University of Waterloo
SENATE
Notice of Meeting

Date: Monday 16 November 2020
Time: 3:30 p.m.
Place: Microsoft Teams Videoconference

	OPEN SESSION	Action
3:30	**Consent Agenda** **Motion:** To approve or receive for information by consent items 1-4 below.	
	1. Minutes of the 19 October 2020 Meeting	Decision
	2. Reports from Committees and Councils	
	a. Joint Report – Graduate & Research Council and Undergraduate Council	Decision
	b. Graduate & Research Council	Information
	c. Undergraduate Council	Decision/Information
	3. Report of the President	
	a. Recognition and Commendation	Information
	4. Reports from the Faculties	Information
	Regular Agenda	
3:35	5. Business Arising from the Minutes	Information
3:40	6. Research Presentation – Charmaine Dean, Vice-President, Research & International	Information
	7. Reports from Committees and Councils	
3:50	a. Joint Report – Graduate & Research Council and Undergraduate Council	Decision
4:00	b. Graduate & Research Council	Decision
4:10	c. Undergraduate Council	Decision
4:20	d. University Committee on Student Appeals	Information
4:30	8. Report of the President	Information
4:35	a. Academic Affairs Working Group Update	Information
4:45	9. Q&A Period with the President	Information
4:50	10. Report of the Vice-President, Academic & Provost	Information
5:00	11. Other Business	
	CONFIDENTIAL SESSION	
5:05	12. Minutes of the 19 October 2020 Meeting	Decision
5:10	13. Business Arising from the Minutes	
5:15	14. Report from Nominating Committee for Honorary Degrees	Decision

	CONFIDENTIAL SESSION	**Action**
5:25	15. Report of the President	Information
	16. Other Business	

9 November 2020
KJJ/ees

Karen Jack
University Secretary

University of Waterloo
SENATE
Minutes of the 19 October 2020 Meeting

Present: Sheila Ager, Jean Andrey, Sandra Banks, Kankar Bhattacharya, David Billedeau, Anne Bordeleau, Dan Brown, Kofi Campbell, Jeff Casello, Robyn Clarke, David Clausi, Joan Coutu, Neil Craik, Peter Deadman, Charmaine Dean, David DeVidi, Catherine Dong, Aiman Fatima, Paul Fieguth, Wendy Fletcher, Cindy Forbes, George Freeman, Martha George, Mark Giesbrecht, Robert Gorbet, Julia Goyal, Kelly Grindrod, Feridun Hamdullahpur (chair), David Ha, Dennis Huber, Natalie Hutchings, Karen Jack (secretary), Martin Karsten, Achim Kempf, Sabrina Khandakar, Veronica Kitchen, Christiane Lemieux, Robert Lemieux, Lili Liu, Ellen MacEachen, Sara Marsh, Peter Meehan, Samantha Meyer, Ian Milligan, Zoran Miskovic, Graham Murphy, Beth Namachchivaya, Cathy Newell Kelly, Daniel O'Connor, Troy Osborne, David Perrin, William Power, Sam Rubin, James Rush, Max Salman, Emma Schuster, Abbie Simpson, Sivabal Sivaloganathan, Richard Staines, Sharon Tucker, Twesh Upadhyaya, Cristina Vanin, Paul Ward, Mary Wells, Stanley Woo, Nancy Worth, Samer Zu'Mot

Guests: Jean Becker, Kathy Becker, Bruce Campbell, Aldo Caputo, Ingrid Cowan, Madison Cox, Katie Damphouse, Yufei Du, Anna Esselment, Barbara Forrest, Laureen Gehl, Heather George, Mike Grivicic, Candace Harrington, John Hirdes, Micaela Kelly, Andrea Kelman, Nick Manning, Norah McRae, Christine McWebb, Bessma Momani, Susan Oestreich, Alice Raynard, Chris Read, Susan Roy, Emily Schroeder, Anindya Sen, Daniela Seskar-Hencic, Nadia Singh, Allan Starr, Sheri Sutherland, Brandon Sweet, Mat Thijssen, Sean Thomas, Caitin Vaux, April Wettig, Diane Williams, Kathy Winter

Absent: Mike Ashmore, Dominic Barton*, Lisa Bauer-Leahy, Michael Beauchemin, Carmen Bruni, Eric Croiset, Lori Curtis*, Fraser Easton*, John Haddock, Jennifer Kieffer, Kesen Ma, Blake Madill, Teferi Mergo, Barb Moffatt, Richard Myers, Erin O'Connell**,** Neil Randall, Marcus Shantz*, Joanne Shoveller, Siva Sivoththaman, Bruno Tremblay, Johanna Wandel, Clarence Woudsma, En-Hui Yang

*regrets

OPEN SESSION

The chair welcomed senators to the meeting and extended a special welcome to recently elected senators attending their first meeting: Lori Curtis, Catherine Dong, Sara Marsh, and Sivabal Sivaloganathan. In an effort to raise awareness about the University's United Way campaign, members watched a video of the deans undertaking their annual trek into the meeting dressed as members of the cast of *Star Trek*. Kudos from Senators followed.

Consent Agenda
Senate heard a motion to approve or receive for information the items on the consent agenda.

Freeman and Simpson.

1. MINUTES OF THE 21 SEPTEMBER 2020 MEETING
Senate approved the minutes of the meeting.

2. REPORTS FROM COMMITTEES AND COUNCILS
Graduate & Research Council. Senate received the report for information.

Undergraduate Council
Faculty of Arts, AFM – Removing Work Term Reflections from Co-op Requirements
Senate heard a motion to approve changes to the regulations re: accounting and financial management ("AFM") co-op work term reflections, effective 1 September 2021.

Faculty of Arts, Fine Arts – Honours Arts Co-op Sequence Change
Senate heard a motion to approve changes to the co-op sequence for Fine Arts students in Honours Arts Co-op, effective 1 September 2021.

Faculty of Arts, Communication Requirement
Senate heard a motion to approve changes to undergraduate communication requirements in the Faculty of Arts, effective 1 September 2021.

Faculty of Arts, Restrictions on Multiple Plan Combinations
Senate heard a motion to approve changes to the Faculty of Arts' regulations re: multiple plan combinations, effective 1 September 2021.

Faculty of Science, Grades and Academic Standings – Academic Standings
Senate heard a motion to approve a change to the Faculty of Science's regulations re: academic standings, effective 1 September 2021.

The remaining items were received for information.

3. REPORT OF THE PRESIDENT

Recognition and Commendation. Senate received the report for information.

Tenure and Promotion. Senate received the report for information.

4. REPORTS FROM THE FACULTIES

Senate received the reports for information.

In response to a senator's query, the secretary confirmed that the Faculty of Applied Health Sciences report will be corrected after the meeting to reflect the withdrawal of two department name change recommendations.

The question was called, and the motion carried unanimously.

Regular Agenda

5. BUSINESS ARISING FROM THE MINUTES

There was no business arising from the minutes.

6. RESEARCH PRESENTATION – HEATHER GEORGE, PhD CANDIDATE HISTORY

Jeff Casello introduced Heather George, PhD candidate in History. George presented the topic, "Haudenosaunee Storytelling and Cultural Practice in Museology: Building Relationships Tsi Teyótte Karhá:kon (at the Edge of the Woods)." George spoke to her acknowledgements and then informed senators about: her study of Haudenosaunee storytelling and museology and their nexus with efforts toward reconciliation; the ten cultural organizations in her focus, and relevant laws and treaties; the interdisciplinary nature of her research; specific ethical considerations. In discussion: some of the difficulties accessing resources in light of the pandemic, but also because of some repatriation challenges; ways George is using technology. Members offered a virtual round of applause to George.

7. REPORTS FROM COMMITTEES AND COUNCILS

Graduate & Research Council

New Program, Faculty of Arts

Senate heard a motion to approve the Graduate Diploma (GDip) in Computational Data Analytics for the Social Sciences and Humanities, effective 1 January 2021, as presented at Attachment #1.

