Systems Design Engineering, January 1, 2015 – April 30, 2015.

MATEOS SANTILLAN, Edgar, Lecturer, Department of Electrical & Computer Engineering, January 1, 2015 – April 30, 2015.

MORLEY, Mark, Lecturer, Department of Systems Design Engineering, January 1, 2015 – April 30, 2015.

MOSTAFA, Haytham, Lecturer, Department of Electrical & Computer Engineering, January 1, 2015 – April 30, 2015.

REIDEMEISTER, Thomas, Lecturer, Department of Electrical & Computer Engineering, January 1, 2015 – April 30, 2015.

VAUGHAN, Annabel, Lecturer, School of Architecture, September 1, 2014 – December 31, 2014.

Graduate Instruction

IVKOVIC, Igor, Lecturer, Department of Electrical & Computer Engineering, January 1, 2015 – April 30, 2015.
**Special Reappointments**

*Undergraduate Instruction*

**ELBESHBISHY, Elsayed,** Lecturer, Department of Civil & Environmental Engineering, January 1, 2015 – April 30, 2015.

**ZARNETT, Jeffrey,** Lecturer, Department of Electrical & Computer Engineering, January 1, 2015 – April 30, 2015.

*Graduate Instruction*

**ALLARAKHIA, Minna,** Lecturer, Department of Management Sciences, January 1, 2015 – April 30, 2015.

**BLAKE, Clifford,** Lecturer, Department of Management Sciences, January 1, 2015 – April 30, 2015.

**Cross Appointments**

**HANSSON, Carolyn,** Professor, Department of Mechanical & Mechatronics Engineering to Department of Civil & Environmental Engineering, November 1, 2014 – October 31, 2017.

**TAN, Zhongchao,** Associate Professor, Department of Mechanical & Mechatronics Engineering to Department of Chemical Engineering, October 20, 2014 – October 19, 2017.

**Cross Reappointment**

**TAN, Zhongchao,** Associate Professor, Department of Mechanical & Mechatronics Engineering to Department of Civil & Environmental Engineering, January 1, 2015 – December 31, 2018.

**B. ADMINISTRATIVE APPOINTMENT/APPOINTMENT CHANGE**

**ROTHENBURG, Leo,** Director, Geological Engineering, Department of Civil & Environmental Engineering, November 1, 2014 – June 30, 2015.

**UNGER, Andre,** Director, Geological Engineering, Department of Civil & Environmental Engineering, change from July 1, 2013 – April 30, 2016 to July 1, 2013 – September 8, 2014.

**C. ADMINISTRATIVE REAPPOINTMENTS**

**CAMPBELL, Scott,** Director, Centre for Society Technology and Values, Department of Systems Design Engineering, September 1, 2014 – August 31, 2015.


**LAM, Patrick,** Associate Director, Software Engineering Programming, Department of Electrical & Computer Engineering, July 1, 2015 – August 31, 2015.

**WEST, Jeff,** Associate Chair, Undergraduate Studies, Department of Civil & Environmental Engineering, January 1, 2015 – December 31, 2015.

**D. SABBATICAL LEAVES/LEAVE CHANGE**

**AL-MAYAH, Adil,** Assistant Professor, Department of Civil & Environmental Engineering, change from January 1, 2015 – June 30, 2015 to May 1, 2015 – October 31, 2015, 100% salary.
KENNINGS, Andrew, Associate Professor, Department of Electrical & Computer Engineering, May 1, 2015 – April 30, 2016, 85% salary.

TAN, Lin, Assistant Professor, Department of Electrical & Computer Engineering, May 1, 2015 – October 31, 2015, 100% salary.

For Approval by the Board of Governors
AZIZ, Hany, Professor, Department of Electrical & Computer Engineering, May 1, 2015 – October 31, 2015, 100% salary.

FREEMAN, George, Associate Professor, Department of Electrical & Computer Engineering, March 1, 2015 – August 31, 2015, 100% salary and January 1, 2016 – June 30, 2016, 100% salary.

LEUNG, Bosco, Professor, Department of Electrical & Computer Engineering, May 1, 2015 – April 30, 2016, 85% salary.

E. ADMINISTRATIVE LEAVE
LOUCKS, Wayne, Associate Professor, Department of Electrical & Computer Engineering, July 1, 2015 – January 31, 2016, 100% salary.

Pearl Sullivan
Dean, Faculty of Engineering
FOR INFORMATION

A. APPOINTMENTS/REAPPOINTMENTS

Probationary-Term Reappointments

FEDY, Brad, Assistant Professor, Department of Environment and Resource Studies, July 1, 2015 to June 30, 2018: PhD, University of British Columbia, 2006; MSc, York University, 2002; BES, Waterloo, 1999.

WOLFE, Sarah, Assistant Professor, Department of Environment and Resource Studies, July 1, 2015 to June 30, 2018: PhD, University of Guelph, 2006; MA, University of Toronto, 2000; BA, University of Guelph, 1999.

Adjunct Appointments

Graduate Supervision

CHAPMAN, Michael, Professor, Department of Geography and Environmental Management, October 1, 2012 to September 30, 2015.

HARRIS, James, Professor, Department of Environment and Resource Studies, October 1, 2014 to December 31, 2015.

HOWELL, Stephen, Assistant Professor, Department of Geography and Environmental Management, November 1, 2014 to December 31, 2018.

O’FALLON, Terri, Professor, Department of Environment and Resource Studies, September 1, 2014 to August 31, 2015.

STEWART, Robert, Associate Professor, School of Planning, September 1, 2014 to August 31, 2017.

THORN, Greg, Professor, Department of Environment and Resource Studies, October 1, 2014 to September 30, 2018.

Graduate Supervision and Research

MUIRHEAD, Bruce, Professor, Faculty of Environment, November 1, 2014 to October 31, 2017.

Special Appointments

Instruction

AJIBADE, Idowu, Lecturer, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

BOROVILOS, George, Lecturer, School of Environment, Enterprise and Development, January 1 2015 to April 30, 2015.

DESJARDINS, Ellen, Lecturer, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.
GLUSSICH, Douglas, Lecturer, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

HOOYKAAS, Amanda, Lecturer, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

JACKSON, John, Lecturer, Department of Environment and Resource Studies, January 1, 2015 to April 30, 2015.

JOAKIM, Erin, Lecturer, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

POLLOCK, Rebecca, Lecturer, Department of Environment and Resource Studies, January 1, 2015 to April 30, 2015.

STIRBET, Hari, Lecturer, School of Environment, Enterprise and Development, January 1, 2015 to April 30, 2015.

Graduate Students Appointed as Part-Time Lecturers

BISUNG, Elijah, School of Environment, Enterprise and Development, January 1, 2015 to April 30, 2015.

BRISBOIS, Marie Claire, School of Environment, Enterprise and Development, January 1, 2015 to April 30, 2015.

GLENDAY, Peter, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

GUNN, Grant, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

MAY, Bradley, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

McROBERTS, Daniel, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

MEREU, Alex, Faculty of Environment, January 1, 2015 to April 30, 2015.

Postdoctoral Fellows Appointed as Part-Time Lecturers

KIRCHHOFF, Denis, Department of Environment and Resource Studies, January 1, 2015 to April 30, 2015.

RUTTY, Michelle, Department of Geography and Environmental Management, January 1, 2015 to April 30, 2015.

B. ADMINISTRATIVE APPOINTMENT

WEBER, Olaf, Associate Director, Research, Waterloo Institute for Sustainable Energy (WISE), January 1, 2015 to December 31, 2015.
C. SABBATICAL LEAVE
For Approval by the Board of Governors
OELBERMANN, Maren, Associate Professor, Department of Environment and Resource Studies, July 1, 2015 to December 31, 2015, 100% salary.

Jean Andrey
Interim Dean, Faculty of Environment
FOR INFORMATION

A. APPOINTMENTS/REAPPOINTMENTS

Definite-Term Appointment

MOHAMMAD, Nagham (BMath, 1988, MMath, 1993, Baghdad University; MMath, 2007, PhD, 2014, Western University), Lecturer, Dept. of Statistics and Actuarial Science, January 1, 2015 – December 30, 2016. Dr. Mohammad will teach six courses per budget year and participate in departmental activities as required.

Definite-Term Reappointments

PEI, Martin, Lecturer, Dept. of Combinatorics and Optimization, December 31, 2015 – December 30, 2016.

ROH, Patrick, Lecturer, Dept. of Combinatorics and Optimization, May 1, 2015 – April 30, 2016.

Visiting Appointments

DAROONEH, Amir Hossein (University of Zanjan), Scientist, Dept. of Applied Mathematics, September 1, 2015 – August 31, 2016.

LI, Lin (Jiaxing University), Scholar, Dept. of Pure Mathematics, October 1, 2014 – September 30, 2015.

XIA, Cheng Yi (Tianjin University of Technology), Scholar, Dept. of Applied Mathematics, August 1, 2015 – July 31, 2016.

Adjunct Appointments

Research


NG, Chetat, Professor, Dept. of Pure Mathematics, September 1, 2014 – August 31, 2017.

Adjunct Reappointments

Instructor

AL-MASRI, Eyhab, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.


BURKOWSKI, Forbes, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.


HARJI, Ashif, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.

HOLTBY, Dan, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.


KHARAL, Rosina, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.

KOU, Tian, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.

LANCOTOT, Kevin, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.


SAKHNIINI, Victoria, Lecturer, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.


Research

WAINWRIGHT, John, Associate Professor, Dept. of Applied Mathematics, July 1, 2014 – June 30, 2017.

Cross Reappointments


WOLKOWICZ, Henry, Professor, Dept. of Combinatorics and Optimization to Dept. of Applied Mathematics, December 1, 2014 – November 30, 2017.

Graduate Student to Part-time Lecturer Appointments

DOUCETTE, John, David R. Cheriton School of Computer Science, January 1, 2015 – April 30, 2015.


Postdoctoral Fellow to Part-time Lecturer Appointments

BONAMY, Marthe, Dept. of Combinatorics and Optimization, September 1, 2015 – August 31, 2016.


Postdoctoral Fellow to Part-time Lecturer Reappointments


B. ADMINISTRATIVE APPOINTMENT

CHANG, Dong Eui, Associate Chair, Undergraduate Studies, Dept. of Applied Mathematics, July 1, 2015 – June 30, 2017.

C. ADMINISTRATIVE REAPPOINTMENT

MORTON, Andrew, Director, Software Engineering, David R. Cheriton School of Computer Science, July 1, 2016 – August 31, 2016.

D. RESIGNATION

GEL, Yulia, Associate Professor, Dept. of Statistics and Actuarial Science, effective December 31, 2014.

E. SABBATICAL LEAVES

For Approval by the Board of Governors

BRECHT, Timothy, Associate Professor, David R. Cheriton School of Computer Science, May 1, 2015 – April 30, 2016, 85% salary.

MORRIS, Kirsten, Professor, Dept. of Applied Mathematics, July 1, 2015 – June 30, 2016, 96.1% salary.

SCHONLAU, Matthias, Professor, Dept. of Statistics and Actuarial Science, September 1, 2015 – August 31, 2016, 85% salary.

TUNÇEL, Levent, Professor, Dept. of Combinatorics and Optimization, September 1, 2015 – February 29, 2016, 100% salary.

Ian P. Goulden
Dean, Faculty of Mathematics
FOR INFORMATION

A. APPOINTMENTS/REAPPOINTMENTS

Adjunct Appointments

*Graduate Supervision*

MITCHELL, Kristen, Assistant Professor, Department of Earth and Environmental Sciences, October 1, 2014 to September 30, 2017.

O’CONNELL, David, Assistant Professor, Department of Earth and Environmental Sciences, November 1, 2014 to October 31, 2017.

SHOUAKAR-STASH, Orfan, Assistant Professor, Department of Earth and Environmental Sciences, December 1, 2014 to November 30, 2017.

*Graduate Supervision and Research*

BRENT, Michael H., Associate Professor, School of Optometry and Vision Sciences, December 1, 2014 to November 30, 2017.

GALLIN, Warren John, Professor, Department of Biology, October 1, 2014 to September 30, 2017.

Research

PAPASTERGIOU, John, Assistant Professor, School of Pharmacy, November 1, 2014 to October 31, 2017.

TANG, Anson, Assistant Professor, School of Pharmacy, December 1, 2014 to November 30, 2017.

*Undergraduate Instruction*

MCFARLANE, Thomas, Assistant Professor, School of Pharmacy, January 1, 2014 to December 31, 2014.

Adjunct Reappointments

*Graduate Supervision*

VAN STAAL, Cees R., Professor, Department of Earth and Environmental Sciences, December 1, 2014 to November 30, 2017.

XIAO, Wenjiao, Professor, Department of Earth and Environmental Sciences, November 1, 2014 to October 31, 2017.

*Graduate Supervision and Research*

CLARKE, Keith D., Assistant Professor, Department of Biology, January 1, 2015 to December 31, 2017.

MARTY, Jerome, Associate Professor, Department of Biology, October 1, 2014 to September 30, 2017.
TANDLER, Amos, Professor, Department of Biology, October 1, 2014 to September 30, 2017.

VAN DER KRAAK, Glen, Professor, Department of Biology, October 1, 2014 to September 30, 2017.

**Special Appointment**  
**Undergraduate Instruction**  
INGRAM, Laura, Lecturer, Department of Chemistry, January 1, 2015 to April 30, 2015.

**Special Reappointments**  
**Undergraduate Instruction**  
BOHLOULI-ZANJANI, Parisa, Lecturer, Department of Physics and Astronomy, January 1, 2015 to April 30, 2015.

GILBERT, Dara E., Lecturer, Department of Chemistry, January 1, 2015 to April 30, 2015.

**Postdoctoral Fellow to Part-Time Lecturer Appointment**  
SUNARSO, Jaka, Lecturer, Department of Chemistry, January 1, 2015 to April 30, 2015.

**Postdoctoral Fellow to Part-Time Lecturer Reappointment**  
HARRISON, Joel, Lecturer, Department of Biology, January 1, 2015 to April 30, 2015.

**Staff to Faculty Reappointment**  
MARTA, Richard, Lecturer, Department of Chemistry, January 1, 2015 to April 30, 2015.

B. **ADMINISTRATIVE REAPPOINTMENT**  
DUHAMEL, Jean, Director, Institute for Polymer Research, July 1, 2014 to June 30, 2017.

PROUZET, Eric, Associate Director, Global Initiatives, Waterloo Institute for Sustainable Energy (WISE), January 1, 2015 to October 31, 2015.

C. **RESIGNATION**  
VAN DER MEER, Matthijs, Assistant Professor, Department of Biology, effective January 1, 2015.

D. **SABBATICAL LEAVE**  
For Approval by the Board of Governors  
SORBARA, Luigina, Associate Professor, School of Optometry and Vision Science, May 1, 2015 to October 31, 2015 and May 1, 2016 to October 31, 2016, 85% salary.

T.B. McMahon  
Dean, Faculty of Science
FOR APPROVAL

Committee Appointments

Motion: To approve the following appointments:

- **Committee on Student Appeals:** Doug Turner (political science) as arts undergraduate student representative, replacing Renishaki Kamalanathan, term to 30 April 2015.
- **Executive Committee:** John Garcia (public health & health systems) as AHS faculty senator representative, replacing Richard Wells, and Coleen Even (French studies) as graduate student senator representative, replacing Maryam Shahtaheri, terms to 30 April 2015.
- **Long Range Planning Committee:** Maryam Shahtaheri (president, GSA) as graduate student senator representative, replacing Coleen Even, term to 30 April 2015.
Council of Ontario Universities
Report of the Academic Colleague

The academic colleagues met on December 11th and 12th in Toronto. A presentation from Cecilia Brain (COU Senior Policy Analyst) and the discussion that ensued during the dinner meeting focused on population projections and future trends in university enrollment in Ontario. Population decline of 18-20 year olds in Ontario is expected until 2021, and the recovery will likely be slow (not reaching 2010 levels until 2033). This demographic change will impact regions in different ways, however, with the GTA continuing to experience growth and the north experiencing the greatest population decline. Universities may be implementing various strategies to mitigate the enrolment changes that may accompany demographic changes. For example, universities might focus on international student recruitment, increasing participation rates in Ontario, improving transition (retention) rates, and adjusting the source region of admitted students. Finally, OUAC data show that decreased enrolment is likely to affect faculties differently.

Significant discussion was also devoted to the question of sexual assault policies and campus response. Though the issue of sexual assault has been highlighted in the media lately, campuses have been concerned about student safety and support for a number of years. Some universities have policies embedded within student conduct codes, or human rights codes; other institutions have stand-alone policies. The issue needs further conversation on campuses and across the sector. Academic colleagues discussed a number of pertinent questions for the Reference Group on Sexual Violence to consider, including:

- What are the benefits of a stand-alone policy?
- In what circumstances might a campus official (faculty, advisor) be required to report an assault, even if the student does not want it reported (for example, must a faculty member report an assault if the student is under 18 years old)?
- Sexual assault and sexual violence are issues for all members of a campus community (not just students). How are universities working to ensure safety and support for all community members?
- How are students (especially survivors) being engaged in the Reference Group’s discussions? How might their voices be helpful in encouraging victims to come forward?
- What responsibility do faculty members have in helping create safe spaces for students? How are faculty best prepared for these responsibilities?
- What support or education programs are already in place at university campuses? How are these programs communicated to faculty, students, and administrators?
- How might issues and concerns differ according to campus type (especially commuter schools versus residential schools)?
- How do campuses use third party investigators? Is this an effective approach to addressing the issue?
- In addition to providing supports for victims, campuses may need to provide supports for accused perpetrators; this may be very difficult to address.
- What are some of the effective strategies currently in place at universities (for example, embedded counselors, peer mentors/advisors, utilizing women police officers)?
- How do campus efforts to address sexual violence overlap with initiatives in the area of mental health? These efforts should not be approached in isolation. Resources from the mental health area should be leveraged to improve supports for sexual assault victims.
- Given constraints on budgets, what resources are available across the sector, and how can they be shared?

During the business meeting on December 12, 2014, the academic colleagues received a COU update on a number of important issues:
Program approvals: MTCU released detailed program approval guidelines in October; the guidelines reflect the ministry’s long-term differentiation agenda. The most tangible element of the current SMAs is the section on program growth areas. MTCU is working to operationalize this element through the program approvals process.

Following the distribution of the new guidelines, COU sent three recommendations to the deputy minister:

1. MTCU should understand and rely on universities’ internal program approval processes. Universities have strong incentives to consider program sustainability and market need; it is not clear what the ministry process adds. In the past, the ministry relied upon the attestations provided by executive heads. The current process includes a much more detailed level of evaluation.

2. The guidelines’ covering memo includes a note about potentially expanding the scope of reviews to include certificate programs, changes in mode of delivery, and additions like co-ops or experiential learning. COU requested that the ministry work with universities before expanding the scope in these ways.

3. MTCU needs to make sure the expedited process works for SMA-aligned programs.

The ministry has not yet provided a response to the COU letter.

The Program Approvals Working Group will keep meeting. In particular, the Working Group will discuss the ways in which program growth areas are included in SMAs—while the standard SMA documents might include only general areas of program growth, universities may have included more detailed information in appendices. This information may be helpful in determining if a program can fall into the expedited category for approval. The Working Group will discuss certificates at their next meeting.

OCAV members met with Assistant Deputy Minister David Carter-Whitney in early December to discuss three issues of concern:

- Universities have rigorous processes to assess sustainability of programs (duplication, demand, resources); OCAV is interested in helping MTCU understand these processes more completely. MCTU continues to see its role as addressing duplication across the sector and guarding differentiation.
- OCAV is interested in discussing the ministry’s expectations about universities’ consultation with other institutions as part of the program approval submission process. Posting the programs (similar to PEQAB’s process) should be sufficient. It is unrealistic to expect that universities can identify other potentially affected programs proactively. MTCU has heard this concern and understands the challenge. Any proactive efforts from universities are appreciated and it may shorten the program approval process.
- OCAV would like to discuss OSAP eligibility for students in not-yet-approved (or non-approved) programs. The current policy is inconsistent, as students enrolled at programs through out-of-province providers are eligible for OSAP. COU is currently collecting data regarding the financial impact of expanding OSAP eligibility.

Sexual violence: Over the past month, this high-profile issue has been very challenging. The topic has gained media attention, and the ministry has encouraged a tangible response. A province-wide action plan against sexual violence was also announced by Premier Wynne.

COU has worked with universities to develop two response threads: an immediate response and a longer term plan. To begin, COU collected information on existing policies and supports; all provosts agreed to set up or refresh webpages on sexual assault, and to include a statement from the provost or executive head.

Executive heads also discussed sexual assault responses and policies at their recent meeting.
A Reference Group on Sexual Violence was also formed, and will look at best practices, provide advice to universities, assess opportunities for collaborative approaches and/or the development of resources, provide support for the upcoming Ontario Committee on Student Affairs (OCSA) meeting (including college representatives, scheduled for February 20, 2015), and lead the university sector’s engagement in the premier’s initiative.

Universities will review their own policies with reference to the Ontario Women’s Directorate guidelines.

**Online initiative:** 340 proposals for online courses and modules were submitted—one-third of the proposals were for modules. Given limited resources, we expect that one-in-five will be funded. COU has asked MTCU to allocate additional resources to the fund.

The new Ontario Online Learning Consortium was incorporated in October and had its first member’s meeting last month. All colleges and universities are members. A majority of board members were elected, and the final members will be elected by the new board, including students, experts, and community members. Nominations for the remaining board positions are being solicited. In total, the board will include 14 members. The board will begin a search process for hiring a CEO early in 2015.

COU will work with MTCU to launch the work of the new organization, starting with the function and design of a web portal providing services to students.

**Bill 8 (Exec Compensation and Ombudsman) and Bill 10 (MTCU Act) updates:** Bill 8 includes three elements: the bill enables government to establish a compensation framework for senior executives; it extends jurisdiction of the ombudsman; and it lowers the bar on who must register as a lobbyist and introduces onerous reporting requirements. The current Ombudsman plans to attend the February executive heads meeting to discuss.

Bill 10 includes an expansion of MTCU’s collection of personal information. This is part of MTCU’s effort to use data in policy development. While using data to inform policy development is a good idea, universities do have concerns about protection of privacy and are recommending the use of non-identifying data in policy analysis. COU recommended amendments to the Act, but these recommendations were not accepted. COU will follow up with MTCU regarding next steps.

**Graduate allocations:** COU is in active discussions about allowing flexibility to fill some graduate allocations (funded graduate spaces) with international graduate students.

**Additional files:** COU is waiting for MTCU’s next steps on three files: the funding formula review; credential review and collaborative nursing programs; and SMA metric review.

**Guest presentation: Cynthia Wesley-Esquimaux, PhD, Vice Provost (Aboriginal Initiatives), Lakehead University**

Dr. Wesley-Esquimaux argued in favor of support for Aboriginal students as an important means of acknowledging student identities and the existence of Indigenous knowledge. Universities are working on these issues, but Aboriginal students are still isolated within the campus community. Many universities have houses or centres for Aboriginal students/studies, and these are a blessing and a curse: they provide support, but in isolation, separated from other campus supports. This kind of support needs to be institutionalized so that it is part of the work of a campus, not a separated effort. Until equity is achieved, these kinds of separated supports may be necessary. Dr. Esquimaux discussed the elements universities can agree on, including that supports are needed, and that efforts at inclusion will help graduation rates. A truly holistic education should include the incorporation of Indigenous knowledge. Faculty promotion and tenure is problematic for some Aboriginal faculty. The tenure and promotion process needs additional flexibility to account for Indigenous practices such as community service. Tenure processes can evolve; they have changed over time, and can be further adapted. Such an effort is not about lowering scholarly standards, but about recognizing diverse ways of knowing and diverse approaches to scholarship and service.
Reports from Colleagues on Committees

Executive Committee: The Executive Committee met in November to prepare for the December Executive Heads Roundtable, and discussed the following issues:

- Conference of Ontario Board Members: Harvey Weingarten (President and CEO, HEQCO) spoke about differentiation.
- Bonnie Patterson will be leaving COU this summer; a new search committee is forming. Mary Louise Hill will serve as the academic colleague representative on the committee. Colleagues discussed the importance of having representation on the committee, as well as representation from a smaller, non-GTA institution.
- Bill 8: Executive Heads discussed concerns about a compensation framework imposed by the government.
- International students: Minister Moridi has expressed strong support for internationalization. This may create an opportunity to seek reconsideration of the government’s approach to support internationalization and international students. The Executive Committee is directing advocacy efforts at establishing flexibility so that universities can fill some graduate allocations with international students. In addition, the Executive Committee is also advocating for the capping of the International Student Recovery (ISR) at the current level of grant reductions. These suggestions have been sent to Executive Heads for review and discussion.
- Ministry review: Provincial ministries and programs are currently under review, which might cause some disruption.

Government and Community Relations Committee: The committee met to discuss the draft Pre-Budget Submission, which is based on the Government Relations Framework that was approved by the Executive Heads Roundtable in September. Some detail about the regional economic impact of universities is included in the draft, and the draft is aligned with some of the government’s fall messaging. The committee also discussed college aspirations for the expansion of degree granting (including 3-year bachelor’s degrees), and campus sexual assault policies and supports.

Committee on Nominations: The committee met via email to affirm the university nominations for the Ontario Online Learning Consortium board members.

Budget and Audit Committee: The committee discussed the auditor’s report; the auditors did not note any concerns. The auditors will be retained for an additional three years to provide third-party oversight for the project (required by the contract). The committee also discussed the COU office space review process. The lease on the space at 180 Dundas will expire in July 2016.

OUAC Advisory Board: The modernization process is underway; a blog has been set up so that people can follow the progress. George Granger, executive director at OUAC, is set to retired this year. George has provided outstanding leadership to OUAC over the years; he will be missed.

Quality Council: The Learning Outcomes Symposium took place in October and was very successful. The Quality Council is considering plans for future conferences. There will be a conference for key IQAP personnel this spring. New program approval applications are starting to come in.

The next meeting of the academic colleagues is scheduled for February 26 & 27, 2015.

Marios Ioannidis
Academic Colleague
Council of Ontario Universities
FOR INFORMATION

**Proposals Reviewed: September 2013 to August 2014** (September 2012 to August 2013 in parentheses)
UARC reviewed a total of 70 (68) proposals for regular faculty appointments. Of these [29 (31) females, 41 (37) males], 6 (6) were for tenured, 45 (52) were for probationary-term, and 19 (10) were for definite-term appointments. More detail is provided in the table contained within this report. For comparison purposes, the total number of proposals reviewed in recent years was: 90 (2007-08), 58 (2008-09), 58 (2009-10), 79 (2010-11) and 87 (2011-12).

**Length of the Review Process**
Appointment proposals from academic units and faculties generally were very good, and department chairs/school directors have been very helpful in providing any additional information requested. Advance notice of proposals continues to be important to ensure speedy turnaround. Policy 76 specifies five working days for the review process. During the past year, UARC members were able to complete most reviews within five working days unless there was some missing information and discussions with the chair/director or dean were required.

**Administration**
The *Summary of Recruiting Efforts for UW Faculty Positions* form which chairs/directors are required to complete can be found at: [https://uwaterloo.ca/secretariat-general-counsel/committees-and-councils/university-appointments-review-committee](https://uwaterloo.ca/secretariat-general-counsel/committees-and-councils/university-appointments-review-committee)

**UARC Members, September 2013 to August 2014**
Jack Callaghan (AHS), Dawn Parker (ENV), Kenneth Davidson (MATH), Andrew Faulkner (ARTS), Doreen Fraser (ARTS), Tadeusz Gorecki (SCI), Flora Ng (ENG, chair), Catherine Rosenberg (ENG), Gerry Schneider (ENG)
### SUMMARY OF PROPOSALS FOR REGULAR FACULTY APPOINTMENTS

**of duration two years or more**

REVIEWED BY UARC

September 2013 to August 2014

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Files</th>
<th>Nationality</th>
<th>Gender</th>
<th>Appointment Type</th>
<th>Professorial Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>F</td>
<td>M</td>
<td>Prof.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dontenured</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tenured</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Probationary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Definite Term</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lect.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Assist. Prof.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Assoc. Prof.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F</td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>AHS</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>ARTS</td>
<td>16</td>
<td>11</td>
<td>4</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>ENG</td>
<td>16</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ENV</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>MATH</td>
<td>13</td>
<td>5</td>
<td>1</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>9</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>70</td>
<td>42</td>
<td>6</td>
<td>22</td>
<td>29</td>
</tr>
</tbody>
</table>

Of the 56 who accepted offers 24 were female, 32 were male. Of the 14 who declined offers, 5 were female, 9 were male.

17 December 2014

Flora Ng
Chair, UARC
The Senate Executive Committee met on 5 January 2015 and agreed to forward the following item to Senate of approval.

FOR APPROVAL

_________________________

Delegation of Authority to the Executive Committee
In the event that the Dean of Mathematics Nominating Committee is ready to report before the regular February meeting of Senate, the following motion is proposed:

Motion: To delegate to the Executive Committee authority to approve the appointment of the Dean of Mathematics on behalf of Senate.

If the appointment is approved by the Executive Committee on behalf of Senate at its meeting on 2 February 2015, then the president will recommend the appointment to the Board of Governors at its meeting on 3 February 2015.
Senate Graduate & Research Council met on 10 November 2014 and 8 December 2014, and agreed to forward the following items to Senate for approval. These items are recommended for inclusion in the regular agenda.

Further details are available at: https://uwaterloo.ca/secretariat/committees-and-councils/senate-graduate-research-council

FOR APPROVAL

PROGRAM CHANGES

**Faculty of Applied Health Sciences – Kinesiology**

1. **Motion:** To approve the addition of a course-based/experiential option to the master of science in kinesiology program, as described in Attachment #1.

   **Rationale:** This new option will broaden the training approach within the existing program so as to provide training to best prepare students who will go on to obtain professional designations/write exams, for application to professional health programs, and for application to thesis-based graduate programs.

**Faculty of Arts – Accounting**

2. **Motion:** To approve the new graduate diploma in accounting as described in Attachment #2.

   **Rationale:** The recent merging of professional accounting under one umbrella organization has opened new paths to achieving the unified professional accounting designation. The addition of this graduate diploma will allow the university to maintain a competitive position among peer institutions which are also offering accounting education towards the same professional designations.

**Faculty of Arts – French Studies**

3. **Motion:** To approve amendments to the comprehensive examination requirements for the doctoral program in French studies as described in item #1 of Attachment #3.

   **Rationale:** These changes will allow students to acquire a broader and deeper knowledge of various critical, theoretical, cultural and historical fields relevant to their thesis, thus streamlining the transition from graduate coursework to doctoral thesis. These revisions will also reduce the time to completion for doctoral students by removing the unnecessary secondary field exam.

4. **Motion:** To approve the program name change from MA in French to MA in French Studies, as described in item #2 of Attachment #3.

   **Rationale:** This change will bring consistency between program titles at the master’s and doctoral levels.

**Faculty of Arts – Psychology**

5. **Motion:** To amend the master of applied science in developmental and communicative science plan to provide an additional research apprenticeship pathway as described in Attachment #4.
**Rationale:** From input received from faculty and students, it has come to light that a community practicum of a full year does not provide sufficient benefit to students who have decided they wish to pursue a PhD as for students who pursue professional career paths. This amendment will allow the former group to devote more time to the research portion of their practicum and less in an applied community setting.

**Faculty of Engineering – Architecture**

6. **Motion:** To approve changes to the master of architecture plan as described in Attachment #5.

**Rationale:** These changes are precipitated by the recent review of the school’s program offering as well as the school’s own strategic planning and curricular review process. It is anticipated that the changes will strengthen the curricular structure of the program in support of advanced research and design, improve graduate retention and completion rates, and attract a larger pool of qualified students from other institutions to graduate study at Waterloo.

**Faculty of Mathematics – Computer Science**

7. **Motion:** To approve changes to the master of mathematics in computer science coursework option plan, as described in Attachment #6.

**Rationale:** It has been determined that the majority of students who have demonstrated interest in the co-op option within the existing plan are enrolled in the coursework program. These students are the most likely to go on to work in industry and are not funded; thus access to the co-op option provides an opportunity to gain valuable experience in industry while providing a meaningful source of income during the students’ studies. Further, it was determined that the presentation was not an essential requirement for the co-op option as these are typically not well attended and the required co-op work report provides ample opportunity to evaluate the student’s work term.

**Faculty of Mathematics – Pure Mathematics**

8. **Motion:** To approve changes to the doctoral and master’s plans in pure mathematics to remove one approved field of research, as described in Attachment #7.

**Rationale:** The department no longer has a faculty member working in the field of functional equations, and the faculty involved in analysis will allow that focus to continue and grow.

**Collaborative Water Program**

9. **Motion:** To approve the participation of the School of Architecture in the Collaborative Water Program, as described in Attachment #8.

**Rationale:** The school recognizes that the Collaborative Water Program is an exciting and unique offering at the University of Waterloo, and that it provides significant educational and resource benefits to researchers and students alike. Students and faculty in the school have expressed a clear desire to participate in this program.

/mg
George Dixon      Jim Frank
Vice-President, University Research    Associate Provost, Graduate Studies
Major Modification

Program: Master of Science in Kinesiology

Degree Designation: Master of Science (MSc)

Type of Modification: Add a course-based/experiential option to the existing Master of Science in Kinesiology program.

This is proposed as a new option for the same MSc degree designation but with a different distribution of loads. Some funding support in the form of research/teaching assistantships would be provided for student in the two years option (as per current department practice).

Option #1: Course-based/Experiential MSc (New)
- 10 total courses (typically 8 content + 2 seminar; max 2 CR/NCR)
- experiential/internship placement
- capstone colloquium

Option #2: Thesis-based MSc (Existing)
- 6 total courses
- thesis work
- thesis defense

Approved at (please note date of approval at previous levels): Department Council (October 2nd, 2014), Faculty Graduate Studies Committee (October 7th, 2014), Graduate Senate (November 10th, 2014)

Effective Date: September 2015

Description of Proposed Change: The addition of a course-based/experiential option to the existing MSc degree in Kinesiology.

Rationale for Proposed Change: To broaden the training approach of our existing MSc program in order to provide training to prepare students for professional designation and exam (e.g., Ergonomics, Clinical Kinesiology), for application to professional health programs (e.g., PT, OT, MD, CP), and/or for application to thesis-based graduate programs.
New Calendar Description:

Objectives:
The objectives of this program are to advance knowledge in human physical activity and to foster a unique interdisciplinary approach to the field of research problems that concern human movement. Students are expected to acquire sufficient knowledge in their area of specialization to pursue research and/or relevant experiential learning at a superior level, to develop a facility with quantitative methods, and to obtain an understanding of the components that together make up the multidiscipline of kinesiology. The overall mission of the Department of Kinesiology to “optimize health, to prevent injury and illness, and to extend the years of high quality life through understanding cellular to societal implications of physical activity, nutrition and lifestyle” is achieved by offering students the opportunity to take courses and conduct research and/or engage in experiential learning on topics of kinesiology that span the range from cell to society. The students are prepared to carry on with graduate studies or to go to professional health care schools, as well as to take higher standing positions in the private sector.

Admission Requirements:
Admission requirements for regular students applying to be admitted to the Master of Science program are as follows:

• An Honours Bachelor’s degree (or equivalent) with at least a second class standing 75% average (B).
• References. Each applicant must submit two letters of reference from faculty members who taught him/her as an undergraduate.
• Proof of proficiency in English (if applicable); accepted examinations and required minimum scores for graduate studies are listed on the English Language Proficiency page.
• Sample of Work. Each applicant must submit one copy of a term paper written during the last two years of undergraduate studies.
• Each applicant must submit a letter indicating why he/she wishes to pursue graduate studies.

For admission requirements for probationary and transitional students can be found in the Graduate Studies Calendar, Academic Regulations - Categories of Admission to the Master's Program. With respect to admission requirements to a qualifying program, under certain conditions applicants who do not meet the University's and the Department's requirements for admission to graduate studies may be considered (see Graduate Studies Calendar - Admission Requirements - Qualifying Program).

Deadline for applications to the Master's program is February 1.

Stream-Specific Admission Requirements (Thesis-based only):
Biomechanics: It is essential that a student have at least a one-term course in each of the following areas: general physiology, statistics, biomechanics of movement, anatomy, calculus, computer science, and physics (mechanics). Students can be admitted to the program lacking one or more of these essential courses, but the deficiency must be made up in the first or second term.
In addition, it is desirable, but not essential, that students have competency in biochemistry, exercise physiology, physics (electrical science), and neuroanatomy.

**Neuroscience:** Students should have at least a one-term course in neuroscience (learning, performance, motor control or sport psychology), statistics and computer science. Students without this background will be evaluated for entrance to the MSc program in terms of their specific research interests as outlined in their application letter. As well, depending on their proposed area of study, anatomy, biomechanics and/or psychology may be required.

**Physiology and Nutrition:** It is essential that a student have at least a one-term course in each of the following areas: general physiology, physiology of physical activity, biochemistry, statistics and biomechanics. Students can be admitted to the program lacking one or more of these essential courses, but the deficiency must be made up in the first or second term. In addition, it is desirable, but not essential that students have competency in anatomy, calculus, computer science and physics (mechanics).

**Degree Requirements:**
There are two options for completion of the MSc in Kinesiology: 1) thesis-based, or 2) course-based. The specific requirements are outlined below.

**Thesis-based Option**
The minimum course requirement for the thesis-based MSc degree is four one-term graduate courses (.50 unit weight), and two graduate seminars (.50 unit weight). Required courses: one-term course related to quantitative analysis (i.e., methods, modeling, mathematics or statistics). Graduate courses must be selected in consultation with, and approved by, the student's supervisor or advisor.

A thesis on an approved subject is required and is defended by an oral examination. The research is conducted under the supervision of the student's advisor and the thesis committee. The MSc thesis committee consists of a minimum of three faculty including the student's supervisor.

The minimum residence requirement for the MSc degree for the thesis-based option is two terms full-time from an Honours Bachelor's degree or equivalent. The requirements for a MSc degree in Kinesiology for the thesis-based option must be completed within six terms. In order to complete the program during this time period a candidate in the thesis-based option is expected to devote to research as much of the time following completion of courses as is necessary to complete the thesis.

**Course-based/Experiential Option**
The minimum requirements for the course-based MSc degree are eight one-term (.50 unit weight) graduate courses, two graduate seminars, a one-term experiential learning component, and a capstone colloquium. Required courses: one-term course related to quantitative analysis (i.e., methods, modeling, mathematics or statistics). A minimum of four courses must be from the Department of Kinesiology for the thesis-based option must be completed within six terms. In order to complete the program during this time period a candidate in the thesis-based option is expected to devote to research as much of the time following completion of courses as is necessary to complete the thesis.

The experiential learning requirement is met with a one-term, full-time, program-relevant internship/experiential placement (minimum of 420 hours) to be arranged by the student in consultation with the Graduate Committee. The placement, objectives,
and work required to meet these objectives are to be approved by the departmental Graduate Committee and the placement supervisor. Candidates are also required to submit a discussion paper or case series related to this placement to the departmental Graduate Committee, as well as present this work as part of the capstone colloquium.

The minimum residence requirement for the course-based MSc degree is two terms full-time from an Honours Bachelor's degree or equivalent. The requirements for a course-based MSc degree in Kinesiology must be completed within three terms. In order to complete the program during this time period a candidate in the course-based option is expected to complete all course work in the first two terms and devote the summer to a relevant internship/experiential placement.

Permission from the Department Graduate Committee and the Associate Dean of Graduate Studies, as appropriate, must be obtained for any MSc degree student (both options) to continue registration beyond term limits.

All MSc degree students (both options) must register for two of the following research seminars: KIN 670A, KIN 670B, KIN 670E; KIN 670F; KIN 670H; KIN 670I to fulfill degree requirements. Please note that these courses are designated as Cr/NCr and do not count towards course requirements. A maximum of two research seminar courses (KIN 670s) can be used towards the MSc degree requirements.

All graduate courses except those designated in this Calendar as Cr/NCr must be assigned a numerical grade. Any student who registers for a course in a department outside the Faculty of Applied Health Sciences must receive a numerical grade for the course. Unless the course is designated Cr/NCr in the Graduate Calendar, the student must ask the instructor to submit a numerical grade. The student must clarify this requirement with the instructor within the first two weeks of each term.

Students must obtain an average of at least 72% (B-) in the set of courses which they present in fulfillment of course requirements for any graduate degree. Unsatisfactory academic performance in any one course will result in a review of the candidate's status by the departmental Graduate Committee. If a student with a failed course is permitted to continue, additional work may be required to clear the failure in that course, or by replacement of the failed course. Alternatively, the student may be required to repeat part or all of the program.
UNIVERSITY OF WATERLOO

GRADUATE EXPEDITED PROPOSAL OF THE
GRADUATE DIPLOMA (TYPE 1)
IN ACCOUNTING

Submitted to the Ontario Universities Council on Quality Assurance

VOLUME I - PROPOSED BRIEF
NOVEMBER 2014
# TABLE OF CONTENTS

1. Program Description and Objectives ................................................................. 1

2. Admission Requirements .................................................................................... 3

3. Program Content and Graduation Requirements.............................................. 5

4. Mode of Delivery................................................................................................... 6

5. Assessment of Teaching and Learning............................................................. 6

6. Program Resources ............................................................................................. 8

7. Quality Assurance..............................................................................................10

Appendix I............................................................................................................... 13

Appendix II..............................................................................................................18
1. Program Description and Objectives

The Canadian accounting profession is in the midst of a major transformation, with Chartered Accountants (CAs), Certified Management Accountants (CMAs), and Certified General Accountants (CGAs) merging to form a unified body of Chartered Professional Accountants (CPAs). The new CPA qualification process differs from the qualification processes of the three legacy designations, necessitating changes to university accounting programs and also creating qualification options that did not exist before unification.

To allow its graduate students to take advantage of one of these new options, The School of Accounting and Finance (SAF) is seeking approval of a new Graduate Diploma in Accounting (GDAcc), which will be awarded to candidates who are admitted to the SAF’s existing two-term, eight-course Master of Accounting (MAcc) program, but choose to leave the program after completing one term of at least four courses. The new GDAcc therefore meets the Ontario Council of Graduate Studies definition of a Type 1 Graduate Diploma. Given this structure, the GDAcc will have the same broad objectives as the MAcc program, namely to (see Appendix I for specific GDAcc learning outcomes):

- combine core business knowledge and financial management competencies with depth in competencies relevant to the Chartered Professional Accountant (CPA) profession,
- demonstrate the highest standards in professionalism, capabilities & behaviour, and
- promote a commitment to lifelong professional development.

It is important to note that the GDAcc would not result in additional graduate accounting students because in the absence of a Diploma option, MAcc-eligible students pursuing a CPA designation would have a choice of three routes: (1) complete the full MAcc program, just as they did between 1985 and 2014 when pursuing the legacy CA or CMA designations; (2) complete one of the Graduate Diploma in Accounting programs recently created by other universities in Ontario; or (3) complete the new CPA Professional Education Program (PEP) while working full-time. We believe the MAcc will be the preferred path for the vast majority of CPA-bound students, but the GDAcc could help retain some students who might otherwise leave UW to pursue a CPA via routes (2) or (3).

The Existing MAcc Program

The MAcc is a professional terminal degree designed to combine the exploration of career interests with preparation for professional accounting exams. Students, who, due to their co-op experiences or exposure to practice areas through specific undergraduate course content, have already determined an interest in a particular career path, can select courses that provide them with a "head start" on their future career. Students considering a career as part of the management team of an organization can, for example, incorporate courses that will assist them in developing incentive systems, improving their financial statement analysis competencies, and
expanding their ability to develop and execute profitable business models. MAcc students without a specific career interest can take courses in several practice areas in an effort to "test the waters" and determine which careers they would like to pursue. All MAcc students must also take courses that develop the technical and professional competencies needed to pass the CPA profession’s national Common Final Evaluation (CFE) and thereby obtain the CPA designation. Students who successfully complete the MAcc are permitted by CPA Canada, the CPA profession’s governing body, to proceed directly to the CFE without completing any of the six modules in CPA Canada’s PEP, which is the standard route to a CPA designation in Canada.

The Proposed GDAcc Program

The proposed GDAcc is designed to accommodate students who wish to focus their graduate studies on developing the technical and professional competencies needed to pass the CFE and thereby obtain the CPA designation. Students who successfully complete the GDAcc would be exempted by CPA Canada from the first four of the six modules in the PEP, leaving them to complete the last two PEP modules through CPA Canada prior to writing the CFE. Prior to recent changes in the professional accounting qualification process in Ontario (and Canada), this type of partial exemption from the legacy pre-final evaluation professional program was not available to students at any Ontario university. With this exemption option now available, students who would otherwise complete the full MAcc program would be able to opt out after one term and receive the partial exemption offered by the GDAcc.

As a Type 1 Diploma program, the GDAcc will not have admission requirements or course offerings that are distinct from the existing MAcc program, so there will be nothing to distinguish a GDAcc student from an MAcc student until the end of the first term, when students decide whether to opt for a GDAcc or to continue with the MAcc.

The GDAcc program was unanimously approved by SAF faculty members at a School meeting on February 28, 2014.
2. Admission Requirements

As a Type 1 Diploma, the GDAcc will not have its own admission requirements. Students will apply to the existing MAcc and be admitted on the basis of the admission requirements detailed below.

Beginning in 2015, the admission requirements for the MAcc will change as a result of the CPA unification noted above. The CPA Competency Map includes a broader set of competencies than that of legacy CA and CMA maps, along with expectations for deeper levels of knowledge in many areas. To ensure that all MAcc students enter the program with the breadth and depth of competencies needed for success in the program and on the new CFE, the SAF has approved certain changes to the basket of undergraduate courses that will be used to make MAcc admission decisions.

In addition, students in the Classes of 2016 and beyond will proceed through a different set of undergraduate courses due to changes arising from the implementation of the SAF Learning Model and recent changes to adapt the undergraduate programs to the new CPA Competency Map. These undergraduate program changes result in the need to further modify MAcc admission requirements for the classes of 2016 and beyond (changes are awaiting UW Senate approval).

The following tables set out the MAcc admission requirements for the Classes of 2015 and beyond. The new requirements for the Class of 2015 have been approved by UW Senate. The new requirements for the Classes of 2016 and beyond have been approved by the Arts Graduate Affairs Group and will come up for approval by UW Senate in the Spring of 2014.

<table>
<thead>
<tr>
<th>Requirement #1: Successful completion of any of the following University of Waterloo four-year Honours undergraduate programs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bachelor of Accounting and Financial Management</td>
</tr>
<tr>
<td>• Bachelor of Mathematics/CPA, or</td>
</tr>
<tr>
<td>• Bachelor of Science (Biotechnology)/CPA</td>
</tr>
<tr>
<td>with at least:</td>
</tr>
<tr>
<td><strong>MAcc Classes of 2015 &amp; 2016</strong></td>
</tr>
<tr>
<td>• a 75% average in the last two years of the program</td>
</tr>
<tr>
<td><strong>MAcc Classes of 2017 &amp; thereafter</strong></td>
</tr>
<tr>
<td>• a 75% average in the last three years of the program</td>
</tr>
</tbody>
</table>

Class of 2016 students were in the midst of their second year when MAcc admission changes for 2016 and beyond were made, so second-year courses are excluded from the overall-average requirement for this class.
**Requirement # 2:** Achieved an average of at least 75% in the following basket of undergraduate courses (first-attempt grades only):

<table>
<thead>
<tr>
<th>Term</th>
<th>MAcc Class of 2015</th>
<th>MAcc Classes of 2016 &amp; thereafter</th>
</tr>
</thead>
</table>
| 3A   | Class of 2015 students had completed the 3A term by the time 2015 MAcc admission changes were made, so 3A courses are excluded from 2015 requirement. | • AFM 341 Accounting Information Systems  
• AFM 362 Taxation 1  
• AFM 373 Cases & Applications in Finance I or AFM 476 Advanced Corporate Finance |
| 3B   | • AFM 331 Business Strategy  
• AFM 341 Accounting Information Systems or CS 330 Management Information Systems  
• AFM 361 Taxation 1  
• AFM 431 Professional Ethics for Financial Managers or PHIL 215 Professional & Business Ethics | • AFM 311 Connections to Ethical Context  
• AFM 351 Audit Strategy  
• AFM 363 Taxation 2  
• AFM 481 Cost Management Systems |
| 4A   | • AFM 451 Audit Strategy  
• AFM 481 Cost Management Systems  
• AFM 491 Advanced Financial Accounting | • AFM 433 Business Strategy  
• AFM 491 Advanced Financial Accounting |
| 4B   | • AFM 401 Accounting Theory  
• AFM 411 Connections Across Competencies for Accounting Professionals  
• AFM 461 Taxation 2  
• AFM 471 Cases & Applications in Finance or AFM 476 Advanced Corporate Finance  
• AFM 482 Performance Measurement & Organization Control | • AFM 401 Accounting Theory  
• AFM 462 Taxation 3  
• AFM 482 Performance Measurement & Organization Control  
• AFM 479 Cases & Applications in Finance II or AFM 424 Equities and AFM 322 Derivatives |
3. Program Content and Graduation Requirements

Program Content

**MAcc Program**

The MAcc is a two-term, eight-course program offered in the Winter and Spring terms, with the one mandatory core course in the second term (ACC 610-Public Accounting Practice) building on and integrating the competencies learned in the two mandatory core courses from the Winter term (ACC 611-External Reporting and ACC 680-Performance Measurement & Control Systems for Implementing Strategy). In addition to these three core courses, to satisfy the CPA PEP exemption requirements mentioned in the opening section, MAcc students must also complete two of a specific set of four elective courses offered in the Winter term (ACC 607-Tax Issues Integration, ACC 650-Assurance & Governance, ACC 685-Performance Management, ACC 690-Topics in Finance). MAcc students round out their course requirements with any three electives chosen from among the more than 10 typically available across the two terms.