Dean and Ager. Carried unanimously.

Undergraduate Council

Faculty of Arts, English Language and Literature

Senate heard a motion to approve the creation of a diploma in Creative Writing, effective 1 September 2021.

DeVidi and Ager. Carried unanimously.

St. Jerome's University, Italian Language

Senate heard a motion to approve the creation of a diploma in Italian language, effective 1 September 2021.

DeVidi and Freeman. Carried unanimously.

Senate heard a motion to approve the motions involving changes as an omnibus motion:

Faculty of Arts, Theatre and Performance

Senate heard a motion to approve changes to the Honours Theatre and Performance plan and the Theatre and Performance Minor, effective 1 September 2021.

Faculty of Arts, Fine Arts

Senate heard a motion to approve changes to the Honours Fine Arts Studio Practice plan, effective 1 September 2021.

Faculty of Arts, Fine Arts

Senate heard a motion to approve changes to the Three Year General Fine Arts plan, effective 1 September 2021.

Faculty of Arts, Fine Arts

Senate heard a motion to approve changes to the Fine Arts Studio Minor, effective 1 September 2021.

Faculty of Arts, Fine Arts

Senate heard a motion to approve changes to the Digital Art Specialization, effective 1 September 2021.

Faculty of Arts, Political Science

Senate heard a motion to approve changes to the four-year general political science and honours political science plans, effective 1 September 2021.

Faculty of Arts, Religious Studies

Senate heard a motion to approve changes to the Jewish Studies Minor, effective 1 September 2021.

Faculty of Arts, Spanish and Latin American Studies

Senate heard a motion to approve changes to the three-year general Spanish, four-year general Spanish and honours Spanish plans, effective 1 September 2021.

Faculty of Arts, Spanish and Latin American Studies
Senate heard a motion to approve changes to the diploma in Latin American Studies, effective 1 September 2021.

DeVidi and Ager. Carried unanimously.

Senate heard a motion to approve the motions involving inactivations as an omnibus motion:

Faculty of Arts, Fine Arts
Senate heard a motion to approve the inactivation of the intensive studio specialization, effective 1 September 2021.

Faculty of Arts, Spanish and Latin American Studies
Senate heard a motion to approve the inactivation of the intensive Spanish specialization and the Spanish/English translation specialization, effective 1 September 2021.

Faculty of Science, Geochemistry
Senate heard a motion to approve the inactivation of the honours geochemistry plans (regular and co-op), effective 1 September 2021.

DeVidi and Lemieux. Carried unanimously.

8. REPORT OF THE PRESIDENT/Q&A WITH THE PRESIDENT

Update. Speaking to his presentation, and, at times inviting others to speak (as indicated), the president advised senators about: rankings; performance indicators; an update on the strategic plan and emerging priorities and plans, status, and next steps; recent activities in government relations; an update on the COVID-19 assessment and testing centre; occupancy monitoring; an update about the Academic Affairs Working Group's efforts (Rush); an update on the implementation of student mental health recommendations (John Hirdes); a sustainability update (Mat Thijssen); progress made on the President's Anti-Racism Taskforce and next steps (Dean); work done by the University with Tony Wirjanto for the World Economic Forum regarding insurance (Dean); coming Town Halls.

In discussion: the University's formal lecture period and agreement by DeVidi to consider with the associate deans whether potential communication to instructors about it would be useful; efforts undertaken in the last few years to improve retention and the University's good standing in this regard.

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

Degrees, Diplomas and Certificates. Senate heard a motion to approve the lists of candidates for degrees, diplomas and certificates as recommended by the Faculty councils and the associate vice-president, graduate studies and postdoctoral affairs, and to authorize the chair (on behalf of Senate and report at its subsequent meeting) based on the recommendation of the registrar or, (in the case of graduate students) the associate vice-president, graduate studies and postdoctoral affairs, to add to or change the lists of candidates for degrees, diplomas and certificates, provided that the chair report back to Senate to advise of any such additions or changes.

Rush and Newell Kelly. Carried unanimously.

11. REPORT OF THE VICE-PRESIDENT, RESEARCH AND INTERNATIONAL

Senate received the report for information and heard from Dean about: the richness of COVID-19 related research being undertaken at the University; recent funding success in the humanities and social sciences; the restart effort of the innovation ecosystem.

12. OTHER BUSINESS

There was no other business.

Senate convened in confidential session.

31 October 2020

Karen Jack
University Secretary

CONFIDENTIAL SESSION

The confidential minutes have been removed.

University of Waterloo
SENATE UNDERGRADUATE COUNCIL
and
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
16 November 2020

Senate Graduate & Research Council (SGRC) met on 5 October 2020 and Senate Undergraduate Council (SUC) met on 6 October 2020. The councils considered the preferred name guidelines and agreed to forward this item to Senate for approval as part of the consent agenda.

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

FOR APPROVAL

Motion: That Senate approve the preferred name guideline outlined below, effective 1 September 2021.

Background and rationale: New text for the Academic Calendars (Undergraduate and Graduate) is being created to formalize the University of Waterloo's current practices regarding student name usage on campus.

In response to feedback from students, the "Improving Name Usage" project was launched to students in January 2020 to allow them the opportunity to use a chosen/preferred first name broadly on campus, while retaining their legal first name on tax receipts and official documents. This project, influencing 26 information systems throughout campus, required collaboration among a number of key partners, and the participation of number of committees. Privacy and human rights legislation informed the process, and student consultations helped drive decision-making. More specifically, direction was provided, and decisions were made, through numerous meetings with units including the Secretariat, Legal Office, Equity Office, Glow Centre for Sexual and Gender Diversity, and the Gender and Sexual Diversity Working group. Policy 33 (Ethical Behaviour) was also considered during the decision-making process.

With the introduction of the chosen/preferred first name option in January 2020, this proposed Calendar text adds transparency for students and ensures they understand their options. The University continues to work on measures to improve equity and inclusion for its students, and data related to names, gender identity, and pronoun use will evolve. Based on publicly available websites and academic calendars, the University of Waterloo appears to be one of the early adopters of a chosen/preferred name option compared to other Canadian universities.

The University is committed to displaying a student's chosen/preferred first name wherever possible, and to continuing to increase that use across various systems, processes, and documents. Thus, specifics about current use have not been included in the academic calendar text, allowing greater flexibility to make changes by not being tied to the University calendar publication timelines.

- Examples of official documents displaying legal name: transcripts, diplomas, tax receipts, official and/or legal University letters.
- Examples of where chosen/preferred first name is displayed: systems (e.g., LEARN, Quest, WaterlooWorks), class and exam lists, email, WatCard. Students can use this name on forms and in many communication they request (e.g., reference letters).

The legal name is being treated as protected data and employees have access only to students' chosen/preferred first name – unless the employee role demonstrably requires that they have access to the legal name.

Details as well as procedural aspects of changing a student's legal name and/or their chosen/preferred first name are outlined on The Centre's "updating personal information" web page.

- A legal name change requires the completion of a Change of Name Form, and must be accompanied by legal documentation or photo identification (e.g., marriage certificate, adoption papers, driver's license, passport, etc.). For those that don't have the required documentation or identification, they can have a Commissioner for Taking Affidavits sign a statutory declaration.
- A chosen/preferred first name change is done via WatIAM, requires no documentation, and can be done as often as a student desires.

Proposed Calendar text:
New Calendar page: Recording Students' Names

To maintain the integrity of the University of Waterloo's student records, each student is required to provide, either on application for admission or on personal data forms needed for initial registration, their complete legal name. The University requires that individuals use their legal name on all legal records and official documents.