**GDAcc Program**

As a Type 1 Diploma, students will take courses in the existing MAcc program. No separate or otherwise special courses will be offered as part of this Diploma, so GDAcc students will develop the same set of competencies as MAcc students. Given the MAcc program’s structure and the PEP exemption requirements, students wishing to obtain just the GDAcc must complete four courses in the Winter term: the two mandatory core courses (ACC 611-External Reporting and ACC 680-Performance Measurement & Control Systems for Implementing Strategy) and two electives from the limited set of four mentioned above. Appendix I presents the specific technical and enabling competencies that will be developed in each of the six courses eligible for GDAcc credit (the different colours denote different levels of expected proficiency, with green being highest and red lowest). Upon gaining these competencies, GDAcc (and MAcc) students will satisfy the program’s learning outcomes, which are listed in Appendix II, where they are also mapped to the Graduate Degree Level Expectations (Table 1) and the six courses eligible for GDAcc credit (Table 2).

**Graduation Requirements**

To receive the Diploma, students must obtain a grade of at least 60% in each of the four courses as well as a four-course average of at least 70% (calculated without rounding). In comparison, MAcc degree requirements are a grade of at least 60% in each of the eight courses as well as an eight-course average of at least 75% (calculated without rounding). The lower overall-average requirement for the GDAcc is proposed so that it is consistent with planned Graduate Accounting Diplomas from other Ontario universities, including Queen’s, WLU, and Brock.
GRADUATE EXPEDITED PROPOSAL OF THE GRADUATE DIPLOMA (TYPE 1) IN ACCOUNTING

4. Mode of Delivery

All MAcc courses are offered on campus only and use a wide variety of teaching and learning methodologies (e.g., cases, lectures, guest speakers, student presentations, in-class group discussion) designed to ensure that students achieve the broad program objectives listed in the opening section and obtain the specific technical and enabling competencies included in the CPA Competency Map.

5. Assessment of Teaching and Learning

Assessment of Teaching

At the end of each MAcc course the students evaluate both the course material and the instructor. The same evaluation form is used for both full-time and sessional faculty. The course evaluation forms are distributed to the students for completion at a time when the instructor is not present, to provide students with anonymity. Completed evaluation forms are handed in and then processed by the Registrar's Office. The summarized results are provided to the School's Director and the Director of the MAcc program. Teaching and other course-related issues are addressed by the School's Director with the faculty member. In addition, if there are issues during the term, students are invited to bring them to the attention of the MAcc Director, who will assist the students in resolving them with the faculty member.

Assessment of Learning

Throughout the MAcc program, a variety of assessment methods are used to assess each student’s technical and enabling competencies.

Class Participation

A student's advance preparation and level of in-class engagement comprise the student’s grade for this component of a course. Class participation requires the student to demonstrate initiative and competence and to orally communicate effectively and efficiently.

Class Presentations

Presentations are designed to develop the student’s ability to present and discuss a topic in front of a group. In addition, they force a student to examine ideas and information critically, to identify key issues, and then to orally communicate their analysis effectively and efficiently.

Written Assignments

Written assignments provide a student with the opportunity to identify issues, gather and analyze information, develop ideas, solve problems and make decisions. They must then concisely and clearly communicate their analysis and recommendations in writing.
GRADUATE EXPEDITED PROPOSAL OF THE GRADUATE DIPLOMA (TYPE 1) IN ACCOUNTING

Research Papers

Research papers require the student to explore a topic in greater depth by searching for relevant information, critically examining what they find, and the synthesizing and communicating their findings clearly and concisely.

Examinations

Examinations require students to apply what they have learned in a course to identify and analyze issues, solve problems, and make decisions, then to clearly and concisely present their analysis in writing, often under time constraints.
GRADUATE EXPEDITED PROPOSAL OF THE GRADUATE DIPLOMA (TYPE 1)
IN ACCOUNTING

6. Program Resources

To reiterate a point made in the opening section, the GDAcc would not result in additional graduate accounting students, so it will not require additional SAF or UW resources of any kind. It may, however, prevent the loss of some graduate students, who could choose one of two new paths to a CPA designation instead of the MAcc. Absent a UW Graduate Diploma option, MAcc-eligible students pursuing a CPA designation would have a choice of three routes: (1) complete the full MAcc program, just as they did between 1985 and 2014 when pursuing the legacy CA or CMA designations; (2) complete one of the Graduate Diploma in Accounting programs recently created by other universities in Ontario; or (3) complete the new CPA PEP while working full-time. We believe the MAcc will be the preferred path for the vast majority of CPA-bound students, but the GDAcc could help retain some students who might otherwise leave UW to pursue a CPA via routes (2) or (3).

The first table below presents the faculty responsible for administering the MAcc program or teaching the MAcc courses eligible for GDAcc credit. The second table summarizes the overall teaching resources of the SAF as at December 31, 2013.

<table>
<thead>
<tr>
<th>Name</th>
<th>Degrees</th>
<th>Designations</th>
<th>Title</th>
<th>Teaching or Administrative Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berberich, Greg</td>
<td>BMath, PhD</td>
<td>CPA, CA</td>
<td>Lecturer</td>
<td>Director, MAcc Program</td>
</tr>
<tr>
<td>Hayes, Frank</td>
<td>MBA</td>
<td>CPA, CMA</td>
<td>Lecturer</td>
<td>ACC 690</td>
</tr>
<tr>
<td>Libby, Theresa</td>
<td>BComm, PhD</td>
<td>CPA, CA</td>
<td>Professor</td>
<td>ACC 680</td>
</tr>
<tr>
<td>Mann, Shari</td>
<td>BMath</td>
<td>CPA, CA</td>
<td>Lecturer</td>
<td>ACC 611</td>
</tr>
<tr>
<td>Pomeroy, Bradley</td>
<td>BComm, MSc, PhD</td>
<td>CPA, CA</td>
<td>Assistant Professor</td>
<td>ACC 650</td>
</tr>
<tr>
<td>Robson, Julie</td>
<td>BA, MAcc</td>
<td>CPA, CA</td>
<td>Continuing Lecturer</td>
<td>ACC 607 and Associate Director, MAcc Program</td>
</tr>
<tr>
<td>Vanden Bosch, Nancy</td>
<td>BA, MAcc</td>
<td>CPA, CA, CMA</td>
<td>Continuing Lecturer</td>
<td>ACC 660</td>
</tr>
<tr>
<td>Wainberg, James</td>
<td>PhD</td>
<td></td>
<td>Assistant Professor</td>
<td>ACC 650</td>
</tr>
<tr>
<td>Webb, Alan</td>
<td>BComm, PhD</td>
<td>FCPA, FCA</td>
<td>Associate Professor</td>
<td>ACC 685</td>
</tr>
<tr>
<td>Wiedman, Christine</td>
<td>BA, MAcc, PhD</td>
<td>FCPA, FCA</td>
<td>Associate Professor</td>
<td>ACC 611</td>
</tr>
</tbody>
</table>
## GRADUATE EXPEDITED PROPOSAL OF THE GRADUATE DIPLOMA (TYPE 1)
### IN ACCOUNTING

<table>
<thead>
<tr>
<th>Description</th>
<th>Financial Accounting</th>
<th>Assurance Accounting</th>
<th>Managerial Accounting</th>
<th>Taxation</th>
<th>Accounting Info Systems</th>
<th>Law &amp; Ethics</th>
<th>Finance</th>
<th>Whole Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sufficiency of Faculty:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number faculty members:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>11</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>13</td>
<td>48</td>
</tr>
<tr>
<td>Part-time</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td><strong>Quality of Faculty:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time faculty:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% qualified academically and/or professionally</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>% qualified academically (PhD)</td>
<td>73%</td>
<td>80%</td>
<td>57%</td>
<td>50%</td>
<td>100%</td>
<td>50%</td>
<td>77%</td>
<td>60%</td>
</tr>
<tr>
<td>% qualified professionally (CPA, CA, CMA, CFA, etc.)</td>
<td>73%</td>
<td>60%</td>
<td>83%</td>
<td>88%</td>
<td>25%</td>
<td>100%</td>
<td>38%</td>
<td>67%</td>
</tr>
<tr>
<td>% engaged in intellectual development</td>
<td>73%</td>
<td>60%</td>
<td>57%</td>
<td>50%</td>
<td>100%</td>
<td>50%</td>
<td>77%</td>
<td>60%</td>
</tr>
<tr>
<td>% engaged in professional activities</td>
<td>64%</td>
<td>40%</td>
<td>71%</td>
<td>67%</td>
<td>25%</td>
<td>50%</td>
<td>31%</td>
<td>42%</td>
</tr>
<tr>
<td>Part-time faculty:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% qualified professionally</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>na</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Max.</th>
<th>2013 Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quality of Learning:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Class Size:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergrad advanced-level courses</td>
<td>75</td>
<td>30 to 65</td>
</tr>
<tr>
<td>Graduate level</td>
<td>50</td>
<td>30 to 50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Max</th>
<th>2013 Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Load:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research faculty</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Teaching faculty</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
7. Quality Assurance

Internal Quality Assurance

In September 2012, the School established a Learning Outcomes Committee, which has a mandate that includes:

- Supporting faculty members as they align their courses with specific learning outcomes.
- Developing the School’s ability to efficiently develop, measure, and demonstrate that the SAF learning outcomes add value to its programs for students and graduates, satisfy external stakeholders, and incorporate best practice from AACSB and other groups.
- Recommending responses or changes that flow from an analysis of the alignment of the School’s programs and courses with the CPA Competency Map.
- Maintaining open communication channels with students and other key stakeholders.

Quality assurance is also maintained by the process followed for substantive program changes. Proposed changes are distributed to the School's faculty for open discussion and input. Subsequently, a finalized proposal reflecting this input is distributed to and voted upon by the School's faculty. Any approved changes requiring an amendment to the University's Calendar must also go through a series of approvals at the Faculty and University levels. At each stage, a faculty member representing the School attends such meetings in order to speak to the proposed changes and address questions or concerns.

In addition to quality in program design, we are also committed to maintaining a high level of quality from a program delivery perspective. As part of its quality assurance processes at the program level, student feedback on program delivery and their learning experience will continue to be requested both formally by way of surveys and evaluations and informally through regular feedback sessions to ensure we are meeting the needs of our students.

External Quality Assurance

*Ontario Council of Graduate Studies*

The MAcc program’s most recent OCGS review was in 2009. The reviewers strongly praised the program and had no substantive recommendations for improvement. Following is the Summary Statement from the reviewers’ report:

The MAcc has been a trail blazing pioneer in accounting education since its inception. It has served the University of Waterloo well, providing outstanding accounting candidates to the profession via the co-op philosophy. Moreover, it has managed to do so outside the framework of a Faculty of Business and in doing so created a reputation within the field of accounting that is envied by other universities in the province.
GRADUATE EXPEDITED PROPOSAL OF THE GRADUATE DIPLOMA (TYPE 1) IN ACCOUNTING

The MAcc has overcome many challenges in the process and has successfully adapted to the educational needs of a rapidly changing accounting profession. Many challenges remain, but our review indicates that the present faculty have the potential for meeting the challenges and have credible plans for doing so.

Overall, the program’s goals are appropriate in meeting the twin objectives of the University’s mission and the accounting professions’ needs. Specifically the goals of the MAcc program are to prepare to students for successful professional careers in various streams of accounting or finance, and for lifelong professional development. In the process the program prepares students to pass professional certification exams soon after graduation.

The program’s admission requirements, structure, and curriculum are geared to meeting the needs of students who have identified their career interests relatively early, at age 16 or 17. This allows for early specialization in the undergraduate programs, which in turn provides more flexibility in the 2 terms of the graduate program. The School has been very effective in meeting its goals and is a cutting edge educator of accountants in North America. The faculty are top notch with a good mix of research and educator/practitioner types. There are very close links with the accounting profession in influencing standard setting, obtaining financial resources from the profession, and organizing the work term experiences. There is extensive structured monitoring and feedback of teaching quality by faculty, students, and the accounting profession. The use of technology in delivering in class and distance education is state of the art.

Likewise the success of SAF in meeting the profession’s expectations, as reflected by graduates’ satisfaction in exit surveys and the success of their graduates in Canadian business we are confident that they will meet their future objectives.

The SAF is blessed with outstanding leadership and a very collegial environment. The faculty and staff clearly have the best interests of the graduate students in mind and it is to be applauded.

Professional Program Reviews

Between 1985 and 2014, the MAcc program was the only professionally accredited accounting graduate program in Ontario. During this period, the program was subject to regular reviews by the Institute of Chartered Accountants of Ontario and the Certified Management Accountants of Ontario (now unified as the Chartered Professional Accountants of Ontario). Both professional bodies were always satisfied that the program was meeting the training and educational needs of the respective organizations.
GRADUATE EXPEDITED PROPOSAL OF THE GRADUATE DIPLOMA (TYPE 1) IN ACCOUNTING

The performance of MAcc graduates on professional accreditation exams also provides a useful external measure of the program’s quality. In each of the past four years (2010-2013), the pass rate of MAcc graduates on the national CA accreditation exam has exceeded both the Ontario and the national pass rates. Many MAcc alumni were on the national honour roll in these years, and in three of the four years, an MAcc graduate received the top score in Canada. We will continue to monitor our graduate’s success on the newly designed CPA professional accreditation exams.

Finally, after a recent review by a team from CPA Ontario, the MAcc program and the proposed GDAcc program were accredited by CPA Canada to provide their graduates with various exemptions from the CPA PEP, providing further external assurance of the quality of these programs.
# Technical Competencies

## 1. Financial Reporting

1.1 Evaluates financial reporting needs

1.1.1 Evaluates financial reporting needs and systems

1.1.2 Evaluates the appropriateness of the basis of financial reporting

1.1.3 Evaluates reporting processes to support reliable financial reporting

1.1.4 Explains implications of current trends and emerging issues in financial reporting

1.1.5 Identifies financial reporting needs for the public sector

1.1.6 Identifies specialized financial reporting requirements for specified regulatory and other filing requirements

1.2 Accounting Policies and Transactions

1.2.1 Develops or evaluates appropriate accounting policies and procedures

1.2.2 Evaluates treatment for routine transactions

1.2.3 Evaluates treatment for non-routine transactions

1.2.4 Analyzes treatment for complex events or transactions

1.3 Financial Report Preparation

1.3.1 Prepares financial statements

1.3.2 Prepares routine financial statement note disclosure

1.4 Financial Statement Analysis

1.4.1 Analyzes complex financial statement note disclosure

1.4.2 Evaluates financial statements including note disclosures

1.4.3 Analyzes and provides input in the preparation of the management communication (e.g., management discussion and analysis (MD&A))

1.4.4 Interprets financial reporting results for stakeholders (external or internal)

1.4.5 Analyzes and predicts the impact of strategic and operational decisions on financial results

## 2. Strategy and Governance

2.1 Governance

2.1.1 Evaluates the entity’s governance structure (policies, processes, codes)

2.1.2 Evaluates the specific role of the audit committee in governance

2.1.3 Evaluates mechanisms used for compliance purposes

2.1.4 Analyzes the specific role of the board in an entity’s social responsibility strategy and sustainability

---

### Courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>ACC 611</th>
<th>ACC 680</th>
<th>ACC 685</th>
<th>ACC 690</th>
<th>ACC 650</th>
<th>ACC 607</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Required Courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Must Take Two of these Four Courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX I
MAcc/GDAcc Course Competencies

<table>
<thead>
<tr>
<th>Courses</th>
<th>Two Required Courses</th>
<th>Must Take Two of these Four Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACC 611</td>
<td>ACC 680</td>
</tr>
<tr>
<td>2.2 Mission, Vision, Values, and Mandate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2.1 Assesses whether management decisions align with the entity’s mission, vision, and values</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Strategy Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3.1 Evaluates the entity’s strategic objectives and related performance measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3.2 Evaluates the entity’s internal and external environment and its impact on strategy development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3.3 Evaluates strategic alternatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Strategy Implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4.1 Analyzes the key operational issues and alignment with strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 Enterprise Risk Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5.1 Designs an effective risk management program and evaluates its impact on shareholder value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. MANAGEMENT ACCOUNTING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Management Reporting Needs and Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.1 Evaluates management information requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.2 Evaluates the types of information systems used and the role they play in an organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.3 Recommends improvements to reporting systems to meet information needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.4 Identifies ethical and privacy issues related to information technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Planning, Budgeting, and Forecasting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.1 Develops or evaluates information inputs for operational plans, budgets, and forecasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.2 Prepares, analyzes, or evaluates operational plans, budgets, and forecasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.3 Computes, analyzes, or assesses implications of variances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3 Cost Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.1 Evaluates cost classifications and costing methods for management of ongoing operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.2 Evaluates and applies cost management techniques appropriate for specific costing decisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.3 Recommends changes identified by applying process improvement methodologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.4 Recommends cost management improvements across the entity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4 Revenue Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4.1 Evaluates sources and drivers of revenue growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5 Profitability Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5.1 Performs sensitivity analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5.2 Evaluates sustainable profit maximization and capacity management performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6 Organizational Performance Measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6.1 Evaluates performance using accepted frameworks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX I
MAcc/GDAcc Course Competencies

<table>
<thead>
<tr>
<th>Courses</th>
<th>Two Required Courses</th>
<th>Must Take Two of these Four Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6.2 Evaluates performance of responsibility centres</td>
<td>ACC 611</td>
<td>ACC 680 ACC 685 ACC 690 ACC 650 ACC 607</td>
</tr>
<tr>
<td>3.6.3 Evaluates root causes of performance issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7 Individual Performance Measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7.1 Analyzes the implications of management incentive schemes and employee compensation methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4. AUDIT AND ASSURANCE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Internal Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.1 Assesses the entity’s risk assessment processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.2 Evaluates the information system, including the related processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2 Internal and External Audit Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.1 Advises on an entity’s assurance needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.2 Explains the implications of pending changes in assurance standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3 Internal Audit Projects and External Assurance Engagements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.1 Assesses issues related to the undertaking of the engagement or project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.2 Assesses which set of criteria to apply to the subject matter being evaluated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.3 Assesses or develops which standards or guidelines to apply based on the nature and expectations of the assurance engagement or project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.4 Assesses materiality for the assurance engagement or project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.5 Assesses the risks of the project, or, for audit engagements, assesses the risks of material misstatement at the financial statement level and at the assertion level for classes of transactions, account balances, and disclosures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.6 Develops appropriate procedures based on the identified risk of material misstatement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.7 Performs the work plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.8 Evaluates the evidence and results of analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.9 Documents the work performed and its results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.10 Draws conclusions and communicates results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.11 Prepares or interprets information and reports for stakeholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4 Comprehensive Audit Projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.1 Applies comprehensive auditing techniques</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5. FINANCE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 Financial Analysis and Planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.1 Evaluates the entity’s financial state</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.2 Develops or evaluates financial proposals and financing plans</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# APPENDIX I

**MAcc/GDAcc Course Competencies**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Two Required Courses</th>
<th>Must Take Two of these Four Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 611</td>
<td>ACC 680</td>
<td>ACC 685 ACC 690 ACC 650 ACC 607</td>
</tr>
</tbody>
</table>

5.2 Treasury Management
- 5.2.1 Evaluates the entity’s cash flow and working capital
- 5.2.2 Evaluates the entity’s investment portfolio
- 5.2.3 Evaluates sources of financing
- 5.2.4 Evaluates decisions affecting capital structure
- 5.2.5 Evaluates the entity’s cost of capital
- 5.2.6 Evaluates decisions related to distribution of profits

5.3 Capital Budgeting
- 5.3.1 Develops or evaluates capital budgeting processes and decisions

5.4 Valuation
- 5.4.1 Determines the value of a tangible asset
- 5.4.2 Applies appropriate methods to estimate the value of a business
- 5.4.3 Estimates the value of an intangible asset

5.5 Financial Risk Management
- 5.5.1 Develops or evaluates financial risk management policies
- 5.5.2 Analyzes the use of derivatives as a form of financial risk management

5.6 Corporate Finance Transactions
- 5.6.1 Evaluates the purchase, expansion, or sale of a business
- 5.6.2 Advises a financially troubled entity

6. Taxation

6.1 Corporate Tax
- 6.1.1 Assesses a corporate entity's general tax issues
- 6.1.2 Determines taxes payable for a corporation in routine situations
- 6.1.3 Determines taxes payable for a corporation in non-routine situations
- 6.1.4 Advises on tax consequences or specific tax planning opportunities for shareholders and their closely held corporations
- 6.1.5 Analyzes the tax consequences or planning opportunities for complex corporate transactions
- 6.1.6 Describes the tax consequences of other corporate and partnership restructuring transactions

6.2 Personal Tax
- 6.2.1 Assesses general tax issues for an individual
- 6.2.2 Determines income taxes payable for an individual in routine situations
- 6.2.3 Determines income taxes payable for an individual in non-routine situations
- 6.2.4 Advises on specific tax planning opportunities for individuals
- 6.2.5 Analyzes estate planning opportunities for individuals
## APPENDIX I
### MAcc/GDAcc Course Competencies

<table>
<thead>
<tr>
<th>Courses</th>
<th>Two Required Courses</th>
<th>Must Take Two of these Four Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 611, ACC 680, ACC 685, ACC 690, ACC 650, ACC 607</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2.6 Analyzes tax consequences for non-residents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3 Assessment and Appeals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3.1 Advises taxpayers with respect to assessment, notice of objection, and appeals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ENABLING COMPETENCIES

1. **Professional and Ethical Behaviour**
   - 1.1 Uses an ethical reasoning process.
   - 1.2 Adopts the profession’s values.
   - 1.3 Maintains a stakeholder focus.
   - 1.4 Adheres to laws, professional standards, and policies when exercising professional judgment.

2. **Problem-Solving and Decision-Making**
   - 2.1 Demonstrates a cohesive process for using
     - 2.1.1 Defines the scope of the problem.
     - 2.1.2 Collects and verifies relevant information.
     - 2.1.3 Performs appropriate analyses.
     - 2.1.4 Integrates information to investigate each potentially viable solution or conclusion.
     - 2.1.5 Recommends and justifies a solution or conclusion based on an integrative view of information for the situation.
     - 2.1.6 Uses creativity and innovation to enhance problem-solving and decision-making.

3. **Communication**
   - 3.1 Obtains accurate and relevant information through listening, interviewing, and discussing.
   - 3.2 Writes and speaks to enhance work performed.
   - 3.3 Adapts communications to meet audience needs.

4. **Self-Management**
   - 4.1 Monitors and improves work performance.
   - 4.2 Engages in professional development.
   - 4.3 Recognizes limits to professional competence.

5. **Teamwork and Leadership**
   - 5.1 Plans and effectively manages teams and projects.
   - 5.2 Works effectively as a team member.
### APPENDIX II
MAcc/GDAcc Learning Outcomes

**Table 1: Mapping of learning outcomes with the Graduate Degree-Level Expectations (GDLE)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>To develop greater breadth and depth of knowledge related to both the technical and enabling competencies required of professional accountants</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>To have an awareness of current problems and recent developments in the area of professional practice</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>To comprehend how professional standards and guidelines are developed and revised and to critically evaluate those standards and guidelines</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>To apply and integrate knowledge and professional standards in the critical analysis of a new problem or issue, or of a specific problem or issue in a new context</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>To make decisions in complex situations, clearly communicating the issues, analysis, and conclusions while considering the broader implications of professional judgments</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>To exercise initiative, personal responsibility, and accountability, displaying ethical behavior consistent with the standards of the profession</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>To recognize the limits of personal competence and identify who to consult for the guidance needed to solve a problem</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>To develop the capabilities for continuing professional development</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
## APPENDIX II
### MAcc/GDAcc Learning Outcomes

<table>
<thead>
<tr>
<th>Table 2: Mapping of learning outcomes with GDAcc courses</th>
<th>Required Courses</th>
<th>Electives – Complete two of four courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACC 611</td>
<td>ACC 680</td>
</tr>
<tr>
<td>To develop greater breadth and depth of knowledge related to both the technical and enabling competencies required of professional accountants</td>
<td>P [breadth]</td>
<td>P [breadth]</td>
</tr>
<tr>
<td>To have an awareness of current problems and recent developments in the area of professional practice</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>To comprehend how professional standards and guidelines are developed and revised and to critically evaluate those standards and guidelines</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td>To apply and integrate knowledge and professional standards in the critical analysis of a new problem or issue, or of a specific problem or issue in a new context</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>To make decisions in complex situations, clearly communicating the issues, analysis, and conclusions while considering the broader implications of professional judgments</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>To exercise initiative, personal responsibility, and accountability, displaying ethical behavior consistent with the standards of the profession</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>To recognize the limits of personal competence and identify who to consult for the guidance needed to solve a problem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To develop the capabilities for continuing professional development</td>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>

Legend: [P] Primary focus; [S] Secondary focus; [blank cell] outcome not addressed in a significant manner
1. Modification to the PhD Comprehensive Examinations in French Studies (calendar)

Current Comprehensive Examinations

During their second year of study, PhD students are required to complete two comprehensive examinations: the Secondary Field Exam and the Primary Field Exam.

a) The Secondary Field Exam

Students prepare, under the supervision of a faculty member, a reading list of primary texts and a critical bibliography in a selected secondary field of specialization, not directly related to the PhD thesis. At the end of the first term of Year II, students take a written examination in this secondary field.

b) The Primary Field Exam

Prepared under the direction of the thesis supervisor, the Primary Field Exam entails both a written and an oral component and is intended to prepare students for the writing of the PhD thesis. Students prepare, under the supervision of their thesis advisor, a reading list of primary texts and a critical bibliography on the thesis topic. Students then write a 20-30 page thesis prospectus that is submitted to the thesis committee for approval. The prospectus, the reading list and the critical bibliography are defended orally before the committee. Students must successfully complete both components of the Primary Field Exam in order to proceed to the writing of the thesis.