Students' Chosen/Preferred First Name
A student's chosen/preferred first name is typically the first name that they commonly use, and may differ from their legal first name. Waterloo also recognizes that, as an inclusive community, many of its members use first names other than their legal first names to identify themselves. The University acknowledges that as per the Ontario Human Rights Code, students have the right to be addressed by their chosen name.

Changing Students' Names on Official Documents
Students who wish to change their legal name(s) (first, middle, and/or last) used for official documents are required to provide acceptable documentation or photo identification reflecting the change, or in their absence, complete a statutory declaration.

Note: It is not currently possible to accommodate requests to include accents and special characters on official transcripts nor can these characters be displayed as part of the student's centrally maintained academic record. Students wishing to include accents or special characters in their names on diplomas need to provide that information during the Application to Graduate process.

More information
View the updating name(s) web page for options and instructions.

/rmw & kw

Charmaine Dean Vice President, Research & International

David DeVidi
Associate Vice-President, Academic

Jeff Casello Associate Vice-President, Graduate Studies and Postdoctoral Affairs

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
16 November 2020

Senate Graduate & Research Council met on 5 October 2020 and agreed to forward the following items to Senate for information as part of the consent agenda.

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

FOR INFORMATION

CURRICULAR SUBMISSIONS

On behalf of Senate, council approved new courses and minor program revisions for the Faculty of Engineering (electrical and computer engineering, civil and environmental engineering, chemical engineering) and the Faculty of Mathematics (applied mathematics, computer science).

/*mh kw* Jeff Casello
Associate Vice-President, Graduate Studies and Postdoctoral Affairs

Charmaine Dean
Vice President, Research & International

University of Waterloo
SENATE UNDERGRADUATE COUNCIL
Report to Senate
16 November 2020

Senate Undergraduate Council met on 6 October 2020 and agreed to forward the following items to Senate. Council recommends that these items be included for information or approval, as noted, in the consent agenda.

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

FOR DECISION

REGULATION CHANGES

Engineering
Options, Specializations and Electives

1. **Motion:** That Senate approve the proposed revisions to the grade regulations for options, specializations and electives, effective 1 September 2021.

Rationale and Background: The text in #3 below is modified to acknowledge there may be stricter grade requirements for some options or specializations.

Current Calendar Text: http://ugradcalendar.uwaterloo.ca/page/ENG-BASc-and-BSE-Options-Electives-Engineering1

Revised Calendar Text (bold = new, strikethrough = deleted)

Options, Specializations and Electives for Engineering Students

1. The Bachelor of Applied Science (BASc) and Bachelor of Software Engineering (BSE) consist of two course groupings:
- Compulsory core courses within the plan, and
- Elective courses.
  - Complementary Studies Electives: Complementary Studies elective courses must be chosen from subjects that complement and provide breadth to the engineering curriculum. This Complementary Studies requirement gives students some breadth of studies related to their role as educated professionals in society. (See Complementary Studies Requirements section and plan section for more information.
  - Technical Electives: Technical elective courses are usually chosen from engineering department courses which will give some depth in the student's discipline. (See Engineering plan descriptions for listings of suggested elective course groupings of this type.) Students with special interests may, with the approval of their department associate chair (or academic advisor) structure individual elective course groupings.

2. The Faculty of Engineering recognizes both options and specializations within the BASc and BSE degrees. For students that meet an option or a specialization requirement, the credential is recognized on both the diploma and the transcript. Options are intended to recognize a field of study outside of the basic degree while specializations are intended to recognize success in a concentration within the electives available within the degree specification. Descriptions of the options are provided in BASc and BSE Specific Degree Requirements and descriptions of the specializations are within the specific plan descriptions. The options and option co-ordinators are listed on the designated options and co-ordinators web page. The option co-ordinator can assist in the organization and selection of courses for the option.

Students are encouraged to use a Plan Modification Form and are required to declare an option or specialization for it to be recognized as part of their degree and to appear on the diploma.
3. For an option or specialization to appear on the transcript, a student must achieve an average of at least 60% in the option or specialization courses and at least 50% in each course. **Stricter grade requirements may be imposed for certain options or specializations.**
4. Because options can require students to take extra courses, a student's academic standing must be such that the extra load will not lead to a high risk of failure, and permission of the department associate chair must be obtained. Details follow later in this section. BSE students should refer to the section on Software Engineering, for options that are open to them.
5. Although Engineering does not offer minors to students enrolled in Engineering, many departments of other faculties do. Engineering students who choose a minor must take extra courses chosen from lists prepared by the department offering the minor. Courses in a minor may be used to satisfy some of the technical electives or complementary studies electives.
6. In addition, students may take advantage of other opportunities including the Interdisciplinary Alternatives for Engineering Students, the Accelerated Master's Program, and a concurrent Bachelor of Arts (BA) degree. A concurrent BA degree will require extra courses as well as agreement by both Faculties of Arts and Engineering; interested students should consult their undergraduate advisor.

Mathematics
Upgrading a General Degree to Honours Degree

2. **Motion:** That Senate approve the proposed revisions to the regulation regarding upgrading a general degree to an honours degree, effective 1 September 2021.

Background and Rationale: Under the current process, students graduating with a general degree in Mathematics must declare their intent to return for a four-year Honours degree before graduating, and then also apply for readmission later. This change removes the need to declare their intent ahead of time, and clarifies the process for readmission.

Current Calendar Text: http://ugradcalendar.uwaterloo.ca/page/MATH-Degree-Requirements-for-Math-students

Revised Calendar Text (bold=new, strikethrough=deleted)

Update Note 1 as follows:
1. ~~Students are not normally awarded an Honours BMath degree if they already hold a General BMath degree. Petitions for exceptions to this rule will normally be considered only after an absence from the Faculty of several terms.~~ **Graduates who were previously awarded a general degree may apply for readmission to upgrade to an honours degree. These applications will be considered on a case-by-case basis. Students wishing an upgrade are required to return the earlier degree in order to be granted the upgraded degree. Courses and grades from the general degree would be used towards the upgraded degree if applicable, but students would otherwise need to meet current calendar requirements.**

Mathematics
Update Communications Skills List 2

3. **Motion:** That Senate approve the proposed revisions to the communications skills list 2, effective 1 September 2021.

Background and Rationale: Add ENGL 101B (Introduction to Rhetorical Studies) to the Communication Skills List 2. This course was removed from this list in 2017. The Department of English is now able to support the demand and as recommended we are re-adding this course to List 2.

FOR INFORMATION

ACADEMIC PROGRAM REVIEWS

Two-Year Report – Applied Math, C&O, Computational Math, Pure Math. Following discussion, Council approved the two-year report on behalf of Senate. See Attachment #1.

MINOR PLAN & CURRICULAR MODIFICATIONS

Council approved the following on behalf of Senate:

- minor plan changes for the faculties of applied health sciences (medical physiology minor, honours recreation and leisure studies, general recreation and leisure studies, honours recreation and sport business, honours therapeutic recreation, honours tourism development, bachelor of science, honours health studies, bachelor of public health, honours, pre-clinical specialization, gerontology minor, aging studies option); arts (cultural identities minor, three-year general English – literature and rhetoric); engineering (biomedical engineering, electrical engineering and computer engineering, management engineering, management sciences option, mechatronics engineering, artificial intelligence option, biomechanics option, entrepreneurship option, life sciences option, mechatronics option, science, technology and values option, statistics option); environment (economy and society specialization, climate change and environment specialization, geomatics specialization, knowledge integration, decision support and geographic information systems specialization, diploma of excellence in geographic information systems, urban design specialization, diploma in environmental assessment, urban studies minor); mathematics (computer science); science (computational physics, honours physics, honours physics and astronomy, honours mathematical physics, joint honours X with physics, honours life physics, biophysics specialization, honours life physics, medical physiology specialization, honours materials and nanosciences, medical physiology minor); and software engineering.
- new courses for the faculties of applied health sciences (dean of applied health sciences, school of public health and health systems, kinesiology); engineering (electrical and computer engineering, biomedical engineering, mechanical and mechatronics engineering, management sciences, society, technology and values, systems design engineering); environment (geography & environmental management, knowledge integration, school of planning); mathematics (computing and financial management, computer science); and science (physics).
- course changes for the faculties of applied health sciences (school of public health and health systems, kinesiology, recreation & leisure studies); arts (English, fine arts, gender and social justice, philosophy, sociology); engineering (Conrad School of Entrepreneurship & Business, electrical and computer engineering, biomedical engineering, mechanical and mechatronics engineering, management sciences, systems design engineering); environment (school of environment, resources & sustainability, school of planning, school of environment, enterprise & development), mathematics (combinatorics and optimization, computer science, pure mathematics, statistics); and science (biology, physics).
- course inactivations for the faculties of applied health sciences (school of public health and health systems, kinesiology, recreation & leisure studies); engineering (Conrad School of Entrepreneurship & Business, Management Sciences); mathematics (pure mathematics); and science (physics).