Proposed Comprehensive Examinations

During their second year of study, PhD students are required to complete a set of comprehensive examinations:

Prepared under the direction of the thesis supervisor, the comprehensive examinations entail both written and oral components, and are intended to ensure breadth, to assess competence in the field of French Studies, and to prepare students for the writing of the PhD thesis. Three components are required. 1) Students prepare, under the supervision of their thesis advisor, a selection of primary texts, and develop a broad critical and theoretical bibliography in areas relevant to the selected thesis topic; this first component is followed by an oral examination. 2) Students then write a field exam that is submitted to the thesis committee for approval. 3) Finally, students must submit, under the supervision
of their thesis advisor, a dissertation proposal and outline of the proposed thesis. The bibliography, the
field exam, and a dissertation proposal and outline are defended orally before the committee. Students
must successfully complete all three components in order to proceed to the writing of the thesis.

Rationale

The proposed revisions to the comprehensive examinations aim to eliminate the secondary field
examination and replace it with a component related to the doctoral thesis. Instead, following the
completion of their coursework (Year 1), students will acquire a broader and deeper knowledge of
various critical, theoretical, cultural and historical fields relevant to their thesis, thus streamlining the
transition from graduate coursework to doctoral thesis. These revisions will also reduce the time to
completion for our PhD students by removing the unnecessary secondary field exam.

2. Modification to the title of our MA program in the calendar

Current title

MA in French

Proposed title

MA in French Studies

The following modifications should be made to the calendar in accordance with the revised title:

Section “About French Studies”

The Department of French Studies offers a Master of Arts (MA) degree in French Studies and
Doctor of Philosophy (PhD) degree in French Studies.

Section “Degree Requirements”

There are three routes to the MA in French Studies. Students should discuss their preferred route
with the Graduate Officer early in their programs, preferably during their first term. These routes are:

Rationale

We propose this change to make the titles of our MA and PhD programs consistent.
MEMORANDUM

TO: Graduate Affairs Group

FROM: Elizabeth Nilsen, Associate Chair Graduate Studies, Department of Psychology

DATE: September 12, 2014

RE: Modification to program Community practicum course, and creation of Research Apprenticeship course, that affects learning outcomes to MASc – Developmental and Communication Science

Description of Proposed Change:
Currently, as the program requirements stand, all students complete
(1) 1.5 course credits (.5 credits per Fall, Winter & Spring term) in a Community Practicum placement either in the Psychology Department’s Early Childhood Education Centre or a community location such as an elementary school or a local speech language pathologist’s practice. Students follow the placement with respect to start and end date for all placements (ECEC or other outside location), and spend one morning or afternoon per week in the placement which typically comprises about 3.5 hours each time.
(2) Milestone to be completed in Fall, Winter & Spring term in a Research Lab Internship with a faculty member in the Developmental Psychology division. Students spend 10 hours a week in this placement from the beginning of Fall term until the last day of lectures in Spring term.

The change would be to allow in addition to this arrangement, the alternate choice for students to fulfill the credit requirements with a reduced-time (one-term only) Community Practicum and an increased time gaining research lab experience in the form of conducting additional research studies as follows:

(1) 0.5 course credits (.5 credits per Fall, Winter OR Spring term) in a Community Practicum placement either in the ECEC or a community location such as an elementary school or a local speech language pathologist’s practice. Students will be encouraged to conduct this practicum during the Fall or Winter term. However, if a student chooses the Spring term (their start date will be 1 month in advance of the start of first day of lectures for Spring term to equate the number of weeks to 12 for all terms).
(3) Milestone to be completed in Fall, Winter & Spring term in a Research Lab Internship with a faculty member in the Developmental Psychology division. Students spend 10 hours a week in this placement from the beginning of Fall term until the last day of lectures in Spring term.
(2) 1.0 course credits in a Research Apprenticeship with a faculty member in the Developmental Psychology division. The student will complete additional research work to equate to approximately 84 hours (3.5 hours x 24 weeks over 2 terms).

Rationale for Proposed Change:
The MASc DCS program has been in operation for 8 years with great success. The program was designed from the start to serve two types of students: (1) students unsure whether they wish to pursue a Ph.D. program and who wish to gain more intensive research experience in order to make their decision, and (2) students seeking admission to very competitive professional programs (e.g., speech-language pathology) who seek to further their education at the Master’s level to increase their specialized knowledge in the area of language and thus their competitiveness for admission. Over the years of the program, we have had approximately 50/50 students decide to enter a PhD program or gain admission to their sought-after postgraduate professional area of study.

For students in this second group (2), an applied practicum in a community location for one year has proved to be very valuable. As a result, the original option to complete the program requirements in their original form will remain to serve these students well.

However, it has come to our attention via faculty and student input, that a community practicum of a full year may not benefit the students who have decided they wish to pursue a Ph.D. Degree to the same extent. What these students and faculty are asking for is to be able to devote more time to the research portion of their practicum and less in an applied community setting. In order to serve these students and their faculty advisors better, we are seeking the changes above, to allow students the option of completing only one term in a community practicum and replace the 2/3 time remaining with additional lab research experience in the form of a 1.0 credit Research Apprenticeship course.
Dear Professor Hellinga,

Please find attached a proposal for changes to the calendar regarding the MArch program courses. These changes represent the second phase of the School of Architecture's response to the recommendations of the OCGS MArch Reviewers' Report. Our strategic planning and curricular review process over the past year has lead to a series of proposed course modifications to the MArch program: to strengthen the curricular structure of the program in support of advanced research and design, to improve graduate retention and completion rates, and to attract a larger pool qualified students from other institutions to graduate study at Waterloo Architecture. These modifications are consistent with three elements of the University’s strategic plan 2013-17, namely: research excellence and impact, educational quality, and student opportunities. To facilitate a holistic approach, the MArch curricular review was developed in concert with a curricular review of the BAS program to respond, not only to issues within the graduate program, but also, given that the MArch is the first professional degree to which the BAS leads, to the transition between programs and the preparation of undergraduate architecture students for graduate study at Waterloo.

A summary of the results of this process and the proposed modifications to the program to respond to these recommendations is below. The School of Architecture Faculty members approved these curricular modifications on September 18, 2014.

1. MArch Thesis Structure: course additions

   (i) Arch 693: Thesis Research and Design Studio II

The proposed modifications will transform the existing one semester Arch 692 studio into a more highly structured and coordinated two-semester thesis research and design sequence to better support and direct the development of MArch thesis work and to more substantially incorporate innovative design research into the program. The two-semester sequence is a standard thesis framework for most graduate first professional architectural degree programs and will bring the Waterloo MArch into better alignment with the academic calendar and structure, available support systems and expectations of its peer and aspirant peer institutions. The first semester would be dedicated to thesis research and the second semester to thesis design and/or development, followed by a minimum of one additional independent semester for thesis completion and documentation. Students who wish to extend their thesis development period—to allow them to work as graduate research assistants on special projects with faculty, supplement their education with additional opportunities to obtain teaching experience through graduate teaching assistantships, or travel in support of their research—are able to do so, up to a maximum of three additional consecutive semesters (one year) to complete their degrees.

   (ii) Arch 610: Architectural Research and Analysis

In addition to the restructuring of the thesis research and design studio sequence, a new course in architectural analysis and research methodologies will be offered in the fall semester as a companion course to the thesis research and design studios. This course in architectural analysis and research methods is intended to better enable students to position their work within the context of a larger theoretical discourse while giving them the methodological tools for precedent, program and site analysis, to prepare them for the undertaking of an architectural or urban thesis.

2. MArch Professional Practice: course modification

   Arch 655: Architectural Professional Practice: Ethics, Business, Legal Issues and Contract Administration

The MArch degree is a first professional degree and, as such, currently includes three courses in professional practice: an overview course that deals with professional ethics, business and legal issues (.5 credits) in addition to two smaller courses (.25 credits each) on Acts & Codes (Arch...
654) and Specifications (Arch 652). In order to better organize and integrate the delivery of the content of these courses, the content of the Acts & Codes and Specifications courses have been consolidated into one full credit course in professional practice, the course title and description are being changed to better reflect its actual course content and the two smaller courses have been removed.

3. Co-op Opportunities for Graduate Students coming from other institutions
Given that co-op is a recognized strength of University of Waterloo, as well as in the BAS program, it is proposed to offer an optional co-op term at the end of the first year of the MArch, for students entering from other institutions. This is an important enhancement to their professional training.

4. International Opportunities: ARCH 629 Global Cities
The Rome Program is one of the essential components of the pre-professional curriculum exposing students first-hand to the study of architectural history and contemporary urban environments. Building upon this legacy the School is planning on offering this opportunity to external students after the first year of the MArch program, while expanding its global study initiatives through an augmented series of study abroad electives focused on international architecture and urbanism in Europe, Asia and South America.

Summary of Proposed Revisions:

- Introduce new required course: ARCH 693: Thesis Research and Design Studio II
- Introduce new required course: ARCH 610: Architectural Research and Analysis
- Modify ARCH 655: Architectural Professional Practice: Ethics, Business, Legal Issues and Contract Administration to incorporate the course content of ARCH 654 and ARCH 652, increase the credit value of this course to 1.0 credits and update the title and calendar description to accurately reflect course content
- Inactivate courses ARCH 654 and ARCH 652 as the content of these courses is covered in course ARCH 655
- Introduce ARCH 629, a Global Cities course for graduates enabling students to travel abroad and study firsthand the architecture and urbanism of cities across Europe, Asia and South America.
- Introduce one optional co-op term for graduate students between the first and second year of the MArch program.

Appendices attached include course requirement charts for the two year MArch program and 2nd year direct entry stream, ARCH 693 new course form, ARCH 610 revision form, ARCH 655 revision form, ARCH 654/655 inactivation forms, ARCH 629 new course form.

We have also attached new course forms for the required course offerings in the first year of the MArch program (approved in Senate May 2014) to establish the course codes in the official academic calendar (ARCH 642, 662, 690, 691), a course revision form for ARCH 692 to reflect title and description change and the revised calendar description for the official academic calendar for approval.

Thank you in advance for your attention to the above.

best,

[Signature]

Ila Berman
O'Donovan Director
School of Architecture

University of Waterloo School of Architecture 7 Melville Street S. Cambridge, Ontario N1S 2H4 Ph: 519 888 4567 F: 519 622 3525
Current MArch course structure:

**Fall: Term 1**
- Research + Design Thesis: **ARCH 692 - Graduate Design Studio and Seminar (1.5 units)**
- Elective: **ARCH 6XX - Open Elective (0.5 units)**

**Winter: Term 2**
- Professional Practice: **ARCH 652 - Specifications (0.25 units)**
  **ARCH 654 - Acts & Codes (0.25 units)**
- Elective: **ARCH 6XX - Open Elective (0.5 units)**

**Spring: Term 3**
- Professional Practice: **ARCH 655 - Architectural Practice: Ethics, Professional Liability and Business (0.5 units)**
- Elective: **ARCH 6XX - Open Elective (0.5 units)**
- Research + Design Thesis: **Masters Research and Design Thesis (2.0 units)**

Proposed course structure for final year MArch (includes UW students and students with equivalent degree admitted into final year of program):

**Fall: Term 1**
- Research + Design Thesis: **ARCH 692 - Thesis Research and Design Studio I (1.5 units)**
- Media/Methods: **ARCH 610 - Architectural Research and Analysis (0.5 units)**
- Elective: **ARCH 6XX - Open Elective (0.5 units)**

**Winter: Term 2**
- Research + Design Thesis: **ARCH 693 - Thesis Research and Design Studio II (1.5 units)**
- Professional Practice: **ARCH 655 - Architectural Professional Practice: Ethics, Business, Legal Issues, and Contract Administration (1.0 units)**
- Elective: **ARCH 6XX - Open Elective (0.5 units)**

**Spring: Term 3**
- Research + Design Thesis: **Masters Research and Design Thesis (2.0 units)**
- Elective: **ARCH 6XX - Open Elective (0.5 units)**

Previous MArch credit requirements: 6.0
Revised MArch credit requirements: 8.0*

*New course requirements include ARCH 610 (.5 units) and ARCH 693 (1.5) units.
Course requirements for students in 2 year MArch:

Year 1

**Fall: Term 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Code/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Studio</td>
<td>ARCH 690 - Design Studio (1.5 units)</td>
</tr>
<tr>
<td>History/Theory</td>
<td>ARCH 642 - Modern Architecture (0.5 units)</td>
</tr>
<tr>
<td>Building Technology</td>
<td>ARCH 673 - The Science of the Building Envelope (0.5 units)</td>
</tr>
<tr>
<td>Media/Methods</td>
<td>ARCH 610 - Architectural Research and Analysis (0.5 units)</td>
</tr>
</tbody>
</table>

**Winter: Term 2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Code/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Studio</td>
<td>ARCH 691 - Design Studio - Comprehensive Building Design (1.5 units)</td>
</tr>
<tr>
<td>History/Theory</td>
<td>ARCH 640 - Contemporary Theory, Culture + Criticism (0.5 units)</td>
</tr>
<tr>
<td>Building Technology</td>
<td>ARCH 662 - Steel + Concrete: Design, Structure and Construction (0.5 units)</td>
</tr>
<tr>
<td>Elective</td>
<td>ARCH 6XX - Open Elective (0.5 units)</td>
</tr>
</tbody>
</table>

**Spring: Term 3**

Co-op /Graduate Research Assistantship

Year 2

**Fall: Term 4**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Code/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research + Design Thesis</td>
<td>ARCH 692 - Thesis Research and Design Studio I (1.5 units)</td>
</tr>
<tr>
<td>Elective</td>
<td>ARCH 6XX - Open Elective (0.5 units)</td>
</tr>
</tbody>
</table>

**Winter: Term 5**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Code/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research + Design Thesis</td>
<td>ARCH 693 - Thesis Research and Design Studio II (1.5 units)</td>
</tr>
<tr>
<td>Professional Practice</td>
<td>ARCH 655 - Architectural Professional Practice: Ethics, Business, Legal Issues, and Contract Administration (1.0 units)</td>
</tr>
<tr>
<td>Elective</td>
<td>ARCH 6XX - Open Elective (0.5 units)</td>
</tr>
</tbody>
</table>

**Spring: Term 6**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Code/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research + Design Thesis</td>
<td>Master's Research &amp; Design Thesis (2.0 units)</td>
</tr>
<tr>
<td>Elective</td>
<td>ARCH 6XX - Open Elective (0.5 units)</td>
</tr>
</tbody>
</table>

Total credits – 13.5
The University of Waterloo offers a master's program leading to the Master of Architecture (MArch) professional degree. This program is designed to prepare students for professional qualification as architects. The Master of Architecture program combines elements of a professional master's program and a research-oriented master's program. It offers preparation for entry into the profession of architecture (together with an extension of the knowledge base required of practicing professionals) to students with a pre-professional undergraduate degree in Architecture, such as a Bachelor of Architectural Studies. The 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 Master’s Thesis, the core academic component of the program, will develop research and analytical/interpretive skills, as well as design skills - i.e., the synthetic skills of architecture.

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 equivalent degree are considered for direct entry and advanced standing into year two of the MArch program. These students can complete degree requirements in a minimum of three terms (and, up to a maximum of six terms, for those who wish to extend their Master’s thesis development period, in order to work as graduate research or teaching assistants). All other applicants will be considered for the full two-year program and be admitted into the first year of the MArch.

**Admission Requirements**

- A four-year, honours pre-professional undergraduate Architecture degree or professional Bachelor of Architecture degree with a minimum overall average of 75% (B)
- Two academic letters of reference – Referees will be emailed to complete and submit the official University of Waterloo Graduate Studies Reference form.
- CV/resume
- Supplemental Information Form which includes statement of your proposed research interest (form available on Applicant Quest)
- Portfolio of design work – submitted directly to the School of Architecture, Graduate Coordinator, at the time of application
- Applicants who have not completed three or more years of post-secondary work at a Canadian institution, or at an institution at which English was the language of instruction, will be required to provide certification of English language proficiency. Information about accepted examinations of English Language can be found on the English Language Proficiency page.
- Academic transcripts from each post-secondary institution attended (past or current) showing all courses and marks, along with the transcript legends/keys/grading scales uploaded using Quest. Degree certificates (if obtained) must be uploaded with the transcripts.

Refer to the [Discover Graduate Studies](#) website for complete information on admission requirements and application process.

**Additional Application requirements**

- Applicants being considered for admission to the Master of Architecture who have not completed three or more years of post-secondary work at a Canadian institution, or at an institution at which English was the language of instruction may be required to verify English Proficiency which may include a written exercise or interview as instructed by the School of Architecture. Details will be communicated when required after initial assessment of applications is complete. This is an additional departmental requirement and not a substitute for the certification of English Language Proficiency.

**Degree Requirements**

The Master of Architecture curriculum covers 6 key areas: Design, History & Theory, Building Technology, Media & Methods, Professional Practice and Thesis Research & Design. The two-year program requirements consist of 13.5 total credits including the Master's thesis. Students entering directly into year two of the program are required to complete 8.0 total credits of the 13.5 including the Master’s thesis.

The Master of Architecture degree requirements are as follows:

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th>Course Requirements</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 690 - Design Studio (1.5 units)</td>
<td>Fall</td>
<td></td>
</tr>
<tr>
<td>ARCH 673 - The Science of the Building Envelope (.5 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 642 - Modern Architecture (.5 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 610 - Architectural Research and Analysis (.5 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 691 - Design Studio - Comprehensive Building Design (1.5 units)</td>
<td>Winter</td>
<td></td>
</tr>
<tr>
<td>ARCH 662 - Steel + Concrete: Design, Structure and Construction (.5 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 640 - Contemporary Theory, Culture + Criticism (.5 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 6XX - Open graduate elective (.5 units)</td>
<td>Spring</td>
<td></td>
</tr>
<tr>
<td>Co-op / Graduate Research Assistantship</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 2</th>
<th>Course Requirements</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 692 - Thesis Research and Design Studio I (1.5 units)</td>
<td>Fall</td>
<td></td>
</tr>
<tr>
<td>ARCH 6XX - Open graduate elective (.5 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 610* - Architectural Research and Analysis (.5 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 693 - Thesis Research and Design Studio II (1.5 units)</td>
<td>Winter</td>
<td></td>
</tr>
<tr>
<td>ARCH 655 - Architectural Professional Practice: Ethics, Business, Legal Issues, and Contract Administration (1.0 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 6XX - Open graduate elective (.5 units)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Master's Research & Design Thesis (2.0 units)  
ARCH 6XX - Open Graduate elective (.5 units)  
Spring

* Required for students entering directly into year 2 of the program. All other students will take the course requirement in year 1.

Students are encouraged to use elective courses to explore areas of specialization in support of their thesis research. Up to one half (.5) credit elective may be taken in other departments. One half (.5) course may be an independent Reading Course.

All masters' students write a research thesis, equivalent of four half-unit (.5) credit courses. The thesis is supervised by a faculty advisor, and supported by a committee of two additional faculty members. The thesis must be defended successfully before an Examining Committee composed of a minimum of the student's Supervisor, one Committee member and one Reader as per the requirements listed in the Graduate Studies academic Calendar.
Major Modification

Program: MMath in Computer Science, Coursework Option; and Co-op Option.

Degree Designation: Master of Mathematics, Computer Science

Type of Modification: The co-op option for this program was not specifically addressed when the additional Coursework program was approved and implemented for the MMath program. The School of Computer Science would like to add this option to the Coursework program. In addition, minor amendments to the co-op option requirements and calendar description is requested.

Approved at (please note date of approval at previous levels):
- SCS Council
- Faculty of Mathematics

Effective Date: January 2015

Description of Proposed Change:
1. The School of Computer Science feels that students in the MMath Coursework option should have the same access to the co-op option as those in the MMath Thesis and MMath Research Paper programs.
2. The School also wishes to remove the oral presentation requirement for the Co-op option.

Rationale for Proposed Changes:
1. The majority of students who have demonstrated interest in the co-op option are enrolled in the MMath Coursework program. Students in this program are the most likely to go on to work in industry and are not funded. Access to the co-op option provides an opportunity to gain valuable experience in industry and also offset their program expenses.
2. It was determined that the presentation was not an essential requirement for the co-op option as these are typically not well attended and the required co-op work report provides ample opportunity to evaluate the student’s work term.
Old Calendar Description (where applicable):

**MMath in Computer Science - Co-op Option**

In Computer Science, a master's program may be undertaken on a co-operative basis enabling a student to combine graduate studies with some work experience. The program involves an initial study period, a work period and a final study period. It is fairly flexible in length, each period comprising one or more terms. The usual pattern of study and work consists of two academic terms in which the courses are completed, a two-term work placement, and a final academic term in which the thesis or research paper is completed. Students may apply for the Co-op Option during their second or third term in the standard Master's program.

The degree requirements are the same as for the regular MMath degree program in Computer Science. The work placement must be related to the student's research topic and requires the approval of the Director of Graduate Studies and the student's research supervisor.

The student will be required to do a two-term work placement at a suitable industrial location, to begin as soon as possible after the coursework has been completed. The student will also be expected to return to campus after the work placement in order to complete the final thesis or research paper. The student will need to supply a work term report along with a formal oral presentation when they return to campus.

New Calendar Description (where applicable):

**MMath in Computer Science - Co-op Option**

In Computer Science, a master's program may be undertaken on a co-operative basis enabling a student to combine graduate studies with some work experience. The program involves an initial study period, a work period and a final study period. It is fairly flexible in length, each period comprising one or more terms. The usual pattern of study and work consists of two academic terms in which the courses are completed, a two-term work placement, and a final academic term in which the thesis or research paper, or coursework is completed. Students may apply for the Co-op Option during their second or third term in the standard Master's program.

The degree requirements are the same as for the regular MMath degree program in Computer Science. The work placement must be related to the student's research topic, or relevant to their coursework, and requires the approval of the Director of Graduate Studies and the student's research supervisor or course advisor.

The student will be required to do a two-term work placement at a suitable industrial location, to begin as soon as possible after the coursework or 50% of the degree requirements have been completed. The student will also be expected to return to campus after the work placement in order to complete the final thesis or research paper or remaining coursework. The student will need to supply a work term report along with a formal oral presentation when they return to campus.
Major Modification

Program: Pure Mathematics (both Master’s and Doctoral programs)

Degree Designation: both MMath and PhD

Type of Modification: Change to an approved field.

Approved at (please note date of approval at previous levels): This change was approved at a department meeting of the Department of Pure Mathematics on Wednesday, October 8, 2014.

Effective Date: Immediately.

Description of Proposed Change: One of our four approved fields of research in the Pure Mathematics department needs to be changed from “Analysis and Functional Equations” to simply “Analysis”.

Rationale for Proposed Change: The final faculty member we had in our department working in the area of “Functional Equations” has retired, effective August 2014. We no longer have the ability to supervise students in the area of functional equations. Our research group in “Analysis”, however remains very large and very strong in research productivity.

Old Calendar Description (where applicable):

New Calendar Description (where applicable):
PETITION TO THE FACULTY OF ENGINEERING FOR APPROVAL OF THE REQUEST OF THE SCHOOL OF ARCHITECTURE TO JOIN THE COLLABORATIVE WATER PROGRAM ADMINISTERED BY THE WATER INSTITUTE AT THE UNIVERSITY OF WATERLOO

The collaborative graduate program in Integrated Water Management was approved by the University of Waterloo Senate on March 25, 2013 and was subsequently approved by the Ontario Universities Council on Quality Assurance on May 6, 2013. On January 20, 2014, Waterloo’s Senate approved changing the name of the program to the Collaborative Water Program. The program launched in the Winter 2014 term, and is supported by a gift of $1.75M from the RBC Foundation.

The goal of the Collaborative Water Program is to supplement disciplinary (specialist) training offered in individual departments with perspectives from a variety of water-related disciplines. Students graduating from the Collaborative Water Program will be better equipped to work in inter-disciplinary teams to solve increasingly complex water issues. This program, jointly offered by eight departments across the Faculties of Arts, Engineering, Environment, Mathematics and Science, is intended to promote multi- and inter-disciplinary perspectives related to water.

At the approvals stage, seven departments/schools committed to participate in and deliver the Collaborative Water Program:

- Applied Mathematics;
- Biology;
- Civil and Environmental Engineering;
- Earth and Environmental Sciences;
- Environment and Resource Studies;
- Environment, Enterprise and Development;
- Geography and Environmental Management.

Additional departments/schools are welcome to join the Collaborative Water Program by completing the following approvals process:

1. Department/School approval;
2. Faculty approval;
3. Senate Graduate & Research Council approval;
4. Senate approval.

In January 2014, the Department of Economics was approved to participate in the program.

The School of Architecture approved its participation in the Collaborative Water Program in December 2013 and now seeks Faculty of Engineering approval. Architecture is eager to join the program for the following reasons:

- Several current graduate students have water-related thesis projects and could significantly benefit from collaboration with water students from other areas, and through exposure to water faculty from across campus;
- RBC Water Scholarships are only allocated to departments/schools that participate in the collaborative program;
- Only departments/schools approved to participate in the Collaborative Water Program can enroll students in the program;
- Only students enrolled in the program are eligible to receive the RBC Graduate Scholarships in water;
- These scholarships could significantly benefit graduate students in Architecture who would otherwise have limited opportunities for financial support for their research;
- Architecture Associate Professor Elizabeth English is an active member of the Water Institute and will be participating in instruction of the program courses and supervision of enrolled Architecture graduate students.

In summary, the School of Architecture recognises that the Collaborative Water Program is an exciting and unique offering at the University of Waterloo, and that it provides significant educational and resource benefits to researchers and students alike. Students and faculty in the School of Architecture are eager to participate. We respectfully request the support of the Faculty of Engineering towards this goal.
Senate Undergraduate Council met on 4 November 2014 and on 2 December 2014, and agreed to forward the following items to Senate for approval. Council recommends that these items be included in the regular agenda. Items recommended for inclusion in the consent agenda are contained within a separate report.

Further details are available at: uwaterloo.ca/secretariat/committees-and-councils/senate-undergraduate-council

FOR APPROVAL

__________

CHANGES TO ACADEMIC PLANS [effective 1 September 2015]

Faculty of Engineering
Honours Bachelor of Architectural Studies

1. **Motion:** To approve amendments to the honours bachelor of architectural studies plan as presented.

   (struckthrough = deleted text; underline = new text)

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 Program 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.

**Theme Areas**
Courses in the Honours Bachelor of Architectural Studies degree, are arranged in four main thematic groups:

1. Design: The practice of design and the understanding of its theories and methods.
2. Culture: The understanding of cultural forces in the creative world.
3. Technology: The understanding of technological and practical aspects of design and construction.

2. Visual and Digital Media: The use of creative and analytical tools and techniques.
3. Cultural History and Theory: The understanding of cultural and historical forces shaping the built world.
4. Technology and Environment: The understanding of materials and methods, building technologies, and environmental issues and systems critical to the making of architecture.
5. 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 artistic 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 building programs, studies of principal building types,
and urban design. In the final term, design, theory, and design technology, environment and urban issues are integrated into a major individual project - the comprehensive building design project and technical report.

**Culture**

Cultural history is a unique element of Architecture at Waterloo. The courses are concerned with the human imagination and the forms through which it expresses itself. In class students read and write a great deal. They are exposed to works of history, philosophy, literature and the other arts. Architecture is thus conceived as a form of cultural expression and the creative activity of all students takes place against a background of broad humanistic study. The Academic Program fosters critical, discursive and expressive abilities that are essential to the quality of the School and its graduates.

**Technology**

The study of the technical aspects of building and design begins with courses in statics, strength of materials, building construction and computer applications in architecture. These establish a basis for the main sequence of courses in building materials and methods, structural design, the mechanics of environmental control and computing.

**Environment**

Architecture has an essential relationship with its context, and can never avoid being part of a larger reality. Understanding these situations, in both the natural and built environment, is a necessary and important part of architectural design. This theme area addresses such questions that include an introduction to sustainable building, landscape and energy-efficient building, environmental assessment systems such as Leadership in Energy and Environmental Design (LEED®), passive design, acoustics, carbon emissions, daylighting, studies of settlement patterns and the nature of cities.

**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, and 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.

Professional Practice
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.

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.
Note
Those students who entered the Academic Program prior to September 2003 should consult the undergraduate calendar as indicated above for degree requirements and course credit weightings.

Requirements for the Degree of Honours Bachelor of Architectural Studies
(Pre-Professional Architecture)

<table>
<thead>
<tr>
<th>Term</th>
<th>Cultural History</th>
<th>Environment</th>
<th>Technology</th>
<th>Support/Elective</th>
<th>Design</th>
<th>Professional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic 1A</td>
<td>ARCH 142: Cultural History 1: Iconography [1.00 unit]</td>
<td>not applicable</td>
<td>ARCH 172: Building Construction 1: Construction [0.50 unit]</td>
<td>ARCH 100: Introduction to Architecture</td>
<td>ARCH 192: Design Studio [1.50 units]</td>
<td>not applicable</td>
</tr>
<tr>
<td>Fall-</td>
<td>ARCH 125: Principles of Environmental Design [0.50 unit]</td>
<td>ARCH 172: Building Construction 2: Construction [0.50 unit]</td>
<td>ARCH 110: Visual Communication I: Visual Communication [1.00 unit]</td>
<td>ARCH 192: Design Studio [1.50 units]</td>
<td>PDARCH 1: Co-op Fundamentals for Architects [0.50 unit]</td>
<td></td>
</tr>
<tr>
<td>Academic 1B</td>
<td>ARCH 142: Cultural History 2: The Ancient World [1.00]</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>PDARCH 2: Portfolio Development [0.50 unit]</td>
</tr>
<tr>
<td>Winter-</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>PDARCH 3: Electronic Communications and Web Design [0.50 unit]</td>
</tr>
<tr>
<td>Spring-</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>PDARCH 4: Writing, Editing and Research [0.50 unit]</td>
</tr>
<tr>
<td>Academic 2A</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Fall-</td>
<td>ARCH 246: Cultural History 3: Foundations of Europe [1.00 unit]</td>
<td>not applicable</td>
<td>ARCH 260: Principles of Structures [0.50 unit]</td>
<td>ARCH 226: Environmental Building Design [0.50 unit]</td>
<td>ARCH 202: Design Studio [1.50 units]</td>
<td>not applicable</td>
</tr>
<tr>
<td>Winter-</td>
<td>COOP 1 [0.50 unit]</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Academic 2B</td>
<td>ARCH 247: Cultural History 4: Renaissance to Revolution [1.00 unit]</td>
<td>not applicable</td>
<td>ARCH 276: Timber Design and Construction - Design [0.50 unit]</td>
<td>Elective [0.50 unit]</td>
<td>ARCH 202: Design Studio [1.50 units]</td>
<td>not applicable</td>
</tr>
<tr>
<td>Spring-</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Fall-</td>
<td>COOP 2 [0.50 unit]</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Academic 3A</td>
<td>ARCH 342: Enlightenment and the 19th</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Winter-</td>
<td>ARCH 364: Building Science [0.50 unit]</td>
<td>ARCH 362: Steel and Concrete: Design: [0.50 unit]</td>
<td>Elective [0.50 unit]</td>
<td>ARCH 392: Design Studio [1.50 units]</td>
<td>not applicable</td>
<td></td>
</tr>
<tr>
<td>Term</td>
<td>Cultural History</td>
<td>Environment</td>
<td>Technology</td>
<td>Support/Elective</td>
<td>Design-</td>
<td>Professional Development</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------</td>
<td>-------------</td>
<td>------------</td>
<td>------------------</td>
<td>---------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Spring: COOP 3 [0.50 unit]</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>Select one from options PD 4, PD 5, PD 7, WKRPT-103: TRACK: CACB Criteria [0.50 unit/0.25 unit]</td>
</tr>
<tr>
<td>Academic 3B Fall</td>
<td>ARCH 342: Modern Architecture [0.50 unit]</td>
<td>ARCH 327: Architecture of the Urban Environment [0.50 unit]</td>
<td>ARCH 365: Structural Design Build Workshop [0.50 unit]</td>
<td>Elective [0.50 unit]</td>
<td>ARCH 393: Design Studio [1.50 units]</td>
<td>not-applicable</td>
</tr>
<tr>
<td>Winter: COOP 4 [0.50 unit]</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
</tr>
<tr>
<td>Spring: COOP 5 [0.50 unit]</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>WKRPT-203: Firm Case Study [0.25 unit]</td>
</tr>
<tr>
<td>Academic 4A (Rome)- Fall</td>
<td>ARCH 446: Italian Urban History or-elective [0.50 unit]</td>
<td>ARCH 448: Rome and the Roman Campagna or-elective [0.50 unit]</td>
<td>not-applicable</td>
<td>ARCH 449: The Development of Modern Italian Architecture or-elective [0.50 unit]</td>
<td>ARCH 492: Design Studio [1.50 units]</td>
<td>not-applicable</td>
</tr>
<tr>
<td>Winter: COOP 6 [0.50 unit]</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>not-applicable</td>
<td>WKRPT-203: TRACK Canadian Experience Record [0.25 unit]</td>
</tr>
<tr>
<td>Academic 4B Spring</td>
<td>ARCH 442: Modernisms: Twentieth Century Culture and Criticism [0.50 unit]</td>
<td>ARCH 425: Theory and Design of Contemporary Landscape [0.50 unit]</td>
<td>ARCH 473: Technical Report [0.50 unit]</td>
<td>not-applicable</td>
<td>ARCH 493: Design Studio/Comprehensive Building Design [1.50 units]</td>
<td>not-applicable</td>
</tr>
<tr>
<td>Term</td>
<td>Design</td>
<td>Visual and Digital Media</td>
<td>Cultural History and Theory</td>
<td>Technology and Environment</td>
<td>Urbanism and Landscape</td>
<td>Electives</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>-----------------------------</td>
<td>---------------------------</td>
<td>------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>1A Fall</td>
<td>ARCH 192: Design Studio [1.50 units]</td>
<td>ARCH 110: Visual and Digital Media 1 [1.00 unit]</td>
<td>ARCH 142: Introduction to Cultural History [0.50 unit]</td>
<td>ARCH 172: Building Construction 1 [0.50 unit]</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>1B Winter</td>
<td>ARCH 193: Design Studio [1.50 units]</td>
<td>ARCH 113: Visual and Digital Media 2 [0.50 unit]</td>
<td>ARCH 143: The Ancient World and Foundations of Europe [1.00 unit]</td>
<td>ARCH 126: Environmental Building Design [0.50 unit]</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>2A Fall</td>
<td>ARCH 292: Design Studio [1.50 units]</td>
<td>ARCH 212: Digital Fabrication [0.50 unit]</td>
<td>ARCH 246: Pre-Renaissance to Reformation [1.00 unit]</td>
<td>ARCH 260: Principles of Structures [0.50 unit]</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>2B Spring</td>
<td>ARCH 293: Design Studio [1.50 units]</td>
<td>not applicable</td>
<td>ARCH 248: Enlightenment, Romanticism and the 19th Century [1.00 unit]</td>
<td>ARCH 276: Timber Design and Construction [0.50 unit]</td>
<td>ARCH 225: Theory and Design of the Contemporary Landscape [0.50 unit]</td>
<td>not applicable</td>
</tr>
<tr>
<td>3A Winter</td>
<td>ARCH 392: Design Studio [1.50 units]</td>
<td>ARCH 313: Advanced Visualization and Analysis [0.50 unit]</td>
<td>ARCH 342: Modernism to the 21st Century [1.00 unit]</td>
<td>ARCH 362: Steel and Concrete: Design, Structure and Construction [0.50 unit]</td>
<td>not applicable</td>
<td>Open Elective (any discipline) [0.50 unit]</td>
</tr>
<tr>
<td>3B Fall</td>
<td>ARCH 393: Option Design Studio [1.50 units]</td>
<td>not applicable</td>
<td>not applicable</td>
<td>ARCH 465: Advanced Structures: Design and Analysis [0.50 unit]</td>
<td>ARCH 327: Architecture of the Urban Environment [0.50 unit]</td>
<td>Open Elective (any discipline) [0.50 unit] and an Elective from Architecture Electives [0.50 unit]</td>
</tr>
</tbody>
</table>
### Architecture Electives

The Architecture Elective requirement gives students breadth of study and opportunities for research at the upper levels of the pre-professional program in relation to four curricular areas: Cultural History and Theory (ARCH 540), Technology and Environment (ARCH 570), Visual and Digital Media (ARCH 510), and Urbanism and Landscape (ARCH 520). Three electives, one from each of three of these four thematic areas and course elective streams, must be selected to satisfy the Architecture Elective requirement. These courses can be taken in any semester in the third and fourth years (3A, 3B, 4A, 4B) of the BAS program.

### Open Electives

The Open Elective requirement gives students some breadth of studies related to their role as educated professionals in society. Three electives from any discipline must be completed to satisfy the Architecture Open Elective requirement. These courses can be taken in any semester in the third and fourth years (3A, 3B, 4A, 4B) of the BAS program.

### Rationale:

The proposal includes a number of changes which have occurred as a result of a major curricular review as there have been only small calibrations over the past number of years. The strategic planning and curricular review process took place and led to a number of proposed modifications: strengthening the structure, alignment and integration of the coursework in the program to work in synchronicity with other courses, expansion of coursework in areas that are lacking and improving the transition from the BAS to the MArch programs to improve graduate admission and help to better prepare students for graduate study. While the effective date is set for September 2015, it bears mentioning that the class that entered in 2014 will receive most of the revised curriculum starting in their 2A term in September 2015; this occurs at the request of students in the class and will require minor adjustments to the content of certain courses to attain congruence between certain courses already taught in 1A and 1B and those to be taught from 2A onward.

<table>
<thead>
<tr>
<th>Term</th>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4A (Rome) Fall</td>
<td>ARCH 492: Design Studio [1.50 units]</td>
<td>not applicable</td>
<td>ARCH 446: Italian Urban History or elective [0.50 unit] ARCH 449: The Development of Modern Italian Architecture or elective [0.50 unit]</td>
</tr>
<tr>
<td>4B</td>
<td>ARCH 493: Design Studio/Comprehensive Building Design [1.50 units]</td>
<td>Elective from Architecture Electives [0.50 unit]</td>
<td>ARCH 442: Contemporary Architectural Theory [0.50 unit] Elective from Architecture Electives [0.50 unit]</td>
</tr>
</tbody>
</table>
CHANGES TO ACADEMIC PLANS [effective 1 September 2016]

- Faculty of Science
  International Joint Education Programs

  2. **Motion:** To approve three new partner universities, Chang’an University in Xi’an, Sun Yat-sen University in Guangzhou, and Northwest University in Xi’an, to the existing China 2+2 program for programs in biology, biochemistry, biomedical science, chemistry, environmental science, earth sciences, mathematical physics, materials and nanoscience, and physics.

  **Rationale:** The university has enjoyed a successful 2+2 program since 2005, and the addition of three universities that are Tier 1 in China aims to further expand and strengthen these programs.

CHANGES TO PROGRAM REGULATION [effective 1 September 2016]

- Software Engineering
  Administrative Structure

  3. **Motion:** To approve an amendment to the administrative structure of the software engineering program as described.

  **Administrative Structure**

  Leadership for the Software Engineering program is provided by a Software Engineering Program Director, normally a faculty member chosen from either Computer Science or Electrical and Computer Engineering with a joint or cross appointment. The Program Director is responsible for the academic issues associated with the program's operations, including student liaison and advisement. The Associate Director of Software Engineering assists the Director in managing the program's day-to-day operations and in advising students.

  The Software Engineering Program Board oversees the program's operation and evolution. This inter-faculty Board consults with the two home departments and reports to the two Faculty Councils. The Chair of the Board alternates between the Dean of the Faculty of Engineering and the Dean of Mathematics. Ex-officio members of the board include the

  - Dean of Engineering
  - Dean of Mathematics
  - Director of the David R. Cheriton School of Computer Science
  - Chair of Electrical and Computer Engineering
  - Director (or Associate Director) of Undergraduate Studies (Computer Science)
  - Associate Chair of Undergraduate Studies (Electrical and Computer Engineering)
  - Software Engineering Program Director

  In addition, the board includes four faculty members, two from Computer Science and two from Electrical and Computer Engineering; and one student from the Software Engineering program. Faculty members are appointed for two-year, renewable terms; the student member typically serves a two-term appointment.

  The Software Engineering Curriculum Committee is responsible for the maintenance and evolution of the program curriculum and is chaired by the Software Engineering Program Director. The committee consists of the Director and Associate Director of the Software Engineering Program, six other faculty members (three from Computer Science and three from Electrical and Computer Engineering, including the appropriate Electrical and Computer Engineering Theme Area Chair and the Computer Science Director of Undergraduate Studies) and one student from the
Software Engineering Program. The membership may be drawn from outside of the Board and must include a majority of licensed professional engineers. The Software Engineering Curriculum Committee reports to the Software Engineering Program Board and consults with both the Computer Science Curriculum Committee and the Electrical and Computer Engineering Program Committee.

**Rationale:** This amendment will align the membership of the curriculum committee to allow the program to continue to meet the profession’s accreditation requirements, so that software engineering graduates are eligible to obtain professional engineering licenses in Ontario.

This item is placed on the regular agenda of Senate in part due to the discussion that has been generated on this item in the steps leading to its recommendation, and also in light of the significant impact to the outcomes for software engineering students graduating from the program in their changed ability to obtain an engineering license through the Professional Engineers of Ontario if the amendment is not approved.

At its meeting of 2 December 2014, Senate Undergraduate Council considered this item and welcomed a representation from a faculty member from Engineering who expressed concern at potential implications to academic freedom that may arise from the regulatory body imposing a requirement that a majority of the curriculum committee’s membership be licensed professional engineers.

In its deliberations, several members of council expressed that they did not feel adequately equipped or prepared to carry out a fulsome discussion on the point of academic freedom in the context of this item. Ultimately this item was recommended to Senate by Council with annotation that the recommendation was made by a majority of members present but with a significant number of abstentions (seven).

**FOR INFORMATION**

---

**Academic Program Review Reports**

**Final Assessment Report – Review of Engineering Undergraduate Programs** – Please see [Attachment #1](#)

Mario Coniglio
Associate Vice-President, Academic

/mg
Final Assessment Report on
Review of Engineering Undergraduate Programs
(Chemical, Civil, Computer, Electrical, Environmental, Geological, Management, Mechanical, Mechatronics, Nanotechnology, Software, Systems Design)

Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>2</td>
</tr>
<tr>
<td>Review process</td>
<td>2</td>
</tr>
<tr>
<td>Academic programs offered and program objectives</td>
<td>3</td>
</tr>
<tr>
<td>Assessment of Engineering undergraduate programs – provincially and nationally</td>
<td>5</td>
</tr>
<tr>
<td>International rankings</td>
<td>6</td>
</tr>
<tr>
<td>Demographics and Quality of Engineering faculty</td>
<td>8</td>
</tr>
<tr>
<td>Student quality</td>
<td>9</td>
</tr>
<tr>
<td>Application – registration statistics</td>
<td>11</td>
</tr>
<tr>
<td>Enrollment and graduation data</td>
<td>15</td>
</tr>
<tr>
<td>Number of courses taught and enrolment by level of year</td>
<td>18</td>
</tr>
<tr>
<td>Student course evaluation data for 2010/11 to 2012/13</td>
<td>20</td>
</tr>
<tr>
<td>Student gender ratios in year 1</td>
<td>21</td>
</tr>
<tr>
<td>Proportion of domestic/international students in year 1</td>
<td>22</td>
</tr>
<tr>
<td>Attrition rates between year 1 and year 2</td>
<td>23</td>
</tr>
<tr>
<td>Retention of student cohorts between year 1 and graduation by department</td>
<td>24</td>
</tr>
<tr>
<td>Student exchanges</td>
<td>26</td>
</tr>
<tr>
<td>Co-operative Education</td>
<td>28</td>
</tr>
<tr>
<td>Strengths and challenges identified from the accreditation summaries, Vision 2015 and the CEAB report</td>
<td>30</td>
</tr>
<tr>
<td>Overview of program responses to the “Report of the Visiting Team on the Accreditation Visit”</td>
<td>33</td>
</tr>
<tr>
<td>Final report and decisions of the Canadian Engineering Accreditation Board</td>
<td>34</td>
</tr>
<tr>
<td>Program Action Plans for Engineering Programs in response to the CEAB Accreditation Review</td>
<td>35</td>
</tr>
</tbody>
</table>
Introduction

Twelve undergraduate Engineering programs were scheduled to undergo an accreditation review by the Canadian Engineering Accreditation Board (CEAB) in 2013\(^1\). The Engineering programs being reviewed (start dates in parentheses) are: Chemical (1957), Civil (1957), Computer (1984), Electrical (1957), Environmental (1995), Geological (1982), Management (2007), Mechanical (1957), Mechatronics (2003), Nanotechnology (2005), Software (2001) and Systems Design (1969). The Architecture program was reviewed in 2011 for professional accreditation and was excluded from this exercise. A new undergraduate program in Biomedical Engineering was recently approved (Fall, 2013) and will enroll its first students in Fall, 2014.

These above programs are the responsibility of 6 departments in the Faculty of Engineering: Chemical Engineering; Civil and Environmental Engineering; Electrical and Computer Engineering; Management Sciences, Mechanical and Mechatronics Engineering; and Systems Design Engineering. Several programs are supported by more than one department within the Faculty and others are supported by both Engineering as well as other Faculties. Geological Engineering is supported jointly by the Department of Civil and Environmental Engineering and the Faculty of Science (Department of Earth and Environmental Sciences); Software Engineering is supported jointly by the Department of Electrical and Computer Engineering and the Faculty of Mathematics (mainly David R. Cheriton School of Computer Science); and Nanotechnology Engineering is supported jointly by the Department of Chemical Engineering and the Department of Electrical and Computer Engineering as well as the Department of Chemistry in the Faculty of Science.

Review process

The program self studies were completed in November 2013. Program self studies were prepared by associate chairs, program directors or their designates. Wayne Parker (Associate Dean Co-operative Education and Professional Affairs) coordinated the CEAB process for the Faculty. The site visit occurred from November 24-26, 2013. The CEAB visiting team met with administrators, faculty, staff and graduate and undergraduate students from the various programs being reviewed.

The CEAB permitted a UW “observer” (David McKinnon, Faculty of Mathematics) to monitor the process, thus enabling the University of Waterloo to effectively leverage the accreditation team

\(^1\) The purpose of accreditation by the CEAB is “to identify to the constituent associations of Engineers Canada those engineering programs whose graduates are academically qualified to begin the process to be licensed as professional engineers in Canada. The process of accreditation emphasizes the quality of the students, the academic and support staff, the curriculum and the educational facilities.”
expertise, logistics and assessment report toward meeting our own institutional requirements for cyclical program reviews.

The “Report of the Visiting Team on the Accreditation visit” was received Feb 24 2014 The report from the internal UW observer was received February 13, 2014. The Engineering Faculty “Response to the Report of the Visiting Team on the Accreditation Visit” was submitted to the CEAB on March 24, 2014. The final decision of the CEAB was received on June 26, 2014.

This Final Assessment Report compliments the documents prepared for the CEAB process as it includes aspects of the Engineering programs not included in the CEAB reporting, but that are required as part of the regular cyclical review of academic programs, as articulated in UW’s Institutional Quality Assurance Framework. The scope of the material to be included in this addendum was agreed upon by Geoff McBoyle (then Associate Vice-President, Academic), Wayne Loucks (Associate Dean of Engineering, Undergraduate Studies) and Wayne Parker (Associate Dean Cooperative Education and Professional Affairs). This report was written by Mario Coniglio (Associate Vice-President, Academic), assisted by Wayne Loucks and Wayne Parker. Institutional Analysis and Planning (IAP) provided much of the data used in this report. Separate reports on course evaluations and co-operative education in Engineering are available upon request.

This document also includes information derived from Engineering’s strategic plan and its progress report:


All references referring to “Vision 2015” indicate the 2013 progress report.