David DeVidi
/rmw Associate Vice-President, Academic

Two-Year Progress Report
Applied Mathematics, Combinatorics and Optimization, Computational Mathematics, and Pure Mathematics (BMath)
December 2019

Background

This particular combination of plans was reviewed for the first time in 2015-16, but each of these plans has been reviewed twice before, as part of a larger review of all undergraduate non-Computer Science plans in the Faculty of Mathematics, in 2008 and 2001 (Computational Mathematics did not exist in 2001, and so it was not reviewed at that time).

The 2015-16 review was carried out by Professor Michael Lamoureux, from the University of Calgary, and Professor Mary Pugh, from the University of Toronto. In addition, Professor Michael Dixon, from the Department of Psychology, served as an internal reviewer.

Progress on Implementation Plan

Recommendations

1) Significant effort must be made to improve the information and advice provided to potential and current undergraduate students in the programs in mathematics, whether that be through online resources and webpages, or in-person advising. The wide variety of math programs offered from these four units should be presented as a cohesive unit that students can enter with confidence. Currently, online information on what programs are available and their requirements is spread across many webpages, presenting a confusing matrix of data for the students to sort through. Some programs are described in various Department webpages, others in the Faculty's webpages, and many details are explained in University documents. In particular, Computational Mathematics being independent of Departments does not appear in any prominent way in the online documentation. Some information on possibilities and expectations (such as the option to take graduate courses while an undergrad, or to take a minor outside the Faculty) seems to be absent altogether.

   The Departments state that they do not have the resources to do one-on-one advising with all students. Even if such advising were available, it would have to be complemented by clear, easy-to-understand documentation on proper program information which would allow

students to explore their options and formulate their questions. It is strongly recommended program documentation for students be revised and clarified for student use. Such documentation could include student profiles of real (or hypothetical) students including the generic student who came in with top grades and went through the programs with the goal of going to graduate school in math, the ''good at everything" student who came in with top grades and either needed to discern a single focus or chose to focus on two subjects, the "Renaissance/Non-standard" student who came in with top grades and wants to study both computer science and psychology, the "challenged" student whose path through university has had bumps in the road and how they kept on track and so forth. One does see student profiles if one clicks on the "Future Undergraduates" link of the Faculty of Mathematics page but current undergraduates wouldn't be looking there.

Status: Completed
Details: The Faculty of Mathematics is constantly updating its web presence, and seeking better tools with which to track and assist our students. The size of the faculty makes a distributed representation of its many plans and programs an unavoidable reality. Faculty web pages act as an aggregator, provide a broad overview of what programs are available in the various units, and include links to detail web pages that are owned by the respective units. Each unit constantly maintains the information on programs they own. Many of the units also present additional useful tools for their programs, like degree checklists, as well as profiles of students in their programs. The Undergraduate Calendar has all of the information described in the above recommendation, and departmental and Faculty-level advisors can and do dispense this information to students on a daily basis. More advisors have been hired to help students, and more communications personnel have been hired to assist departments in making opportunities more apparent to students.

2) We encourage the Departments and Faculty to reconsider the program entrance requirements. While the emphasis on contest exams scores (in conjunction with high school grades) has served the Departments well in selecting highly competitive, performance-focused students who will succeed in the program, it also may bias against creative, mathematically talented individuals who don't necessarily like competition. This does not serve the wider community of potential students who could have a full and productive career in mathematics. We understand that the math competitions and math education outreach are a vital service that the Faculty of Mathematics is providing to Canada and that, as a result, it's part of its branding. We also understand that the mandate of the University is broader than simply trying to train undergraduates who might become world-class research academics. That said, it would likely be healthier if the math competition aspect be significantly downplayed the moment students arrive at Waterloo and start the next stage of their lives.

Status: Completed

Details: From the Final Assessment Report: "This recommendation is for something beyond the mandate of the reviewers, and outside of the mandate of the units being reviewed; admissions are handled by the Faculty of Mathematics, and math students enter into the programs under review after their first year of study. Despite that, it is worth mentioning that the faculty has made a number of changes recently to the way that undergraduate students are admitted. All students are now required to supply a "Admissions Information Form" with their applications. This allow the students to discuss things beyond their grades and competition scores. The Faculty of Math takes these forms quite seriously, and tries to admit students who are "well-rounded" as well as being very strong academically. It has been the faculty's experience that these are the students that are most successful in University."

3) A process should be put in place to continuously update and keep current the courses and curricula in the programs. It was somewhat surprising to these reviewers to see, for instance, that the Pure Math program is almost identical to similar programs from 35 years ago. There needs to be room in the programs for modern advances. Ideally, these course reviews would be done as a team by the three Departments (Applied Math, Combinatorics & Optimization, and Pure Math). In addition, it would be wonderful if there were some sort of teaching credit mechanism by which a faculty member from one department could teach a course that is affiliated with another department. One would want to have some sort of bookkeeping to ensure that over a five year windows, say, that these teaching exchanges are fair and balanced. Also, it would be helpful if there were faculty hires who were joint hires between two departments. While joint hires can be delicate when departments have markedly different cultures and professional expectations, because Applied Mathematics, Combinatorics & Optimization, and Pure Mathematics would normally be all in a single department and so the usual difficulties that joint hires would face should be quite minimal.

   Status: Completed
   Details: From the Final Assessment Report: "The recommendation was made based on incorrect information. All departments have processes in place to ensure that the programs are continuously updated and improved. In particular, all three departments have an Associate Chair for undergraduate studies, (Mohammad Kohandel for Applied Math, David McKinnon for Pure Math and Ricardo Fukasawa for Combinatorics & Optimization). Part of the mandate of these Associate Chairs is to oversee, update and improve the undergraduate curriculum. They would also identify any gaps within the curriculum and work to remove them. The position of Associate Chair rotates amount the faculty, and is supported by a Curriculum Committee. This ensures that the program is always being kept modern, and that multiple viewpoints are always involved. The structure for Computational Math is slightly different, in that the role of the Associate Chair is done by the Director, in consultation with the Undergraduate Advisor (Martin Pei), and the role of the Curriculum Committee is done by the Steering Committee. All four units have undergone changes, sometimes minor, sometimes significant, on a regular basis as part of this process. The reviewers were informed

that this was the case and given many examples of improvements to the programs. These processes currently work well, and there is no evidence to support the suggestion that the Pure Math curriculum has been unchanged for 35 years – or that it is 35 years behind the times. As the programs are already doing what the recommendation asked, it is believed that no further action is required to address this recommendation."

The mechanism for facilitating inter-departmental teaching has been implemented, and has resulted in several examples of faculty members teaching course offered by other units. There are also several examples of faculty members in one unit who have formal membership status in other units as well.