**Academic programs offered and program objectives**

The Faculty of Engineering mission statement as articulated in its 2012 strategic plan document is the following:

*Waterloo Engineering offers professional education of the highest quality across a comprehensive set of engineering and architecture disciplines. We engage in internationally recognized research and design. We build knowledge and intellectual rigor through scholarship, graduate, and undergraduate teaching. Our outward-looking*
philosophy sets us apart: it is reflected in our commitment to co-operative education, in our extensive regional, national, and international partnerships, and in our research to meet the challenges of today and to shape the future. (source: Vision 2015 Strategic Plan, May 2012)

All 12 programs under review, except for Software Engineering, grant an Honours BASc (Co-operative Program) in their respective disciplines. Software Engineering offers an Honours BSE. All 12 programs offer one or more options. Minors are not offered in Engineering.

The objectives of the 12 programs are as follows:

- **Chemical Engineering**: to produce graduates capable of designing, analyzing, and controlling processes and systems involving the physical, chemical, or biochemical transformation of matter in the areas of energy, environment, materials, and manufacturing, with attention to economics and sustainability.

- **Civil Engineering**: to allow students to develop the necessary technical and professional skills in structures and mechanics, and in the areas of geotechnical, water resources, transportation, environmental and other areas in order for them to function effectively as Civil Engineers.

- **Computer Engineering**: to provide students with a solid theoretical foundation for the practice of Computer Engineering, expertise in analysis and design techniques in all the major areas within this broad discipline (including but not limited to aspects of hardware, software, and embedded systems, as well as related topics in electrical and software engineering), and practical experience in the application of these methods.

- **Electrical Engineering**: to provide students with a solid theoretical foundation for the practice of Electrical Engineering, expertise in analysis and design techniques in all the major areas within this broad discipline (including but not limited to circuits, devices, power and energy systems, radio-frequency systems, antennas and propagation, control systems, as well as related topics in computer and software engineering), and practical experience in the application of these methods.

- **Environmental Engineering** provides the setting that allows its students to develop the necessary technical and professional skills and knowledge to function effectively as Environmental Engineers.
• **Geological Engineering:** to provide a diverse and sufficiently focused curriculum structure that will permit students to experience the wide spectrum of technical skills associated with Geological Engineering with specific emphasis on geomechanics and hydrogeology.

• **Management Engineering:** to provide its students with skills in operations research, behaviour science, and information technology through core courses and technical electives that reflect important advances in their applications to the design and operation of management and industrial processes.

• **Mechanical Engineering:** to offer a world class program in Mechanical Engineering education that balances theory and practice by means of an innovative and extensive co-op program.

• **Mechatronics Engineering:** integrates the design principles and practices in Mechanical, Electrical, Computer and Systems Design Engineering, and is designed to integrate the various disciplines throughout the program and provide students with a firm grasp of the fundamentals.

• **Nanotechnology Engineering:** to prepare its students for entry either into industrial and government work places or into graduate programs in nanotechnology engineering, nanoscience, or nanomedicine.

• **Software Engineering:** to produce graduates capable of applying a systematic and disciplined approach to the creation, operation and maintenance of software systems by combining Computer Science software expertise with Engineering philosophies, principles and practices.

• **Systems Design Engineering:** to provide an innovative curriculum that produces graduates with broad background and capability in engineering fundamentals, along with study in human factors, environmental, and societal impacts necessary for designing solutions for multi-disciplined problems associated with today's complex systems.

**Assessment of Engineering undergraduate programs – provincially and nationally**

Metrics for the standing of each Engineering program are not available. However, a qualitative idea of the standing of most of the Engineering departments can be obtained through Vision 2015 exercise whereby external assessors commented subjectively on the programs’ standings in Canada. The selected comments below relate only to the undergraduate program.
• Civil and Environmental Engineering: “The department certainly hasn’t declined in its standing since the Vision 2010 external assessor report (top 5 in Canada and arguably the best in undergraduate studies), and might have increased slightly.”

• Chemical Engineering: “Waterloo’s Chemical Engineering Department is one of the better departments in Canada…. Waterloo certainly offers the best co-operative chemical engineering undergraduate program in Canada, and its overall undergraduate program is second to none.”

• Electrical and Computer Engineering: “In Canada at the undergraduate level, Waterloo is in a field all by itself due to the recognizable brand it has, which is built on the co-op program”

• Mechanical and Mechatronics Engineering: “Waterloo’s Mechanical and Mechatronics Engineering department is among the top mechanical engineering departments in Canada…. Hard to “rank”, as it is quite unique: its undergraduate program is excellent, with a great deal of hands-on experience (offered in labs and co-op work terms) with which others can’t really compare.”

• Management Sciences: “The question is difficult to answer for such a new undergraduate program. The Waterloo Management Sciences graduate program has an excellent reputation: it is well-established and recognized as a top-ranked program among Canadian and American schools.”

• Systems Design Engineering: “The department’s undergraduate program is quite unique in Canada and one of the top programs in North America.”

International rankings

Rankings of the Engineering and Technology field

According to the four best-known international university rankings of the field of Engineering and Technology, Waterloo ranks as the #2 school in the country and the province (see chart below). It is important to note that these rankings really measure research (and for the QS and Times Higher Education, academic reputation – which many would argue is also based largely on research). It is extremely likely that a ranking based solely on undergraduate education would see Waterloo increase in its prominence, especially on the provincial and national scale. UW is renowned for its undergraduate co-operative education program and is largely perceived as the top engineering school in Canada for undergraduate studies, as confirmed by the 2012 Business Insider ranking of
engineering schools in which UW was the #1 Canadian school. This ranking, which is based on an employer survey, reflects in a practical way our “product” from the undergraduate program.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Year</th>
<th>Global Rank</th>
<th>National Rank</th>
<th>Provincial Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai (AWRU)</td>
<td>2013</td>
<td>43</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>QS</td>
<td>2013</td>
<td>46</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Taiwan (NTU/HEEACT)</td>
<td>2012*</td>
<td>52</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Times Higher Education</td>
<td>2011**</td>
<td>48</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1: International rankings for Engineering at Waterloo. *Rankings not yet released for 2013. **Waterloo not ranked in top 50 in 2012; rankings not yet released for 2013

**Rankings of Specific Disciplines**

The Taiwan rankings include a reliable ranking of some sub-disciplines based on research output. The most recent (2012) results for Waterloo are below:

<table>
<thead>
<tr>
<th>Subject Ranked by NTU</th>
<th>Global Rank</th>
<th>National Rank</th>
<th>Provincial Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Engineering</td>
<td>40</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Computer Science</td>
<td>25</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>83</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>44</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Materials Science</td>
<td>145</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>30</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2: Taiwan rankings of Waterloo Engineering sub-disciplines.
Demographics and Quality of Engineering faculty

The research output (refereed articles, refereed conference proceedings, books, book Chapters, technical reports, conference presentations) as well as awards and honours of Engineering faculty over the last 5 years is available in the faculty Information forms that were prepared for the CEAB accreditation review. Data on the number of faculty members who are journal editors or that sit on editorial boards and/or granting agencies is not collected, but is expected to be high, given the prominent research profile of Engineering at University of Waterloo.

The quality of the faculty in Engineering is clearly indicated by the number and variety of major faculty awards, and importantly the levels of sponsored research. As of 2013, the Faculty includes 17 Canada Research Chairs (Tier 1 and 2), seven NSERC Industrial Research Chairs, four endowed chairs as well as numerous other prestigious awards. From 2009/2010 to 2012/2013, total sponsored research funding averaged ~$59M. Over this same time span, the total sponsored research funding:faculty ratio was ~$229K.

An important consideration for accreditation purposes is the number of faculty members who are licensed professional engineers (PEng). In the 2012/2013 year, 63% of Engineering faculty were licensed (Table 3). This number does not include non-Engineering faculty in the shared programs (Geological Engineering, Nanotechnology Engineering, Software Engineering). The Faculty encourages its faculty to pursue their PEng designations, but current PEO practices do not count university research as practical experience (Vision 2015). Faculty affected by this regulation will be encouraged to apply for Limited Licenses.

<table>
<thead>
<tr>
<th>Department</th>
<th>Registered</th>
<th>Applied</th>
<th>Not Applied</th>
<th>Not Eligible</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical</td>
<td>20.0</td>
<td>7.0</td>
<td>9.0</td>
<td>0.0</td>
<td>36.0</td>
</tr>
<tr>
<td>Civil &amp; Environmental</td>
<td>29.8</td>
<td>3.0</td>
<td>6.0</td>
<td>0.0</td>
<td>38.8</td>
</tr>
<tr>
<td>Electrical &amp; Computer</td>
<td>49.5</td>
<td>11.0</td>
<td>26.0</td>
<td>0.0</td>
<td>86.5</td>
</tr>
<tr>
<td>Management Sciences</td>
<td>12.3</td>
<td>6.0</td>
<td>4.0</td>
<td>5.0</td>
<td>27.3</td>
</tr>
<tr>
<td>Mechanical &amp; Mechatronics</td>
<td>43.0</td>
<td>5.0</td>
<td>5.0</td>
<td>0.0</td>
<td>53.0</td>
</tr>
<tr>
<td>Systems Design</td>
<td>14.3</td>
<td>2.0</td>
<td>10.0</td>
<td>1.0</td>
<td>27.3</td>
</tr>
<tr>
<td>Other</td>
<td>1.5</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>170.4</td>
<td>35.0</td>
<td>60.0</td>
<td>6.0</td>
<td>271.4</td>
</tr>
</tbody>
</table>

Table 3: Faculty statistics showing numbers of registered PEng in each Engineering department, along with related pending application and eligibility data. Source: Vision 2015
The Faculty has several measures in place aimed to increase representation of females in its professoriate (Vision 2015). Since 2004, women faculty have increased by 83%, whereas the total number of Engineering faculty increased by 51.5%. The regular faculty complement of 292.3 in 2013 was composed of 269.8 tenured or tenure-stream faculty and 22.5 definite-term and continuing lecturers. The number of women was 44 (15.1%). The number of women in its various departments is variable, ranging from a low of 8% in Chemical Engineering to a high of 36.8% in Architecture. Women faculty in non-departmental “support unit” offices make up 39.8% of the faculty.

**Student quality**

The incoming average of the first-year Engineering class can be viewed as a proxy for the quality of the program. Maclean’s magazine has collected and published this data in its annual fall issue on professional schools (Table 4).

<table>
<thead>
<tr>
<th>School</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterloo</td>
<td>90.0%</td>
<td>89.4%</td>
<td>89.2%</td>
</tr>
<tr>
<td>Toronto</td>
<td>92.2%</td>
<td>90.9%</td>
<td>90.3%</td>
</tr>
<tr>
<td>McGill</td>
<td>90.5%</td>
<td>89.6%</td>
<td></td>
</tr>
<tr>
<td>UBC</td>
<td>90.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>School</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterloo</td>
<td>90.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toronto</td>
<td>92.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McGill</td>
<td>90.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UBC</td>
<td>90.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Waterloo’s incoming averages for first-year Engineering students compared to Canadian schools which report higher incoming averages.
Figure 1 below “depicts a steady increase over the past six years in the proportion of undergraduate students entering Waterloo Engineering with incoming final high school averages over 95% and between 90-94%. The record high in 2012 indicates that 65.6% of entering students had a final high school average of 90% or higher, an affirmation of the exceptionally high quality students we attract to our renowned undergraduate program.” (Vision 2015)

Another indicator of program quality is the ratio of undergraduate students to regular faculty (Table 5). The low ratio for Management Sciences reflects the fact that until 2007, it did not have the undergraduate management engineering program.

<table>
<thead>
<tr>
<th>Department</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>17.3</td>
<td>18.2</td>
<td>15.9</td>
<td>15.3</td>
</tr>
<tr>
<td>Chemical</td>
<td>19.3</td>
<td>18.0</td>
<td>17.0</td>
<td>18.8</td>
</tr>
<tr>
<td>Civil &amp; Environmental</td>
<td>17.0</td>
<td>18.1</td>
<td>18.7</td>
<td>19.5</td>
</tr>
<tr>
<td>Electrical &amp; Computer</td>
<td>19.9</td>
<td>20.0</td>
<td>20.4</td>
<td>19.7</td>
</tr>
<tr>
<td>Management Sciences</td>
<td>6.4</td>
<td>7.5</td>
<td>7.7</td>
<td>8.2</td>
</tr>
<tr>
<td>Mechanical &amp; Mechatronics</td>
<td>18.1</td>
<td>17.5</td>
<td>18.2</td>
<td>19.0</td>
</tr>
<tr>
<td>Systems Design</td>
<td>17.0</td>
<td>18.8</td>
<td>18.4</td>
<td>18.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>17.6</td>
<td>17.7</td>
<td>17.6</td>
<td>17.8</td>
</tr>
</tbody>
</table>

Application – registration statistics

Admissions data from Vision 2015 from Fall 2009 to Fall 2012 shows that for the first 3 years, total year 1 Engineering enrolments were 2-8% above the set targets. In Fall 2012, however, enrollment was 98% of target. Over this time frame, most individual programs were within +/- 5% of their set targets. There is no obvious pattern of Engineering programs that are consistently above or below this range related to their target. Table 6 shows the admissions data for Fall 2012.

<table>
<thead>
<tr>
<th>Program</th>
<th>New Admissions</th>
<th>Total 1A Enrol't</th>
<th>% of total</th>
<th>% of int'l</th>
<th>target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CPR</td>
<td>Int'l</td>
<td>Total</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>Architecture</td>
<td>74</td>
<td>1</td>
<td>75</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Chemical</td>
<td>123</td>
<td>18</td>
<td>141</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>UAE: Chemical</td>
<td>7</td>
<td>20</td>
<td>27</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Civil</td>
<td>92</td>
<td>14</td>
<td>106</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>UAE: Civil</td>
<td>6</td>
<td>24</td>
<td>30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electrical &amp; Computer</td>
<td>301</td>
<td>57</td>
<td>358</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Environmental</td>
<td>54</td>
<td>6</td>
<td>60</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Geological</td>
<td>32</td>
<td>0</td>
<td>32</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Management</td>
<td>58</td>
<td>4</td>
<td>62</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Mechanical</td>
<td>176</td>
<td>34</td>
<td>210</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Mechatronics</td>
<td>115</td>
<td>19</td>
<td>134</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Nanotechnology</td>
<td>108</td>
<td>8</td>
<td>116</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Software</td>
<td>118</td>
<td>11</td>
<td>129</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Systems Design</td>
<td>85</td>
<td>2</td>
<td>87</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1349</td>
<td>218</td>
<td>1567</td>
<td>377</td>
<td>377</td>
</tr>
</tbody>
</table>

Table 6: Year one admissions in Engineering for Fall 2012. Data for the discontinued UAE (Chemical and Civil) programs are not relevant to this report. Source: Vision 2015

Engineering at Waterloo continues to be a top choice for students intending to study Engineering. The data presented in Figures 2-7 below were obtained to support the institution’s enrollment projections to 2018. The data show clearly increases in all of the numbers associated with various stages of the enrollment funnel, from applications to offers to confirmations to registrants (new admits) on the annual November 1 count date.
Figure 2: Engineering overall applicants and offers

Figure 3: Engineering overall confirmations, new admits and targets
Figure 4: Engineering domestic applicants and offers

Figure 5: Engineering domestic confirmations, new admits and targets
Figure 6: Engineering international applicants and offers

Figure 7: Engineering international confirmations, new admits and targets
Enrollment and graduation data

As of the 2012/2013 academic year, the Faculty of Engineering had 6840 undergraduate students (head count), including 703 international students. This is an increase of ~49% in the last decade (Fig. 8). In terms of FTEs, Engineering undergraduates make up 16.4% and 7.0% of all Engineering undergraduates enrolled in Ontario and Canadian universities, respectively (Vision 2015).

Figure 8: Undergraduate enrollment growth in all Engineering undergraduate programs. Source: Vision 2015
Of the twelve programs under review, the highest enrollment in Fall 2012 was in Mechanical Engineering (911) and the lowest enrollment was in Geological Engineering (102; ignoring the Civil Engineering enrollment in the now defunct UAE campus - see Table 7).

### Total Undergraduate Enrolment (head count), Fall 2012

<table>
<thead>
<tr>
<th>Program</th>
<th>Total</th>
<th>#Female</th>
<th>% Female</th>
<th>#Visa</th>
<th>% Visa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>370</td>
<td>209</td>
<td>56.5%</td>
<td>5</td>
<td>1.4%</td>
</tr>
<tr>
<td>Chemical</td>
<td>616</td>
<td>202</td>
<td>32.8%</td>
<td>81</td>
<td>13.1%</td>
</tr>
<tr>
<td>UAE: Chemical</td>
<td>62</td>
<td>16</td>
<td>25.8%</td>
<td>50</td>
<td>80.6%</td>
</tr>
<tr>
<td>Civil</td>
<td>554</td>
<td>134</td>
<td>24.2%</td>
<td>60</td>
<td>10.8%</td>
</tr>
<tr>
<td>UAE: Civil</td>
<td>57</td>
<td>8</td>
<td>14.0%</td>
<td>45</td>
<td>78.9%</td>
</tr>
<tr>
<td>Computer</td>
<td>682</td>
<td>59</td>
<td>8.7%</td>
<td>68</td>
<td>10.0%</td>
</tr>
<tr>
<td>Electrical</td>
<td>914</td>
<td>97</td>
<td>10.6%</td>
<td>103</td>
<td>11.3%</td>
</tr>
<tr>
<td>Environmental</td>
<td>249</td>
<td>124</td>
<td>49.8%</td>
<td>16</td>
<td>6.4%</td>
</tr>
<tr>
<td>Geological</td>
<td>102</td>
<td>26</td>
<td>25.5%</td>
<td>2</td>
<td>2.0%</td>
</tr>
<tr>
<td>Management</td>
<td>280</td>
<td>94</td>
<td>33.6%</td>
<td>33</td>
<td>11.8%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>911</td>
<td>93</td>
<td>10.2%</td>
<td>94</td>
<td>10.3%</td>
</tr>
<tr>
<td>Mechatronics</td>
<td>610</td>
<td>66</td>
<td>10.8%</td>
<td>62</td>
<td>10.2%</td>
</tr>
<tr>
<td>Nanotechnology</td>
<td>504</td>
<td>100</td>
<td>19.8%</td>
<td>36</td>
<td>7.1%</td>
</tr>
<tr>
<td>Software</td>
<td>517</td>
<td>61</td>
<td>11.8%</td>
<td>38</td>
<td>7.4%</td>
</tr>
<tr>
<td>Systems Design</td>
<td>412</td>
<td>117</td>
<td>28.4%</td>
<td>10</td>
<td>2.4%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6840</td>
<td>1406</td>
<td>20.6%</td>
<td>703</td>
<td>10.3%</td>
</tr>
</tbody>
</table>

Table 7: Undergraduate enrollment by program in Fall 2012. **Source: Vision 2015.**
There has been a 36% increase over the last decade in the numbers of degrees awarded annually, reaching an all-time high in 2012 of 1046 undergraduate degrees (Figs. 9, 10).

Figure 9: Undergraduate degrees granted in all Engineering programs. Source: Vision 2015

<table>
<thead>
<tr>
<th>Program</th>
<th>Total</th>
<th>#Female</th>
<th>% Female</th>
<th>#Visa</th>
<th>% Visa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>56</td>
<td>33</td>
<td>58.9%</td>
<td>3</td>
<td>5.4%</td>
</tr>
<tr>
<td>Chemical</td>
<td>105</td>
<td>34</td>
<td>32.4%</td>
<td>11</td>
<td>10.5%</td>
</tr>
<tr>
<td>Civil</td>
<td>92</td>
<td>28</td>
<td>30.4%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Computer</td>
<td>89</td>
<td>10</td>
<td>11.2%</td>
<td>3</td>
<td>3.4%</td>
</tr>
<tr>
<td>Electrical</td>
<td>156</td>
<td>11</td>
<td>7.1%</td>
<td>8</td>
<td>5.1%</td>
</tr>
<tr>
<td>Environmental</td>
<td>34</td>
<td>16</td>
<td>47.1%</td>
<td>2</td>
<td>5.9%</td>
</tr>
<tr>
<td>Geological</td>
<td>13</td>
<td>3</td>
<td>23.1%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Management</td>
<td>38</td>
<td>7</td>
<td>18.4%</td>
<td>4</td>
<td>10.5%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>158</td>
<td>11</td>
<td>7.0%</td>
<td>6</td>
<td>3.8%</td>
</tr>
<tr>
<td>Mechatronics</td>
<td>88</td>
<td>4</td>
<td>4.5%</td>
<td>4</td>
<td>4.5%</td>
</tr>
<tr>
<td>Nanotechnology</td>
<td>70</td>
<td>14</td>
<td>20.0%</td>
<td>4</td>
<td>5.7%</td>
</tr>
<tr>
<td>Software</td>
<td>80</td>
<td>8</td>
<td>10.0%</td>
<td>5</td>
<td>6.3%</td>
</tr>
<tr>
<td>Systems Design</td>
<td>67</td>
<td>10</td>
<td>14.9%</td>
<td>1</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1046</strong></td>
<td><strong>189</strong></td>
<td><strong>18.1%</strong></td>
<td><strong>51</strong></td>
<td><strong>4.9%</strong></td>
</tr>
</tbody>
</table>

Table 8: Undergraduate degrees granted by program in Fall 2012. Source: Vision 201
Number of courses taught and enrolment by level of year

The Engineering faculty is fully engaged in teaching in each of the three academic terms. The average number of courses taught in the Fall, Winter and Spring terms in each year since 2007 is 203, 209 and 168 courses, respectively. The last three years have seen a relatively constant number of courses offered in each of the academic terms.

<table>
<thead>
<tr>
<th>Academic Term</th>
<th>Course Level</th>
<th>0</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>Other *</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2007</td>
<td></td>
<td>10</td>
<td>33</td>
<td>68</td>
<td>30</td>
<td>26</td>
<td>9</td>
<td>176</td>
</tr>
<tr>
<td>Winter 2008</td>
<td></td>
<td>6</td>
<td>32</td>
<td>34</td>
<td>63</td>
<td>47</td>
<td>10</td>
<td>192</td>
</tr>
<tr>
<td>Spring 2008</td>
<td></td>
<td>5</td>
<td>28</td>
<td>37</td>
<td>42</td>
<td>36</td>
<td>8</td>
<td>156</td>
</tr>
<tr>
<td>Fall 2008</td>
<td></td>
<td>6</td>
<td>33</td>
<td>72</td>
<td>40</td>
<td>27</td>
<td>13</td>
<td>191</td>
</tr>
<tr>
<td>Winter 2009</td>
<td></td>
<td>2</td>
<td>31</td>
<td>35</td>
<td>64</td>
<td>45</td>
<td>11</td>
<td>188</td>
</tr>
<tr>
<td>Spring 2009</td>
<td></td>
<td>28</td>
<td>39</td>
<td>42</td>
<td>43</td>
<td>10</td>
<td></td>
<td>162</td>
</tr>
<tr>
<td>Fall 2009</td>
<td></td>
<td>36</td>
<td>72</td>
<td>38</td>
<td>38</td>
<td>17</td>
<td></td>
<td>201</td>
</tr>
<tr>
<td>Winter 2010</td>
<td></td>
<td>32</td>
<td>35</td>
<td>66</td>
<td>54</td>
<td>15</td>
<td></td>
<td>202</td>
</tr>
<tr>
<td>Spring 2010</td>
<td></td>
<td>29</td>
<td>39</td>
<td>40</td>
<td>44</td>
<td>12</td>
<td></td>
<td>164</td>
</tr>
<tr>
<td>Fall 2010</td>
<td></td>
<td>37</td>
<td>75</td>
<td>44</td>
<td>41</td>
<td>20</td>
<td></td>
<td>217</td>
</tr>
<tr>
<td>Winter 2011</td>
<td></td>
<td>32</td>
<td>40</td>
<td>70</td>
<td>57</td>
<td>16</td>
<td></td>
<td>215</td>
</tr>
<tr>
<td>Spring 2011</td>
<td></td>
<td>32</td>
<td>42</td>
<td>40</td>
<td>47</td>
<td>16</td>
<td></td>
<td>177</td>
</tr>
<tr>
<td>Fall 2011</td>
<td></td>
<td>33</td>
<td>75</td>
<td>43</td>
<td>44</td>
<td>20</td>
<td></td>
<td>215</td>
</tr>
<tr>
<td>Winter 2012</td>
<td></td>
<td>32</td>
<td>44</td>
<td>69</td>
<td>65</td>
<td>20</td>
<td></td>
<td>230</td>
</tr>
<tr>
<td>Spring 2012</td>
<td></td>
<td>32</td>
<td>41</td>
<td>40</td>
<td>49</td>
<td>17</td>
<td></td>
<td>179</td>
</tr>
<tr>
<td>Fall 2012</td>
<td></td>
<td>34</td>
<td>76</td>
<td>42</td>
<td>44</td>
<td>21</td>
<td></td>
<td>217</td>
</tr>
<tr>
<td>Winter 2013</td>
<td></td>
<td>31</td>
<td>45</td>
<td>67</td>
<td>62</td>
<td>20</td>
<td></td>
<td>225</td>
</tr>
</tbody>
</table>

Table 9: Number of courses taught in Engineering per term. Source: IAP Count Date database, special query run on June 3, 2013.

Definitions and Notes:

- All data as of count date (November 1, February 1, and June 30) in each listed term.
- 100 level courses are offered to current Engineering students. Some courses are restricted to particular programs, or to students in an exchange program. An example of this is CHE 37 – Applied Mathematics 2, offered in academic year 2007/08.
- Courses may have several sections; however each section is not counted in the table above. A course with multiple sections is counted once in each term.
Includes: courses not offered by the Faculty of Engineering where 90% or more enrolled students are registered with the Faculty of Engineering, or Software Engineering. For example, Italian 155 has only Architecture students enrolled and so is included in the 100 level course count.

Excludes: PDEng, PD, Work report and Graduate level courses. Courses with less than 5 students enrolled are also excluded.

“Other” column includes lab and seminar courses.

The Engineering faculty has seen a steady increase in teaching activity since 2007. Fall enrollments have increased ~34% from 2007 to 2012 (17,940 to 24,024 individual course enrollments); from 2008 to 2013, Winter enrollments have increased ~22% (16,145 to 19,633); from 2008 to 2012 Spring enrollments have increased ~19% (13,069 to 15,548).

Table 10: Enrollment in Engineering courses per term according to level. Source: IAP Count Date database, special query run on June 3, 2013.

<table>
<thead>
<tr>
<th>Academic Term</th>
<th>Course Level</th>
<th>00s</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>Other*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2007</td>
<td>484</td>
<td>7605</td>
<td>5861</td>
<td>2006</td>
<td>1242</td>
<td>742</td>
<td></td>
</tr>
<tr>
<td>Winter 2008</td>
<td>283</td>
<td>4050</td>
<td>3736</td>
<td>4414</td>
<td>2474</td>
<td>1188</td>
<td></td>
</tr>
<tr>
<td>Spring 2008</td>
<td>244</td>
<td>3281</td>
<td>3426</td>
<td>3104</td>
<td>2166</td>
<td>848</td>
<td></td>
</tr>
<tr>
<td>Fall 2008</td>
<td>280</td>
<td>8177</td>
<td>6157</td>
<td>2364</td>
<td>1185</td>
<td>1058</td>
<td></td>
</tr>
<tr>
<td>Winter 2009</td>
<td>148</td>
<td>4094</td>
<td>3659</td>
<td>4846</td>
<td>2363</td>
<td>1192</td>
<td></td>
</tr>
<tr>
<td>Spring 2009</td>
<td>3617</td>
<td>3478</td>
<td>3448</td>
<td>2543</td>
<td>986</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2009</td>
<td>7988</td>
<td>6284</td>
<td>2854</td>
<td>1790</td>
<td>1624</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter 2010</td>
<td>4094</td>
<td>3735</td>
<td>4833</td>
<td>3029</td>
<td>1487</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring 2010</td>
<td>3416</td>
<td>3337</td>
<td>3352</td>
<td>2829</td>
<td>1341</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2010</td>
<td>10243</td>
<td>7084</td>
<td>2934</td>
<td>2083</td>
<td>1861</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter 2011</td>
<td>4650</td>
<td>3759</td>
<td>5260</td>
<td>3144</td>
<td>1658</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring 2011</td>
<td>3717</td>
<td>3490</td>
<td>3706</td>
<td>2883</td>
<td>1703</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2011</td>
<td>8610</td>
<td>7282</td>
<td>3031</td>
<td>1941</td>
<td>2110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter 2012</td>
<td>4617</td>
<td>3964</td>
<td>5779</td>
<td>3278</td>
<td>1900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring 2012</td>
<td>3467</td>
<td>3735</td>
<td>3356</td>
<td>2951</td>
<td>2039</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2012</td>
<td>8841</td>
<td>7639</td>
<td>2940</td>
<td>2221</td>
<td>2383</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter 2013</td>
<td>4773</td>
<td>3693</td>
<td>5177</td>
<td>3835</td>
<td>2155</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Definitions and Notes:

- All data as of count date (November 1, February 1, and June 30) in each listed term.
- A particular student may register in more than one course. As a result, a unique student is counted multiple times in each term.
- 00 level courses are offered to current Engineering students. Some of these are restricted to particular programs, or to students in an exchange program. An example of this was CHE 37 – Applied Mathematics 2, offered in academic year 2007/08.
• Includes: courses not offered by the Faculty of Engineering where 90% of more enrolled students are registered with the Faculty of Engineering, or Software Engineering. For example, Italian 155 has only Architecture students enrolled and so is included here.
• Excludes: PDEng, PD, Work report and Graduate level courses. Courses with less than 5 students enrolled are also excluded.
• “Other” column includes lab and seminar courses.

**Student course evaluation data for 2010/11 to 2012/13**

Course evaluations are carried out by the Engineering Society and the summary results are available to all Engineering students and faculty members.

The evaluation questionnaire consists of 18 questions that can be answered and scored on a five point Likert-type scale plus space for providing written comments to the course instructor. Data are converted to a percentage scale, with higher numbers indicating more positive responses. A separate report is available that presents detailed aggregated information on the teaching evaluations for undergraduate courses in Engineering.

Considering scores in aggregate, students generally rate the teaching quality in their first to fourth year courses favourably, with scores ranging from 73.6% to 78.5%. Similarly, students’ overall appraisal of their courses is favourable, with scores in the same time interval ranging from 67.6% to 72.8%. Fourth year courses are rated more favourably than those in the first three years.
**Student gender ratios in year 1**

Undergraduate studies in Engineering are still overwhelmingly dominated by males but the data suggest this is changing slowly. Software engineering, compared to the aggregated numbers for all engineering programs, has 6-11% more male students.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Female Proportion</th>
<th>Male Proportion</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/08</td>
<td>17.4%</td>
<td>82.6%</td>
<td>2479</td>
</tr>
<tr>
<td>2008/09</td>
<td>18.9%</td>
<td>81.1%</td>
<td>2583</td>
</tr>
<tr>
<td>2009/10</td>
<td>19.1%</td>
<td>80.9%</td>
<td>2594</td>
</tr>
<tr>
<td>2010/11</td>
<td>18.1%</td>
<td>81.9%</td>
<td>2727</td>
</tr>
<tr>
<td>2011/12</td>
<td>19.7%</td>
<td>80.3%</td>
<td>2838</td>
</tr>
</tbody>
</table>

Table 11: Gender proportions of year 1 students in Faculty of Engineering. Total students (also for tables 12-14) refers to the number of unique students counts in a fiscal year, including registrations on work terms. A student with 1, 2 or 3 registrations in a fiscal year would all count as 1 unique student. Source: IAP Count Date database, registration cube, extracted on June 6, 2013

**Software Engineering – year 1 students**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Female Proportion</th>
<th>Male Proportion</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/08</td>
<td>8.4%</td>
<td>91.6%</td>
<td>225</td>
</tr>
<tr>
<td>2008/09</td>
<td>9.6%</td>
<td>90.4%</td>
<td>230</td>
</tr>
<tr>
<td>2009/10</td>
<td>8.5%</td>
<td>91.5%</td>
<td>234</td>
</tr>
<tr>
<td>2010/11</td>
<td>9.4%</td>
<td>90.6%</td>
<td>245</td>
</tr>
<tr>
<td>2011/12</td>
<td>13.4%</td>
<td>86.6%</td>
<td>253</td>
</tr>
</tbody>
</table>

Table 12: Gender proportions of year 1 students in Software Engineering. Source: IAP Count Date database, registration cube, extracted on June 6, 2013

Definitions and Notes:

- All data as of count date (November 1, February 1, and June 30) in each fiscal year.
- Unique student counts are for each fiscal year. Students who register for more than 1 term are counted once.
- Includes: all students registered to the Faculty of Engineering or Software Engineering at least once in the listed fiscal year.
Proportion of domestic/international students in year 1

International student enrollments in undergraduate Engineering programs have increased over the period of the self-study and closely tracked, within 2%, the institutional numbers over the same time period. In the 2007/2008 fiscal year, Engineering visa students constituted 7% of the total enrollment, whereas the institutional number for the same year was 9%. In the 2011/2012 year, visa students in engineering constituted 12.8% of the total where as the institutional number was 11%.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Domestic</th>
<th>International</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/08</td>
<td>93.1%</td>
<td>7.0%</td>
<td>2479</td>
</tr>
<tr>
<td>2008/09</td>
<td>92.9%</td>
<td>7.2%</td>
<td>2583</td>
</tr>
<tr>
<td>2009/10</td>
<td>91.4%</td>
<td>8.8%</td>
<td>2594</td>
</tr>
<tr>
<td>2010/11</td>
<td>89.3%</td>
<td>10.7%</td>
<td>2727</td>
</tr>
<tr>
<td>2011/12</td>
<td>87.2%</td>
<td>12.8%</td>
<td>2868</td>
</tr>
</tbody>
</table>

Table 13: Proportion of domestic vs. international students in Engineering. Source: IAP Count Date database, registration cube, extracted on June 6, 2013

Software Engineering – year 1 students

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Domestic</th>
<th>International</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/08</td>
<td>208</td>
<td>17</td>
<td>225</td>
</tr>
<tr>
<td>2008/09</td>
<td>215</td>
<td>15</td>
<td>230</td>
</tr>
<tr>
<td>2009/10</td>
<td>220</td>
<td>14</td>
<td>234</td>
</tr>
<tr>
<td>2010/11</td>
<td>226</td>
<td>19</td>
<td>245</td>
</tr>
<tr>
<td>2011/12</td>
<td>230</td>
<td>23</td>
<td>253</td>
</tr>
</tbody>
</table>

Table 14: Proportion of domestic vs. international students in Software Engineering. Source: IAP Count Date database, registration cube, extracted on June 6, 2013

Definitions and Notes:
- All data as of count date (November 1, February 1, and June 30) in each fiscal year.
- Visa status is based on the fees paid by the student, not their citizenship. For example, an international student may have a diploma from a secondary school in Ontario, but did not qualify to pay domestic fees; this student would be counted as international.
- Unique student counts are for each fiscal year. Students who register for more than 1 term are counted once.
- Includes: students registered to the Faculty of Engineering or Software Engineering at least once in the listed fiscal year.
**Attrition rates between year 1 and year 2**

Retention between year 1 and year 2 varied little from 2007/08 to 2010/11, ranging from 82.9% to 85.5%. However, the retention of the 2011/12 was notably weaker at 73.4%. By contrast, retention of Software Engineering students has steadily decreased from 2007/08 (98.2%) to 2009/10 (97.4%), followed by sudden drops for the 2010/11 and 2011/12 cohorts (92.4% and 88.5%, respectively). The reason for the apparent jump in the number of 'not retained' students in 2011/12 (265/16.65%) is most likely the result of the implementation of new progression rules for first-year engineering students together with a new streaming schedule for some students. Additional data for subsequent years is needed to fully assess whether the reported figure indicates a trend or is an anomaly.

<table>
<thead>
<tr>
<th>Year 1 to Year 2 Status</th>
<th>2007/08</th>
<th>2008/09</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained between year 1 and year 2</td>
<td>1162</td>
<td>1244</td>
<td>1213</td>
<td>1351</td>
<td>1168</td>
</tr>
<tr>
<td>Not Retained</td>
<td>79</td>
<td>75</td>
<td>91</td>
<td>100</td>
<td>265</td>
</tr>
<tr>
<td>Started with advanced standing</td>
<td>118</td>
<td>141</td>
<td>159</td>
<td>152</td>
<td>159</td>
</tr>
<tr>
<td>Total</td>
<td>1359</td>
<td>1460</td>
<td>1463</td>
<td>1603</td>
<td>1592</td>
</tr>
</tbody>
</table>

Table 15: Retention (unique student counts) in Faculty of Engineering. Source: IAP Count Date database, application cube, extracted on June 12, 2013

**Faculty of Engineering – proportions**

<table>
<thead>
<tr>
<th>Year 1 to Year 2 Status</th>
<th>2007/08</th>
<th>2008/09</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained between year 1 and year 2</td>
<td>85.50%</td>
<td>85.21%</td>
<td>82.91%</td>
<td>84.28%</td>
<td>73.37%</td>
</tr>
<tr>
<td>Not Retained</td>
<td>5.81%</td>
<td>5.14%</td>
<td>6.22%</td>
<td>6.24%</td>
<td>16.65%</td>
</tr>
<tr>
<td>Started with advanced standing</td>
<td>8.68%</td>
<td>9.66%</td>
<td>10.87%</td>
<td>9.48%</td>
<td>9.99%</td>
</tr>
</tbody>
</table>

Table 16: Retention (proportions) in Faculty of Engineering. Source: IAP Count Date database, application cube, extracted on June 12, 2013

**Software Engineering – unique student counts**

<table>
<thead>
<tr>
<th>Year 1 to Year 2 Status</th>
<th>2007/08</th>
<th>2008/09</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained between year 1 and year 2</td>
<td>108</td>
<td>114</td>
<td>110</td>
<td>121</td>
<td>108</td>
</tr>
<tr>
<td>Not Retained</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Started with advanced standing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>117</td>
<td>113</td>
<td>131</td>
<td>122</td>
</tr>
</tbody>
</table>

Table 17: Retention (unique student counts) in Software Engineering. Source: IAP Count Date database, application cube, extracted on June 12, 2013
Software Engineering – proportions

<table>
<thead>
<tr>
<th>Year 1 to Year 2 Status</th>
<th>First Registration Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained between year 1 and year 2</td>
<td>98.18%</td>
</tr>
<tr>
<td>Not Retained</td>
<td>1.82%</td>
</tr>
<tr>
<td>Started with advanced standing</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Table 18: Retention (proportions) in Faculty of Engineering. Source: IAP Count Date database, application cube, extracted on June 12, 2013

Definitions and Notes:
- All data as of count date (November 1, February 1, and June 30) in each fiscal year.
- Students who register for more than 1 term in a fiscal year are counted once.
- Retained: student who progressed to year 2 by the next Fall term.
- Not retained: student who did not progress to year 2 by the next Fall term, or did not register at the institution after year 1.
- Started with advanced standing: began their undergraduate career with some credits transferred, and/or entered the institution at the level higher than 1A.
- Includes: full time undergraduate students who registered to the Faculty of Engineering or Software Engineering at least once in the listed fiscal year.
- Excludes: Graduate students, part-time students.

Retention of student cohorts between year 1 and graduation by department

On average, for the 3 cohorts being reported on whose initial enrollment occurred in the 2004/05, 2005/06 and 2006/07 academic years, 75.4% graduated within six years of initial enrollment. 15.4% left (“withdrew”) the university with no degree from any Faculty. The best completion rates overall in the Faculty of Engineering are found in the Architecture program (79.6%), but in the Engineering programs being considered in this review, the best completion rates are by students who enrolled initially in Mechanical Engineering at 78.2%. The weakest rates of graduation are of students who enrolled initially in Electrical and Computer Engineering programs at 69.3%

<table>
<thead>
<tr>
<th>Cohort Fiscal Year</th>
<th>Completed</th>
<th>In Progress</th>
<th>Not Registered</th>
<th>Withdraw</th>
<th>Cohort Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>75.18%</td>
<td>8.93%</td>
<td>1.88%</td>
<td>14.02%</td>
<td>1120</td>
</tr>
<tr>
<td>2005/06</td>
<td>74.98%</td>
<td>6.49%</td>
<td>1.99%</td>
<td>16.54%</td>
<td>1155</td>
</tr>
<tr>
<td>2006/07</td>
<td>76.19%</td>
<td>6.52%</td>
<td>1.53%</td>
<td>15.77%</td>
<td>1243</td>
</tr>
</tbody>
</table>

Table 19: Student status six years after initial enrollment in all undergraduate programs in Engineering. Source: IAP Count Date database, retention cube v2, extracted on June 10, 2013
<table>
<thead>
<tr>
<th>Cohort Fiscal Year</th>
<th>Completed</th>
<th>In Progress</th>
<th>Not Registered</th>
<th>Withdrew</th>
<th>Cohort Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td>81.03%</td>
<td>3.45%</td>
<td>1.72%</td>
<td>13.79%</td>
<td>232</td>
</tr>
<tr>
<td>2006/07</td>
<td>78.69%</td>
<td>4.51%</td>
<td>0.82%</td>
<td>15.98%</td>
<td>244</td>
</tr>
</tbody>
</table>

Table 20: Student status six years after initial enrollment in Chemical Engineering. Source: IAP Count Date database, retention cube v2, extracted on June 10, 2013

<table>
<thead>
<tr>
<th>Cohort Fiscal Year</th>
<th>Completed</th>
<th>In Progress</th>
<th>Not Registered</th>
<th>Withdrew</th>
<th>Cohort Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>77.24%</td>
<td>7.59%</td>
<td>2.76%</td>
<td>12.41%</td>
<td>145</td>
</tr>
<tr>
<td>2005/06</td>
<td>75.16%</td>
<td>5.88%</td>
<td>3.27%</td>
<td>15.69%</td>
<td>153</td>
</tr>
<tr>
<td>2006/07</td>
<td>80.00%</td>
<td>2.78%</td>
<td>0.56%</td>
<td>16.67%</td>
<td>180</td>
</tr>
</tbody>
</table>

Table 21: Student status six years after initial enrollment in Civil Engineering. Source: IAP Count Date database, retention cube v2, extracted on June 10, 2013

<table>
<thead>
<tr>
<th>Cohort Fiscal Year</th>
<th>Completed</th>
<th>In Progress</th>
<th>Not Registered</th>
<th>Withdrew</th>
<th>Cohort Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>67.63%</td>
<td>12.14%</td>
<td>1.73%</td>
<td>18.50%</td>
<td>346</td>
</tr>
<tr>
<td>2005/06</td>
<td>70.19%</td>
<td>6.52%</td>
<td>1.86%</td>
<td>21.43%</td>
<td>322</td>
</tr>
<tr>
<td>2006/07</td>
<td>70.14%</td>
<td>8.99%</td>
<td>2.61%</td>
<td>18.26%</td>
<td>345</td>
</tr>
</tbody>
</table>

Table 22: Student status six years after initial enrollment in Electrical and Computer Engineering. Source: IAP Count Date database, retention cube v2, extracted on June 10, 2013

<table>
<thead>
<tr>
<th>Cohort Fiscal Year</th>
<th>Completed</th>
<th>In Progress</th>
<th>Not Registered</th>
<th>Withdrew</th>
<th>Cohort Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>81.29%</td>
<td>5.48%</td>
<td>2.26%</td>
<td>10.97%</td>
<td>310</td>
</tr>
<tr>
<td>2005/06</td>
<td>77.78%</td>
<td>8.08%</td>
<td>2.02%</td>
<td>12.12%</td>
<td>297</td>
</tr>
<tr>
<td>2006/07</td>
<td>75.49%</td>
<td>7.19%</td>
<td>0.98%</td>
<td>16.34%</td>
<td>306</td>
</tr>
</tbody>
</table>

Table 23: Student status six years after initial enrollment in Mechanical Engineering. Source: IAP Count Date database, retention cube v2, extracted on June 10, 2013

<table>
<thead>
<tr>
<th>Cohort Fiscal Year</th>
<th>Completed</th>
<th>In Progress</th>
<th>Not Registered</th>
<th>Withdrew</th>
<th>Cohort Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>80.95%</td>
<td>0.95%</td>
<td>0.00%</td>
<td>18.10%</td>
<td>90</td>
</tr>
<tr>
<td>2005/06</td>
<td>75.47%</td>
<td>5.66%</td>
<td>1.89%</td>
<td>16.98%</td>
<td>85</td>
</tr>
<tr>
<td>2006/07</td>
<td>77.12%</td>
<td>0.85%</td>
<td>0.85%</td>
<td>21.19%</td>
<td>86</td>
</tr>
</tbody>
</table>

Table 24: Student status six years after initial enrollment in Software Engineering. Source: IAP Count Date database, retention cube v2, extracted on June 10, 2013

Definitions and Notes
- All data as of count date (November 1, February 1, and June 30) in each fiscal year.
- Students who register for more than 1 term in a fiscal year are counted once.
• Withdrew - student did not register again at the undergraduate level in any Faculty.
• In progress – student is still registered at the undergraduate level in any Faculty.
• Not registered – as of selected term, student is not registered, but does register again in the future.
• Completed – student has graduated within six years of initial enrolment.
• Six years defined as 18 calendar terms since start of undergraduate career.
• Includes: full time, degree seeking undergraduate students who first registered to the Faculty of Engineering or Software Engineering at least once in the listed fiscal year.
• Excludes: Graduate students, part-time students.

**Student exchanges**

Engineering students are actively engaged in international exchanges, as shown in the following data from the 2012 Exchange report.

<table>
<thead>
<tr>
<th>Year</th>
<th>ST\textsubscript{in}</th>
<th>ST\textsubscript{out}</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>123</td>
<td>96</td>
<td>219</td>
</tr>
<tr>
<td>2006</td>
<td>176</td>
<td>85</td>
<td>261</td>
</tr>
<tr>
<td>2007</td>
<td>162</td>
<td>58</td>
<td>220</td>
</tr>
<tr>
<td>2008</td>
<td>163</td>
<td>65</td>
<td>228</td>
</tr>
<tr>
<td>2009</td>
<td>180</td>
<td>74</td>
<td>254</td>
</tr>
<tr>
<td>2010</td>
<td>204</td>
<td>89</td>
<td>293</td>
</tr>
<tr>
<td>2011</td>
<td>215</td>
<td>92</td>
<td>307</td>
</tr>
<tr>
<td>2012</td>
<td>205</td>
<td>91</td>
<td>296</td>
</tr>
<tr>
<td>2013</td>
<td>212</td>
<td>132</td>
<td>344</td>
</tr>
<tr>
<td>Average 2008-2013</td>
<td>192</td>
<td>86</td>
<td>277</td>
</tr>
</tbody>
</table>

Table 25: Engineering student exchange from 2005-2013. ST\textsubscript{in} are inbound exchange and “ST\textsubscript{out}” are outbound UW students.

Geographically the 2012 distribution of exchange student origins (ST\textsubscript{IN}) and destinations (ST\textsubscript{OUT}) is as shown in Table 26 (there were 7 other ST\textsubscript{in} students for destinations that had no corresponding ST\textsubscript{out} students)

<table>
<thead>
<tr>
<th>ST\textsubscript{IN} 2012</th>
<th>ST\textsubscript{OUT} 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany 57</td>
<td>Singapore 26</td>
</tr>
<tr>
<td>Country</td>
<td>Exchanges</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>France</td>
<td>52</td>
</tr>
<tr>
<td>Switzerland</td>
<td>21</td>
</tr>
<tr>
<td>Sweden</td>
<td>17</td>
</tr>
<tr>
<td>Australia</td>
<td>15</td>
</tr>
<tr>
<td>Singapore</td>
<td>10</td>
</tr>
<tr>
<td>China</td>
<td>6</td>
</tr>
<tr>
<td>Finland</td>
<td>5</td>
</tr>
<tr>
<td>Denmark</td>
<td>4</td>
</tr>
<tr>
<td>England</td>
<td>4</td>
</tr>
<tr>
<td>Austria</td>
<td>2</td>
</tr>
<tr>
<td>Holland</td>
<td>2</td>
</tr>
<tr>
<td>India</td>
<td>2</td>
</tr>
<tr>
<td>Chile</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 26: Engineering student exchanges in 2012 according to destination and origin.
Co-operative Education

Co-operative education is one of the defining factors in the success of undergraduate programs in Engineering. All Engineering undergraduate programs are given in the co-operative education mode of study. Engineering students continue to experience high employment rates (Table 27), with high employer and student satisfaction with their work terms.