4) On a related matter, a process is needed to identify and cover any gaps in the curriculum. Perhaps because of the division of math into separate departments, there seem to be some holes that are not covered in the various mathematical programs. Geometric PDE's, theoretical PDE's, mathematical probability, some modern harmonic analysis (both pure and in applications), and industrial applications are some examples that highlight the issue. To present the students with a comprehensive mathematics education, it is important to monitor the breadth across all program and ensure important fields are covered.

   Status: Completed
   Details: From the Final Assessment Report: "Each department has an undergraduate committee whose purpose is to examine and renew the curriculum in each department. In addition, the Undergraduate Affairs Committee at the Faculty level is charged with the same task at a higher level. We will continue to work on providing the most excellent and broad-ranging courses that we can, given the resource constraints we must work with." There is no evidence to support the notion that the departments under review do not offer as broad and deep a program as they can.

5) The university needs to also consider the issue of renewal of faculty in Pure Math and Combinatorics & Optimization. Both departments appear to be "top heavy", especially the Pure Math department:

	Asst. Prof.	Assoc. Prof.	Full Prof.
Applied Math	4 (17%)	7 (30%)	12 (52%)
C & O	3 (11%)	6 (22%)	18 (67%)
Pure Math	2 (9%)	4 (17%)	17 (74%)

Assuming that the time to tenure/promotion is 6 years and that the professorial career is 35 years, then one could expect 17% of the faculty to be assistant professors. In practice, one

would want higher numbers than this. Junior faculty are vital for bringing in new fields, new ideas, and for shaking up the status quo (however much senior faculty might resent such disruption). Not all assistant professors get tenure. Also, strong departments will have hired so well (and supported their hires so well) that some assistant and associate professors will move to even better departments. While such losses are unfortunate to the department, they are a sign of good taste in hiring and vigour - the departing faculty member will, no doubt, have invigorated the department while they were there and will, one hopes, have left with nothing but good things to say about the department they left.

Status: In progress
Details: As should be expected, all Departments are always willing and eager to hire strong candidates. In fact, all three Departments hired in 2017 and 2018, and all three are hiring again for 2020. The Departments will continue to hire excellent and energetic junior faculty members to all three Departments, as resources allow.

6) While we did not meet with any lecturers, the research faculty felt that lecturers need to be more fully integrated into departments so that they can be full participants in the delivery of the programs. For the lecturers to properly prepare the students for upper level courses, likely they need to do more than just teach first-year courses -- it might be appropriate for them to also teach the upper level courses. This would help address concerns raised about the mismatch between what is being delivered in first year courses, and what professors are needing their students to master before entering the upper years of the programs. Also, it would help if lecturers have a primary departmental affiliation. Having a departmental affiliation would, one hopes, allow them to be more fully aware of what students will need to know after their first year. Some of the research faculty expressed concerns that some of the first-year courses are not open to innovation. Running a large first-year course is a complicated, delicate job and it's easy to imagine that once the course coordinator has "figured things out" that he/she would prefer to let the machine run without change. This is the easiest thing to do but it doesn't allow for pedagogical innovation or for the introduction (or elimination) of topics or the redistribution of focus on topics. Further, because there seems to be a tradition of providing lecture notes for courses, rather than having students read a textbook, there's a risk that whoever writes the notes sets the tenor of the course. Experienced lecturers will lecture in an independent manner from the notes, providing their own vision and allowing the notes to serve as an additional resource, but inexperienced lecturers may not do so --- this makes having lecture notes instead of a book somewhat risky.

Status: Completed
Details: After much discussion, it was concluded that lecturers are best served by allowing a variety of different administrative structures. Some lecturers are at home in a department, and others are best used in the Centre for Education in Mathematics and Computing, or the

Dean of Mathematics Office, or the Mathematics Undergraduate Office, or indeed in the Mathematics and Business group.

Since the review, research active members of the Faculty have thoroughly reviewed the introductory algebra and calculus courses, resulting in a significant overhaul and improvement.

7) Some concrete decision needs to be taken on the Computational Math program. Specifically, either promote it, or close it down. There seems to be a great opportunity for an exciting math program that could lead to outstanding careers for students. This would be in computational math, modeling, data analytics, and related industrial careers that merge math skills with cutting edge computation. Yet we see little enthusiasm by current participants and little effort to advertise and promote the program. Without an effort by the Faculty of Mathematics to properly grow this endeavour, perhaps resources should be re-allocated elsewhere. We recognize that the program is probably not expensive to run and that the graduate portion of the program may be valuable --- it should at the very least be easy for current students to know about this program. For example, it is listed under "programs" on the "future undergraduates" page of the Faculty of Mathematics but is not listed under "majors, minors, and specializations" on the "current undergraduates" page.

Status: Completed

Details: Computational Mathematics (CM) is an important and vibrant part of the Faculty's undergraduate and graduate programs, and we are supporting it vigorously. Advertising for the program has significantly increased over the last two years, and in particular, it is advertised through the future undergraduates web page (https://uwaterloo.ca/math/future-undergraduates/programs). The undergraduate CM programs have been growing in recent years, increasing their enrolment by at least 30% each year since 2015 – from 32 students in Fall 2015, to 143 students in Fall 2019.

8) In our discussions with the research faculty, there was great concern about the New Resource Allocation Model (NRAM) that is being implemented. For example, the Applied Mathematics department is in a precarious position vis a vis engineering. Engineering programs at other universities have created their own courses, with their own course codes, in which they present mathematical material. They then changed their program requirements so that they no longer require a particular course that is taught by the mathematicians and, instead, required their own course. It is our understanding that the Applied Math department has made great efforts to staff first year math courses for engineering students and so they are, naturally concerned, about whether the NRAM will encourage engineering departments to try and play the types of games that have been played at other universities. And, of course, because of the three-department structure any such behaviours would disproportionately

affect the Applied Math department which has been acting for the common good by sending its faculty members to teach courses that are focussed on students from an outside faculty.

Status: N/A
Details: This is not a recommendation.

9) As a final note, the innovation goals of the university need to be better addressed in the programs. While the co-op programs, and online course development are a notable and worthy contribution to innovation, it would be outstanding to see the introduction of professional skills training for the students. This could include courses that work on presentation skills, project management, team management, use of technology in mathematical work, a math modelling course in AMATH for use in industry, and so on. Experiments in novel teaching methods, experiential learning, and entrepreneurial activities should be actively promoted by the Faculty for delivery in its programs.

Status: Complete
Details: From the Final Assessment Report: "The co-op program includes substantial professional skills training for students, and our departments' courses already include presentations, project and team management, technology, and mathematical modelling. All units under review are constantly examining their teaching methods, and we will continue to teach our students in the best way possible, using both novel and tried-and-true techniques." In particular, we require all of our students to take communications courses which are designed to enhance the students' communications skills, in part to enable them to be more successful in the workplace.

Updated Implementation Plan

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
5.	Faculty Renewal	Hire more junior faculty	Department Chairs and Faculty Dean	2020 and ongoing

The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for monitoring the Implementation Plan.

UNIVERSITY OF WATERLOO

Date of next program review: _____
Date

Signatures of Approval:

Oct 22, 2019

Chair/Director Date

AFIW Administrative Dean/Head (For AFIW programs only) Date

2019-10-23.

Faculty Dean Date

Note: AFIW programs fall under the Faculty of ARTS; however, the Dean does not have fiscal control nor authority over staffing and administration of the program.

Associate Vice-President, Academic Date
(For undergraduate and augmented programs)

Associate Vice-President, Graduate Studies and Postdoctoral Affairs Date
(For graduate and augmented programs)

Date of next program review: **2022-2023**
Date

Signatures of Approval:

Chair/Director Date

AFIW Administrative Dean/Head (For AFIW programs only) Date

Mark Giesbrecht
Dean, Faculty of Mathematics
Aug 27, 2020

Faculty Dean Date

Note: AFIW programs fall under the Faculty of ARTS; however, the Dean does not have fiscal control nor authority over staffing and administration of the program.