Co-op Employment, 2012

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Seeking Employment</th>
<th>Employed</th>
<th>Unemployed</th>
<th>% Employed</th>
<th>% Int'l Work Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>399</td>
<td>385</td>
<td>14</td>
<td>96.5%</td>
<td>29.8%</td>
</tr>
<tr>
<td>Chemical</td>
<td>750</td>
<td>707</td>
<td>43</td>
<td>94.3%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Civil</td>
<td>670</td>
<td>650</td>
<td>20</td>
<td>97.0%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Computer</td>
<td>745</td>
<td>731</td>
<td>14</td>
<td>98.1%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Electrical</td>
<td>1034</td>
<td>990</td>
<td>44</td>
<td>95.7%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Environmental</td>
<td>287</td>
<td>274</td>
<td>13</td>
<td>95.5%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Geological</td>
<td>97</td>
<td>84</td>
<td>13</td>
<td>86.6%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Management</td>
<td>306</td>
<td>289</td>
<td>17</td>
<td>94.4%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>1032</td>
<td>993</td>
<td>39</td>
<td>96.2%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Mechatronics</td>
<td>699</td>
<td>685</td>
<td>14</td>
<td>98.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Nanotechnology</td>
<td>601</td>
<td>584</td>
<td>17</td>
<td>97.2%</td>
<td>23.9%</td>
</tr>
<tr>
<td>Software</td>
<td>590</td>
<td>585</td>
<td>5</td>
<td>99.2%</td>
<td>33.8%</td>
</tr>
<tr>
<td>Systems Design</td>
<td>476</td>
<td>463</td>
<td>13</td>
<td>97.3%</td>
<td>14.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7686</td>
<td>7420</td>
<td>266</td>
<td>96.5%</td>
<td>14.5%</td>
</tr>
</tbody>
</table>

Co-op Employment, 2013

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Seeking Employment</th>
<th>Employed</th>
<th>Unemployed</th>
<th>% Employed</th>
<th>% Int'l Work Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>404</td>
<td>387</td>
<td>17</td>
<td>95.8%</td>
<td>31.0%</td>
</tr>
<tr>
<td>Chemical</td>
<td>800</td>
<td>764</td>
<td>36</td>
<td>95.5%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Civil</td>
<td>694</td>
<td>684</td>
<td>10</td>
<td>98.6%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Computer</td>
<td>760</td>
<td>752</td>
<td>8</td>
<td>98.9%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Electrical</td>
<td>1024</td>
<td>1003</td>
<td>21</td>
<td>97.9%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Environmental</td>
<td>289</td>
<td>268</td>
<td>21</td>
<td>92.7%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Geological</td>
<td>125</td>
<td>112</td>
<td>13</td>
<td>89.6%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Management</td>
<td>315</td>
<td>308</td>
<td>7</td>
<td>97.8%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>1099</td>
<td>1068</td>
<td>31</td>
<td>97.2%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Mechatronics</td>
<td>744</td>
<td>733</td>
<td>11</td>
<td>98.5%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Nanotechnology</td>
<td>564</td>
<td>553</td>
<td>11</td>
<td>98.0%</td>
<td>20.8%</td>
</tr>
<tr>
<td>Software</td>
<td>602</td>
<td>597</td>
<td>5</td>
<td>99.2%</td>
<td>36.5%</td>
</tr>
<tr>
<td>Systems Design</td>
<td>481</td>
<td>478</td>
<td>3</td>
<td>99.4%</td>
<td>13.6%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7901</td>
<td>7707</td>
<td>194</td>
<td>97.5%</td>
<td>14.6%</td>
</tr>
</tbody>
</table>

Table 27: Co-op employment statistics for 2012 and 2013. Source: 2012 data is corrected from Vision 2015; 2013 data from Martha Foulds, Faculty of Engineering.
A full report on co-op programs is available upon request. Excerpts from this report are included below.

- The number of co-op students scheduled out each term is growing with Spring term showing the largest growth of students scheduled out. Most programs are showing either increasing or steady numbers, with the exception of Computer Engineering which has a highly variable rate of students scheduled out to work, and is showing an overall decreasing trend.

- Co-op employment rates have remained above 92.5% over the past 7 years, however some programs consistently lag behind the average (Chemical, Electrical, Mechanical, Environmental, Geological).

- In Winter and Spring terms, employment rates are lower as a result of first work term students. First work term students that struggle with employment are encouraged to go to their home country (international students) and incentive funding has been provided by the Dean to increase on campus hiring. Bridging Entrepreneurs to Students (BETS) is another program that has been developed to provide paid opportunities to 20 first work term students in Winter and Spring. Although these programs are very popular, they have not eliminated unpaid on campus jobs. The trend for unpaid jobs is decreasing.

- How and when students find employment also differs from term to term and program to program. In Fall term students are more successful through JobMine and find jobs earlier in the recruiting term. In Spring term, many students find jobs after the start of the work term as this term has the most competition from other co-op programs and regular students seeking summer jobs.

- There is a significant difference between programs of the numbers of jobs posted in a given term. Computer and Software have the highest number of jobs posted every term and Geological and Nanotechnology have the least number of jobs posted per term.

- There is a notable increase in students working in the US, and highly variable rates of students working internationally. The international work term rates are affected by international students that find work at home for their first work term – many of whom would have preferred to work in Canada had they been able to find employment here. The high US numbers are predominantly Software and Computer students going to Silicon Valley, although we are starting to see more diversity with both types of students and US locations.
• The top two industries that Engineering students work in are manufacturing and professional, scientific and technical Services. There is an increasing interest for finance jobs, with 10% of students from Computer, Management, Software and Systems Design having had these jobs over the past 7 years.

Strengths and challenges identified from the accreditation summaries, Vision 2015 and the CEAB report

Strengths

1. Engineering continues to bring into its offerings well-enrolled, innovative programs that attract top students. Mechatronics (start date 2003), Nanotechnology (start date 2005), Management Engineering (start date 2007) and Biomedical Engineering (start date 2014) are the most recent examples. The Faculty regularly reviews and refines its undergraduate curricula for its various programs in order to offer its students the high quality Engineering education they expect from Waterloo.

2. The Engineering undergraduate experience is enhanced by the quality of the professoriate and staff, and enriched by the large number of graduate students in the Faculty that are available to undergraduates as course TAs. The program is also enhanced by strong relationships with industry and a strong emphasis on safety.

3. Engineering continues to meet its undergraduate enrollment targets with very high quality students. Small increases to future enrollment targets to 2017 are consistent with the Faculty’s wish to maintain a high-quality program.

4. Engineering undergraduates are well supported by the Engineering Undergraduate Office and a Faculty commitment to ensuring high quality teaching and a modern, high-quality learning environment (support for capstone design projects, upgraded undergraduate labs, computing facilities, learning space, retention initiatives/recovery programs, appointment of an Associate Dean of Engineering for Teaching, etc.). The CEAB Visiting Team noted generally the high level of engagement of faculty with their students, and a generally satisfied and enthusiastic undergraduate body in Engineering.
5. Co-operative education is well integrated into Engineering undergraduate programs at Waterloo and is a strong differentiator from other engineering programs in Ontario and nationally. Co-op employment statistics are strongly positive and speak to the value employers place on Waterloo Engineering students. The CEAB Visiting Team noted broadly the value that co-operative education brings to the program.

6. The curricula of all Engineering programs, with minor exceptions (noted below), meet with the Curriculum Content criteria of the CEAB. All programs received PN (“progress noted”) as it relates to the CEAB’s graduate attributes.

**Challenges**

1. Females as Engineering faculty and as undergraduate students continue to be underrepresented relative to the gender balance in the Canadian population. However, the participation of females in the Faculty of Engineering both as students and professors at Waterloo is on par or above Ontario and Canadian averages. In fact, Waterloo, being one of the largest engineering schools in Canada, represents 913 women or ~8% to the total women in engineering across of the country.

Part of the imbalance of the participation of women in engineering, stems from the fact that there is a smaller number of young women who are “engineering ready” and have the needed courses to enter an engineering program by the end of high school. For example, only 33% of the engineering ready high school pool in Ontario were young women and would be eligible to apply to an engineering program. To address this imbalance, the Faculty has worked tirelessly over the past decade to support and promote Waterloo Engineering to females as the destination of choice to study, do research and become a professor. The result is that Waterloo has had a remarkable increase in the number of young women entering Engineering programs as showcased by the percentages of women entering 1st year engineering (15% in 2007 vs. 21% in 2013). This is due in large part to the efforts of UW’s Women in Engineering committee and their devotion to helping promote a career in

2 Graduate attributes are the following: (1) a knowledge base for engineering, (2) problem analysis, (3) investigation, (4) design, (5) use of engineering tools, (6) individual and team work, (7) communication skills, (8) professionalism, (9) impact of engineering on society and the environment, (10) ethics and equity, (11), economics and project management, and (12) life-long learning.

3 Information on gender balance in Engineering is from Prof. Mary Wells, Associate Dean of Outreach in Engineering and Chair of Women in Engineering.
engineering to young women through outreach programs such as GoEngGirl (started in 2005), Badge Day (started in 2010), the CATALYST Women’s conference (started in 2011) and Women in Engineering applicant events (started in 2010).

2. The number of professionally-licensed engineers in the Engineering professoriate continues to be an issue as flagged by the recent CEAB accreditation exercise. The Report of the Visiting Team on the Accreditation Visit rated the following programs as “unacceptable” in this regard: Civil, Computer, Electrical, Environmental, Mechanical, Software and Systems Design. The Geological Engineering program was rated as “marginal”. There were no issues related to professional licensure in Chemical, Management, Mechatronics and Nanotechnology programs. Further discussion on professional licensure is presented in the following section.

3. After re-allocation of curriculum content, the Visit Team report noted that three Engineering programs do not meet the Curriculum Content requirements of the CEAB. Computer Engineering and Management Engineering are both deficient in the number of natural sciences AU\(^4\). Geological Engineering is deficient in the number of Engineering science and Engineering design AU and received an “unacceptable” rating for the “Significant design experience” criterion. Further discussion on design content is presented in the following section.

4. The CEAB Visit Team did note for a number of programs that curricular improvements could be made in program and course content, course sequencing, lecture or lab scheduling and balance of course load over the program.

5. Participation in student international exchanges could be stronger. Only 7% of Engineering undergraduate students participate in an international experience during their programs. However, co-op employment statistics from 2009 to 2012 show a steady increase in the number of international placements, from 10.0% of the total in 2009 to 14.7% in 2012.

\(^4\) The CEAB defines Accreditation Units (AU) “on an hourly basis for an activity which is granted academic credit and for which the associated number of hours corresponds to the actual contact time of that activity between the student and the faculty members, or designated alternates, responsible for delivering the program”. AU are recognized across a series of disciplines: mathematics and natural sciences (min 420 AU), mathematics (min 195 AU), natural sciences (min 195 units), Engineering science and design (min 900 AU), Engineering science (min 225 AU), Engineering design (min 225 AU), complementary studies (min 225 AU). The Engineering program curriculum is also assessed via other Engineering science content, modern Engineering tools and laboratory experience. Three scores are possible or each category: acceptable, marginal, and unacceptable.
Overview of program responses to the “Report of the Visiting Team on the Accreditation Visit”

Each of the concerns raised by the Visit Team were responded to by the Faculty of Engineering in their “Response to the Report of the Visiting Team on the Accreditation Visit to University of Waterloo” document. In some cases, however, the findings of the CEAB Visit Team were challenged, and a program position defended or clarified.

The response document provides details as they relate to each Engineering program where an “unacceptable” or “marginal” rating was received vis a vis the CEAB criteria on Curriculum Content, Faculty and Financial Resources. Changes to be implemented span a wide spectrum and include course revisions and program changes, setting up task forces to examine specific issues, improving communications strategies, appointing specific champions to address certain issues and appointing curriculum advisors for individual programs (where there is more than one program in a department), and issues related to the structure and function of curriculum committees.

Responsibility for overseeing and resourcing changes lies with the Chair of each of the Engineering departments, and where appropriate, their Associate Chairs responsible for undergraduate studies. Resources, where needed, will come from departmental or Faculty budgets. The timing of changes will vary - some will be implemented immediately, others are dependent on the calendar submission schedule, and still others will depend on various issues that affect personnel.

Two prominent issues were the deficiencies in professional registration of instructors in the program (point #2 in previous section) and the teaching of Engineering design (point #3). Increased professional registration is an objective in the Faculty strategic plan, and all new faculty contracts now indicate the necessity for professional registration within five years. One of the responsibilities of the Associate Dean, Co-operative Education and Professional Affairs is to assist with this process in the Faculty.

Regarding Engineering design AUs in courses, it was noted in the program response that this was due to the Visit Team’s reallocation without consultation with program leaders and therefore conclusions reached by the Visit Team were questionable. In fact, “all Engineering programs at Waterloo now culminate with a capstone design sequence of at least two courses that provide a significant opportunity for students to conduct an open-ended design” and “Upon graduation, all of our programs provide substantial opportunities for students to acquire design skills within a combination of constrained and open-ended contexts”. Lastly, the Faculty feels that “it is inappropriate to expect
that all opportunities for design education be open-ended”. The Faculty will pay particular attention in the coming years to focus on design in the context of its students graduate attributes.

**Final report and decisions of the Canadian Engineering Accreditation Board**

After due consideration of the Engineering response document, a CEAB accreditation meeting took place May 31 to June 1, 2014. Overall, the Engineering undergraduate programs under review for accreditation were positively appraised. The CEAB decision (June 26, 2014) was as follows:

- Accreditation was granted to the following Engineering programs for six years to June 30, 2020 – Chemical, Civil, Environmental, Management, Mechanical, Mechatronics, Nanotechnology, Software and Systems Design.

- The Computer, Electrical and Geological engineering programs were each accredited for three years to June 30, 2017 with a report required by June 30, 2016.

For the programs accredited to 2017, the professional status of the professoriate was identified as a weakness or deficiency, and for the Electrical Engineering and Geological Engineering programs, there were also issues related to curriculum content that required addressing. With the exception of the above issues, all three programs were still generally positively appraised. All of the other Engineering programs either had no issues identified or just a small number of concerns where there was the potential for non-satisfaction in the near future.
Program Action Plans for Engineering Programs in response to the CEAB Accreditation Review

Prepared by:

Wayne Parker
Associate Dean, Cooperative Education and Professional Affairs

With support from:

Department and Electrical and Computer Engineering
Department of Civil and Environmental Engineering

October 2014
**Background**

The Faculty of Engineering employs an integrated approach for the CEAB accreditation and undergraduate program review processes. The CEAB process is employed as the primary external assessment of the program quality. In the recently completed accreditation cycle, three programs (Electrical, Computer and Geological) received comments that resulted in decisions that will require the submission of reports to the CEAB after 3 years while the remaining 9 programs received the maximum accreditation of 6 years. The following document provides the actions that have been identified by the associated Departments to address the specific concerns of the CEAB.

**Computer Engineering**

**Weakness:** Engineering Design taught by faculty licensed to practice engineering in Canada, is marginal. (Criterion 3.5.5)

**Response:** All new faculty hires in our department are contractually required to become licensed as Professional Engineers, and we therefore expect to have greater numbers of licensed faculty available to teach ED-intensive courses over time. In the meantime, licensed faculty have been reassigned to teach ED-intensive courses, such that we easily meet minimum ED constraints based on the accreditation team’s extensive revisions to our AUs.

**Electrical Engineering**

**Weakness 1:** The program is marginal in the specific areas of statistics and numerical analysis. (Criterion 3.4.3.1)

**Response:** We still contend that the accreditation team largely ignored the statistics content in ECE 200A and the extensive numerical methods laboratories that are part of ECE 205/MATH 211, ECE 206/MATH 212, and MATH 215. We however recognize that it was not explicitly stated in the calendar descriptions for these courses, and see this as an opportunity to strengthen both topics in our programs. The laboratory components of ECE 205/MATH 211, ECE 206/MATH 212, and MATH 215 will be separated and become two new courses, ECE 204A Numerical Methods I and ECE 204B Numerical Methods II, to be offered to 2A and 2B students starting in Fall 2015. Furthermore, we currently have a task force looking into our ECE 316 Probability and Random Processes course, with the objective of
revising the course into a new Probability and Statistics Course. We expect departmental approval for the new course in Fall 2014.

**Weakness 2:** The number of Accreditation Units in Engineering Design delivered by licensed engineers is marginal. (Criterion 3.5.5)

**Response:** All new faculty hires in our department are contractually required to become licensed as Professional Engineers, and we therefore expect to have greater numbers of licensed faculty available to teach ED-intensive courses over time. In the meantime, licensed faculty have been reassigned to teach ED-intensive courses, such that we easily meet minimum ED constraints based on the accreditation team's extensive revisions to our AUs.

**Geological Engineering**

1. *There is insufficient engineering design content and engineering science. (Criterion 3.4.4)*

**Program Response:**

Reallocation of Academic Units (AUs) by the Visiting Team reduced the total engineering design (ED) and engineering science (ES) content below the minimum required by CEAB.

The Department of Civil and Environmental Engineering and the Geological Engineering Board initiated a complete review and revision of the Geological Engineering (GEOE) curriculum in 2012 (it should be noted that the civil engineering and environmental engineering programs have also been reviewed and revised in parallel). The outcome of this process was an extensive revision of the GEOE curriculum from first year through fourth year. The revised curriculum has been approved by the Geological Engineering Board, Faculty Undergraduate Studies Committee, and Engineering Faculty Council in 2014. Approval by the Senate Undergraduate Council will be requested at the October 2014 meeting.

The curriculum revisions will increase the ES and ED content in the GEOE program. Revisions have focused on the timing of existing course offerings, condensing the current set of courses into a smaller subset, and introducing new courses while removing others. This will introduce more ES+ED into the curriculum for a total of 932 ES+ED AU, which is greater than the CEAB minimum of 900. This analysis accounts for adjustment of the AU content by the Visiting Team for ENVE 100, ENVE 127, GEOE 153, CIVE 381, EARTH 390, and Work Reports 200/300/400.

**Responsibility for Action:**

Director of Geological Engineering
Dept. Chair and Associate Chair for Undergraduate Studies, CEE Dept.
CEE Curriculum Committee (incl. GEOE)
**Resources Required:**
Minimal. The curriculum revisions have been completed within the constraint of not adding teaching tasks or other resource requirements.

**Timeline:**
Pending approval by the Senate Undergraduate Council in October 2014, the new curriculum will be implemented in the 2015/2016 UW Calendar. The first GEOE class with the new curriculum will graduate in 2020.

2. *In many cases the significant design experience is a research project. (Criterion 3.4.4.4)*

**Program Response:**
The fourth year design project or capstone project is a two course project (GEOE 400/401) that accounts for a substantial portion of the ED content in the AU analysis of the GEOE curriculum. Starting in the Fall 2013 term, the format of the GEOE 400/401 Capstone Design Project was significantly altered to better meet the CEAB expectations for engineering design. The Program Visitor reviewed samples from a previous format of this course, some of which were research-based and not consistent with the CEAB expectation for design.

Since the Fall 2013 term, the GEOE 400/401 project course has been held in conjunction with the environmental engineering students in ENVE 430/431. This course model is for a group design project, with strong emphasis on innovative development of design alternatives, explicit consideration of constraints including social, economic and environmental impacts, and multi-objective analysis and optimization of alternatives. There were some transition issues for GEOE students and technical (faculty) advisors in shifting to the ENVE 430/431 course model.

Starting in early 2014, a CEE Capstone Design curriculum committee was formed to review the course objectives, design project requirements and course implementation for the civil, environmental and geological programs. A course Terms of Reference was developed to define the course expectations, requirements and delivery. A CEE Capstone Design Coordinator was appointed to oversee the course development and implementation of new initiatives. This will be an ongoing appointment.

The Fall 2014 term represents the second implementation of GEOE 400/401 with ENVE 430/431. The Capstone Design Coordinator is one of the GEOE 400/ENVE 430 instructors for the Fall 2014 term to help ensure the new initiatives and emphasis on design. This includes communication with faculty technical advisors with regards to the project design requirements, and working with the students and technical advisors to develop project concepts with appropriate design emphasis rather than research.

The ongoing efforts to enhance the GEOE capstone design courses (as well as civil and environmental) reflect the importance of these courses to the ED content in the curriculum,
and will prevent a future occurrence of the deficiency noted during the 2013 CEAB visit. Assignment of teaching tasks for the capstone design courses will be done to ensure consistent implementation of the new course model and initiatives for GEOE 400/401.

**Responsibility for Action:**
Director of Geological Engineering  
Dept. Chair and Associate Chair for Undergraduate Studies, CEE Dept.  
CEE Capstone Design Coordinator

**Resources Required:**
Minimal. The capstone design course curriculum revisions to date have been completed within the constraint of not adding teaching tasks or other resource requirements.

**Timeline:**
The revised course curriculum for GEOE 400/401 has been implemented for F14/W15 in parallel with the ENVE 430/431 course. These changes will affect GEOE graduates starting with the 2015 graduating class.

3. There is insufficient engineering science and engineering design taught by faculty licensed to practice engineering in Canada. (Criterion 3.5.5)

**Program Response:**
The Department of Earth and Environmental Sciences as well as the Department of Civil and Environmental Engineering have agreed to the following timeline to ensure all unlicensed (non PEng) faculty teaching ES and ED in core courses and technical electives within the GEOE Program will comply with the following schedule:
1. All unlicensed faculty will apply for their PEng license by August 31, 2014. Those with undergraduate degrees in engineering (BASc or equivalent) will apply for a full license. Those with an undergraduate degree in science (BSc or equivalent) will apply for a limited license.
2. All unlicensed faculty must pass the professional practice exam before April 30, 2015.

Following the GEOE curriculum revision, the minimum path AU count for ES+ED as taught by licensed PEng has been increased to comfortably exceed the minimum required by CEAB. The assignment of teaching tasks will be continuously reviewed to ensure that licensed engineers are teaching key courses with ES and ED content in the curriculum.

**Responsibility for Action:**
Dean of Science, Chair of Earth Sciences  
Dean of Engineering, Chair CEE Dept.

**Resources Required:**
The Faculty of Engineering will continue to reimburse faculty for expense incurred during the process of obtaining professional engineering licensure (application fees, exam fees, etc.)

**Timeline:**
All unlicensed faculty will apply for their PEng license by August 31, 2014. All unlicensed faculty must pass the professional practice exam before April 30, 2015.
**Concern:**

4. *The quality of the education experience may be adversely affected by the morale of the students.*
   
   *(Criterion 3.5.1.1)*

**Program Response:**

The Program Visitor noted three key morale-related issues based on interviews with GEOE students:

1. **Identity** – As a small program, the students stressed that they did not feel like they were part of the program until 3rd year.
2. **Communication** – Students feel that are not a priority in either CEE or the EES departments. Because of this, they feel that there isn’t a clear line of communication for things like scheduling conflicts for lectures and lab times.
3. **Capstone Design** – Students expressed strong dissatisfaction with a perceived lack of suitable design projects in the recently established group-based design course, which combines GEOE and ENVE students.

The Director of the GEOE program and the CEE Dept. have implemented a number of initiatives to address the morale issues raised by the students.

**Identity**

The director of the GEOE program will establish a “town hall” meeting at the beginning of each term so that all GEOE students on campus can attend. This will allow all GEOE students to interact with their fellow GEOE colleagues across all years, establish a GEOE community, and provide the opportunity for mentoring to grow organically.

During F13 and S14, the Director of GEOE held “town hall” meetings with all of the GEOE students on campus. It was very evident at these meeting that 1A and 1B students entirely defer to the advice that upper-year students provide on how to make decisions to manage their time and resources in order to succeed in the program. In previous years, the 4th year GEOE students had their own space, which was provided by CEE. It is imperative that EES and CEE allocate resources to enable all GEOE students to co-exist in the same space. Given that this pool of students is about 120, it would be analogous in size to the CIVE study area provided by CEE. Various room options are being considered at this time.

**Communication**

The implementation of regular “town hall” meetings will improve communications between the GEOE cohorts and the Director. In addition, all GEOE student cohorts (starting in 1A) will be assigned a class professor who will be responsible to follow each cohort through their undergraduate career. The class professor will serve as the first-point of communication for program and related issues. They will meet bi-weekly (6 times/term) with each cohort during the scheduled class-professor time slot. The GEOE director will be responsible to communicate with each class professor and convey concerns that cannot be rectified to the Associate Chairs for Undergraduate Studies or the Department Chairs (Civil and Environmental Engineering and Earth and Environmental Sciences).
Starting immediately, faculty members from CEE and EES will be assigned as class professors for all GEOE classes. Dr. Dipanjan Basu has been assigned the position of Associate Director of the GEOE Program effective May 2014.

**Capstone Design**
As described in the response to Item 2. under “Deficiencies,” the capstone design course model for the GEOE program has been revised considerably. The course requirements and expectations have been more clearly defined, and are being communicated to the students and faculty technical advisors by the Capstone Design Coordinator and course instructor. The W14 course instructor met with the 3B students in advance of their 4A term to ensure that this cohort of students (who entered the GEOE Capstone Design Project course in the F14 term) had a clear indication of the course expectations, and where to seek appropriate guidance to help them develop a suitable design project.

| **Responsibility for Action:** |
| Director of Geological Engineering |
| Chair, Earth Sciences |
| Chair, CEE |

| **Resources Required:** |
| Minimal. The implementation of town hall meetings and Class Professors does not add teaching tasks or other resource requirements. |
| There is a commitment to assign all GEOE students with an appropriate study space; however, at this time various room options are being considered. |

| **Timeline:** |
| The town hall meetings and Class Professors have already been implemented. Ongoing actions will be implemented on a term-by-term basis by the Director of GEOE. |