May 26, 2020

Associate Vice-President, Academic Date
(For undergraduate and augmented programs)

Associate Vice-President, Graduate Studies and Postdoctoral Affairs Date
(For graduate and augmented programs)

Checklist for SUC/SGRC Reviewer Feedback
Quality Assurance Office

Two-Year Progress Report: Applied Mathematics, Combinatorics and Optimization, Computational Mathematics, and Pure Mathematics (BMath)

Name of Reviewer: Kathy Acheson

Date: 8/20/2020

Does the Two-Year Progress Report:

1.	Clearly describe progress achieved on the various action items in the implementation plan?	☒ **Yes**	☐ **No**
2.	Explain convincingly any circumstances that would have altered the original implementation plan?	☒ **Yes**	☐ **No**
3.	For items that are behind schedule, propose an amended implementation schedule that is reasonable and credible?	☒ **Yes**	☐ **No**
4.	Address significant developments or initiatives that have arisen since the program review process, or that were not contemplated by the program review process?	☒ **Yes**	☐ **No**

General Comments

N/A

University of Waterloo
SENATE
Report of the President
16 November 2020

FOR INFORMATION

Recognition and Commendation

Cindy Yang is the winner of the inaugural **Raymond Laflamme and Janice Gregson Graduate Scholarship for Women in Quantum Information Science**. Yang, a new Master of Applied Science student in Electrical and Computer Engineering (quantum information) has a passion for acoustic and superconducting waves who discovered quantum information science while learning how to make photonic devices. She was instantly intrigued by the possibilities that quantum research offered her. The new award honours Raymond Laflamme, Officer of the Order of Canada, and his partner Janice Gregson, for their leadership at the Institute for Quantum Computing (IQC) through Ray's 15-year tenure as Executive Director (2002-17). The award is given to a self-identified female IQC graduate student who has achieved academic excellence and shows a strong potential for research excellence. Yang is thankful to the Laflamme family for their support. "I feel delighted, honoured and grateful to be the first recipient of this scholarship," said Yang. "I hope my work can contribute to the field of quantum information non-trivially."

(adapted from the *Daily Bulletin*, 5 October 2020)

The University of Waterloo will award **posthumous degrees** as part of its fall convocation in celebration of the academic accomplishments of **Mansour Esnaashary Esfahani** and **Marizeh (Mari) Foroutan**, two students killed in the crash of Ukrainian International Airlines Flight PS752 in January 2020. An honorary degree has also been awarded to **Jaya Gupta**, an undergraduate Engineering student who lost her fight with cancer earlier this fall. "The sadness at the loss of Mansour, Mari and Jaya has been profound both personally and across our University community," says Feridun Hamdullahpur, president and vice-chancellor. "As we recognize our graduating students, we felt it important to celebrate the academic and personal contributions of each of these wonderful individuals to honour their memories."

Waterloo awarded Gupta an honorary Bachelor of Applied Science degree in September 2020 before she lost her battle with a rare form of cancer. The Nanotechnology Engineering student also received her iron ring, a significant milestone for every engineer, at a special virtual ceremony attended by Hamdullahpur and Mary Wells, dean of engineering. Esfahani will be awarded a Doctor of Philosophy in Civil Engineering. He was conducting his doctoral research in the area of construction automation and management, focusing on adaptive reuse projects in the circular economy. Foroutan's graduate work in Geography and Environmental Management focused on the application of new algorithms and technologies in remote sensing to study climate change as well as researching planetary extremes from hyper-arid hot deserts to freezing worlds. She will be awarded a Doctor of Philosophy in Geography. Both Foroutan and Esfahani will be honoured on October 23 as part of the fall 2020 virtual PhD graduate celebration. The University is creating memorial awards for Foroutan and Esfahani, with generous support from alumni and donors.

(adapted from the *Daily Bulletin*, 20 October 2020)

The following students will be recognized at the **October 2020 Convocation ceremonies** for their outstanding achievements.

Faculty of Applied Health Sciences

- **Eric Thomas Hedge** will be recognized with the **Alumni Gold Medal** in recognition of outstanding academic achievement in a master's program.
- **Amanda Rafka Raffoul** will be named a **University Finalist for Alumni Gold Medal** at the doctoral level.

Faculty of Arts

- **Tianjia Huang** will be awarded the **Accounting Alumni Award for Excellence in Accounting**, given to the student graduating from the Master of Accounting program, who has the highest marks in all required and elective accounting courses.
- **Houman Mehrabian** will be recognized with the **Amit and Meena Chakma Award for Exceptional Teaching by a Student,** awarded to a graduating student who has had a formal teaching role at the University and shown intellectual vigour and strong communication.
- **Tanya Michelle Tomasin** will receive the **Renison University College - President's Special Award for Academic Achievement**.
- **Katelynn Alida Folkerts** and **Melissa Meade** will both be named **University Finalist for the Alumni Gold Medal**.
- **Faculty of Engineering**
- **Jason Lars Deglint** and **Linda Yunzhi Wang** are **University Finalists for the Alumni Gold Medal**.

Faculty of Environment

- **Simar Kaur** and **Nichola Mercer** will be recognized **as University Finalists for the Alumni Gold Medal**.

Faculty of Mathematics

- **Nashid Shahriar** will be awarded the **University of Waterloo Alumni Gold Medal** in recognition of his outstanding academic achievement in a doctoral program.
- **Ishan Bansal** will be recognized as **University Finalist for Alumni Gold Medal**.
- **Yuyu Duan** will be named winner of the **James D. Leslie Undergraduate Prize**, awarded to a student who has achieved a first-class standing and has earned at least half of the credits for their undergraduate degree through online courses.
- **Nicholas Joseph Emile Richardson** will be recognized with the **K. D. Fryer Gold Medal**, awarded to a graduating Faculty of Mathematics student who best exemplifies academic excellence and good citizenship.

Faculty of Science

- **Mohammad Roostaie** and **Shawna Leigh-Ann Semple** will be recognized as **University Finalists for the Alumni Gold Medal**.

(adapted from the *Daily Bulletin*, 21 October 2020)

University of Waterloo
REPORT OF THE DEAN OF APPLIED HEALTH SCIENCES TO SENATE
November 16, 2020

FOR INFORMATION

A. APPOINTMENTS

Definite Term Reappointment

YESSIS, Jennifer, Associate Professor, School of Public Health and Health Systems, December 31, 2021-0-April 30, 2021. [BSc, University of Waterloo, 1992, MSc, University of Waterloo, 1995, PhD, University of Waterloo, 2001]. Dr. Yessis will provide teaching support for the required and core courses offered within the undergraduate program in the School and also provide support to the Director to lead the development of the accreditation self-study.

Research Appointment

LAMBRAKI, Irene, Research Associate Professor, School of Public Health and Health Systems, May 1, 2021 – August 31, 2021.

Special Lecturer Appointment

LEIGHTON, Jaylyn, Lecturer, Department of Recreation and Leisure Studies, January 1, 2021 – April 30, 2021.

Postdoctoral Appointment

MACKINNON, Melissa, School of Public Health and Health Systems, January 1, 2021 – December 31, 2023.

B. SABBATICAL

Approved by the Board of Governors

Change in Sabbatical

DUNCAN, Robin, Associate Professor, Department of Kinesiology, **from** January 1, 2021 – December 31, 2021 **to** September 1, 2021 – August 31, 2022, one year at 85% salary.

Lili Liu, Dean
Applied Health Sciences

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF THE FACULTY OF ARTS TO SENATE
November 16, 2020

FOR INFORMATION

A. APPOINTMENTS

Definite Term Reappointments
FONG, Laura, Lecturer, Stratford School of Interaction Design and Business, January 1, 2021 to December 31, 2021.

Visiting Reappointment
O'MALLEY, Patricia, Visiting Scholar, School of Accounting and Finance, July 1, 2020 to June 30, 2022.

Adjunct Reappointments – Instruction
BULLOCH, Dean, Lecturer, Department of Psychology, September 1, 2020 to December 31, 2020.

Adjunct Reappointments – Graduate Supervision
ETHIER, Nicole, Clinical Supervision, Department of Psychology, September 1, 2020 to August 31, 2021.

B. ADMINISTRATIVE APPOINTMENTS

TAYLOR, Christopher, Lecturer, Black Equity Strategist and Anti-Racism Advisor, September 1, 2020 to August 31, 2021.

Administrative Reappointment
ACHESON, Katherine, Professor, Director, Global Engagement Seminar, July 1, 2020 to December 31, 2021.

CHANGE in DATES
ACHESON, Katherine, Professor, Associate Dean, Undergraduate Programs, **from** July 1, 2019 to June 30, 2022 **to** July 1, 2019 to December 31, 2021.

C. RETIREMENT

EULETTE, Lynn, Lecturer, Department of Psychology, effective July 1, 2020.

O'BRIEN, Patricia, Professor, School of Accounting and Finance, effective July 1, 2020.

D. SABBATICAL LEAVES

For approval by the Board of Governors:
DUBEAU, Catherine, Associate Professor, Department of French Studies, January 1, 2021 to June 30, 2021, six month leave at 85% salary.

JHA, Ranjini, Professor, School of Accounting and Finance, January 1, 2021 to June 30, 2021, six month leave at full salary.

WOOD, Joanne, Professor, Department of Psychology, July 1, 2021 to December 31, 2021, six month leave at 85% salary.

Sheila Ager
Dean, Faculty of Arts

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF ENGINEERING TO SENATE
November 16, 2020

FOR INFORMATION

A. ***APPOINTMENTS***

Probationary Term Reappointment

SCHNEIDER, Oliver, Assistant Professor, Department of Management Sciences, July 1, 2021 – June 30, 2024. PhD, (Computer Science), University of British Columbia, Vancouver, BC, 2016; MSc (Computer Science), University of British Columbia, Vancouver, BC, 2012; BSc, (Computer Science), Hon., University of Saskatchewan, Saskatoon, SK, 2010).

Visiting Appointments

BONAKDAR, Ali, Scientist, Department of Mechanical and Mechatronics Engineering, October 1, 2020 – September 30, 2021.

SINGH, Gurmeet, Scholar, Department of Mechanical and Mechatronics Engineering, January 2, 2021 – December 31, 2022.

Adjunct Appointments

Graduate Supervision and Research
SIVA, Parthipan, Assistant Professor, Department of System Design Engineering, August 1, 2020 – July 31, 2023.

Cross Appointments

EVANS, Stephen, G., Professor, Department of Earth and Environmental Sciences to Department of Civil and Environmental Engineering, March 1, 2020 – February 28, 2022.

HANCOCK, Mark, Associate Professor, Department of Management Sciences to Department of Systems Design Engineering, September 1, 2020 – August 31, 2023.

YAVUZ, Mustafa, Professor, Department of Mechanical and Mechatronics Engineering to Department of Electrical and Computer Engineering, May 1, 2020 – April 30, 2023.

FOR APPROVAL BY THE BOARD OF GOVERNORS

B. **SABBATICALS**

BEESLEY, Philip, Professor, School of Architecture, January 1, 2021- June 30, 2021, six months sabbatical at 85% salary.

VAN PELT, Robert, Jan, Professor, School of Architecture, January 1, 2021 – December 31, 2021, one year sabbatical at 85% salary.

YIN, Shunde, Associate Professor, Department of Civil and Environmental Engineering, Special Early sabbatical, March 1, 2021 – August 31, 2021, 6 months at 100% salary.

CHANGE IN SABBATICAL

HUISSOON, Jan, Professor, Department of Mechanical and Mechatronics Engineering, change in sabbatical end date from December 31, 2021 to March 31, 2022 at 100% salary. Four by four administrative leave from April 1, 2022 to July 31, 2022 at 100% salary.

Mary Wells

Mary A. Wells
Dean, Faculty of Engineering

University of Waterloo
REPORT OF THE DEAN OF ENVIRONMENT TO SENATE
November 16, 2020

FOR INFORMATION

A. APPOINTMENTS

Special Appointments

Instruction

ALTON, Christopher, Lecturer, School of Planning, January 1, 2021 to April 30, 2021.

BAKER, Denise, Lecturer, School of Planning, January 1, 2021 to April 30, 2021.

BLAIR, Timothy, Lecturer, School of Planning, January 1, 2021 to April 30, 2021.

CURTIS, Kevin, Lecturer, School of Planning, January 1, 2021 to April 30, 2021.

ENRIGHT, Paddy, Lecturer, Department of Geography and Environmental Management, January 1, 2021 to April 30, 2021.

LEDREW, Ellsworth, Lecturer, Department of Geography and Environmental Management, January 1, 2021 to April 30, 2021.

RAM, Angeline, Lecturer, Department of Geography and Environmental Management, January 1, 2021 to April 30, 2021.

SMITH, Nancy, Lecturer, School of Planning, January 1, 2021 to April 30, 2021.

Graduate Supervision and Research

DERKSEN, Chris, Assistant Professor, Geography and Environmental Management, January 1, 2021 to December 31, 2023.

Cross Appointments

HALL, Heather, Assistant Professor, School of Environment, Enterprise and Development to the Department of Geography and Environmental Management September 1, 2020 to December 31, 2023.

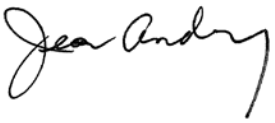
B. ADMINISTRATIVE APPOINTMENTS

C. SABBATICAL LEAVES

For Approval by the Board of Governors

BURCH, Sarah, Associate Professor, Department of Geography and Environmental Management, January 1, 2021 to June 30, 2021 at 85% salary.

CLARKE, Amelia, Associate Professor, School of Environment, Enterprise and Development, January 1, 2021 to August 31, 2021 at 100% salary.



Jean Andrey
Dean

University of Waterloo
REPORT OF THE DEAN OF MATHEMATICS TO SENATE
November 16, 2020

FOR INFORMATION

A. APPOINTMENTS (for approval by the Board of Governors)

Definite Term - Reappointments

SALAHUDDIN, Mohammad Ali, Research Assistant Professor, David R. Cheriton School of Computer Science, October 1, 2020 – September 30, 2021.

Visiting Appointments

LUCENA, Marcia (Universidade Federai do Rio Grande do Norte), Associate Professor, David R. Cheriton School of Computer Science, September 1, 2020 – May 31, 2021.

NIXON, Anthony (Lancaster University), Professor, Dept. of Combinatorics & Optimization, February 1, 2021 – June 30, 2021.

SITHARAM, Meera (University of Florida), Professor, Dept. of Combinatorics & Optimization, February 1, 2021 – June 30, 2021.

THERAN, Louis (University of St. Andrews), Professor, Dept. of Combinatorics & Optimization, February 1, 2021 – May 31, 2021.

TRAVES, William (United States Naval Academy), Professor, Dept. of Combinatorics & Optimization, February 1, 2021 – June 30, 2021.

WANG, Kevin, Research Associate, David R. Cheriton School of Computer Science, September 1, 2020 – December 31, 2020.

Adjunct Reappointments

Instructor

IBRAHIM, Ahmed, Lecturer, David R. Cheriton School of Computer Science, January 1, 2021 – April 30, 2021.

FURINO, Steve, Lecturer, Office of the Dean, January 1, 2021 – April 30, 2021.

HUANG, Patrick, Lecturer, David R. Cheriton School of Computer Science, January 1, 2021 – April 30, 2021.

Cross Reappointments

CHEN, Tao (Associate Professor, Economics), in the Dept. of Statistics and Actuarial Science, September 1, 2020 – August 31, 2025.

CZARNECKI, Krzysztof (Professor, Dept. of Electrical and Computer Engineering), in the David R. Cheriton School of Computer Science, March 1, 2020 – June 30, 2023.

WONG, Alexander (Associate Professor, Dept. of Systems Design Engineering), in the David R. Cheriton School of Computer Science, December 1, 2019 – June 30, 2023.

B. **SABBATICALS** (already approved by the Board of Governors)

Change In Appointment

LHOTAK, Ondrej (Associate Professor), David R. Cheriton School of Computer Science (*ref.* Dean's Report to Senate, September 2020)
From: January 1, 2021 – December 31, 2021
To: September 1, 2021 – August 31, 2022

ORCHARD, Jeff (Associate Professor), David R. Cheriton School of Computer Science, (*ref.* Dean's Report to Senate, September 2020*)*
From: September 1, 2020 – August 31, 2021, with 85% salary
To: January 1, 2021 – June 30, 2021, with 100% salary
This change to the sabbatical was subsequently cancelled.

C. **SPECIAL LEAVE**

TAN, Ken Seng (Professor), Dept. of Statistics and Actuarial Science, October 1, 2020 – September 30, 2021. This is an unpaid leave.

Mark Giesbrecht
Dean

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF SCIENCE TO SENATE
November 16, 2020

For information:

A. ***APPOINTMENTS***

Definite Term - Full-Time Reappointment

DELANEY, Keith, Lecturer, Department of Earth and Environmental Sciences, November 1, 2020 to October 31, 2023.

SFIGAKIS, Francois, Research Assistant Professor, Department of Chemistry, March 1, 2021 to February 28, 2023.

Adjunct Appointments
Graduate Supervision

MESSIER, Christian, Professor, Department of Biology, October 1, 2020 to June 30, 2023.

ROBINSON, Clare, Associate Professor, Department of Biology, October 1, 2020 to September 30, 2023.

TOZER, Doug, Assistant Professor, Department of Biology, October 1, 2020 to June 30, 2023.

WARNER, Barry, (Professor Emeritus) Professor, Department of Earth and Environmental Sciences, October 1, 2020 to September 30, 2023.

Graduate Supervision and Research

CARUSO, Christina, Associate Professor, Department of Biology, October 1, 2020 to June 30, 2023.

INNOCENTE, Steve, Associate Professor, Department of Chemistry, September 1, 2020 to August 31, 2023.

SINCLAIR, Brent, Professor, Department of Biology, November 1, 2020 to June 30, 2023.

Adjunct Reappointments

Graduate Supervision

AMOS, Richard, Professor, Department of Earth and Environmental Sciences, September 1, 2020 to August 31, 2023.

BERG, Steven, Associate Professor, Department of Earth and Environmental Sciences, October 1, 2020 to September 30, 2023.

MOHAMMED, Rasheeduddin, Professor, Department of Earth and Environmental Sciences, May 1, 2020 to April 30, 2023.

O'CONNELL, David, Professor, Department of Earth and Environmental Sciences, November 1, 2020 to October 31, 2023.

PAKTUNC, Dogan, Professor, Department of Earth and Environmental Sciences, November 1, 2020 to October 31, 2023.

PASSEPORT, Elodie, Associate Professor, Department of Earth and Environmental Sciences, October 1, 2020 to September 30, 2023.

REHAN, Rashid, Assistant Professor, Department of Earth and Environmental Sciences, October 1, 2019 to September 30, 2022.

SHOUAKAR-STASH, Orfan, Associate Professor, Department of Earth and Environmental Sciences, December 1, 2020 to November 30, 2023.

vanSTALL, Cees, Professor, Department of Earth and Environmental Sciences, November 1, 2020 to October 31, 2023.

VENKITESWARAN, Jason, Associate Professor, Department of Earth and Environmental Sciences, September 1, 2020 to August 31, 2023.

Research

CUTLER, Murray, Assistant Professor, School of Pharmacy, December 1, 2020 to November 30, 2023.

Graduate Supervision and Research

MUIR, Andrew, Professor, Department of Biology, January 1, 2021 to December 31, 2023.

WOLFE, Brent, Professor, Department of Biology, December 1, 2020 to November 30, 2023.

Undergraduate Instruction and Research

DAMIAN, Festo, Assistant Professor, School of Pharmacy, January 1, 2021 to December 31, 2023.

PASETKA, Mark, Assistant Professor, School of Pharmacy, January 1, 2021 to December 31, 2023.

Cross-Appointments

GOLDTHORPE, Irene, Associate Professor, Department of Electrical and Computer Engineering, cross-appointed to Department of Chemistry, September 1, 2020 to August 31, 2023.

SCOTT, Matthew, Associate Professor, Department of Applied Mathematics, cross-appointed to Department of Biology, October 1, 2020 to June 30, 2023.

Cross-Reappointments

JONES, Lyndon, Professor, School of Optometry and Vision Science, cross-appointed to Department of Biology, October 1, 2020 to June 30, 2023.

MELKO, Roger, Professor, Department of Physics and Astronomy, cross-appointed to Department of Chemistry, September 1, 2020 to August 31, 2023.

SIMON, Leonardo, Professor, Department of Chemical Engineering, cross-appointed to Department of Chemistry, September 1, 2020 to August 31, 2023.

SLAVCEV, Roderick, Associate Professor, School of Pharmacy, cross-appointed to Department of Chemistry, September 1, 2020 to August 31, 2023.

ZHAO, Boxin, Professor, Department of Chemical Engineering, cross-appointed to Department of Chemistry, September 1, 2020 to August 31, 2023.

B. ADMINISTRATIVE REAPPOINTMENTS

DUHAMEL, Jean, Director, Institute for Polymer Research (joint with the Faculty of Engineering), July 1, 2020 to June 30, 2023.

C. *RETIREMENTS*

GUILLEMETTE, J. Guy, Associate Professor, Department of Chemistry, effective September 1, 2020.

R.P. Lemieux
Dean

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
and
SENATE UNDERGRADUATE COUNCIL
Report to Senate
16 November 2020

Senate Graduate & Research Council (SGRC) met on 5 October 2020 and Senate Undergraduate Council (SUC) met on 6 October 2020. Both councils considered academic calendar dates for 2021-2022, as well as calendar guidelines for establishing academic dates and agreed to forward this item to Senate for approval as part of the regular agenda.

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

FOR APPROVAL

ACADEMIC CALENDAR DATES 2020-2021

1. **Motion:** To approve the 2021-2022 academic calendar dates and calendar guidelines for establishing academic dates as presented in Attachment #1.

   Rationale: The dates lay out major academic milestones throughout the year and provide guidance to units throughout the campus community as they conduct academic planning within their respective areas.

   As a result of the need for flexibility due to COVID-19 impacts, and expected increases in demand for in-person exams for online and remote courses, dates for in-person exams for online and remote courses will be determined at a later date. When scheduled, these exam dates will fall within the defined exam period (i.e. none will be scheduled before the "Examinations Begin" date, nor after the "Examinations End" date).

/*rmw & kw*

Jeff Casello
Associate Vice-President,
Graduate Studies and Postdoctoral Affairs

Charmaine Dean
Vice President,
Research & International

David DeVidi
Associate Vice-President, Academic

Academic Calendar Dates, 2021-2022

Revised October 1, 2020

	Fall 2021	**Winter 2022**	**Spring 2022**
Co-operative Work Term Begins	Sept. 7 (T)	Jan. 4 (T)	May 2 (M)
Classes Begin	Sept. 8 (W)	Jan. 5 (W)	May 2 (M)
Holidays	Oct. 11 (M)	Feb. 21 (M) Apr. 15 (F)	May 23 (M) July 1 (F) Aug. 1 (M)
Reading Week	Oct. 9-17 (S-U)	Feb. 19-27 (S-U)	N/A
Convocation	Oct. 22, 23 (F,S)	N/A	June 14-18 (T-S)
Classes End	Dec. 7 (T)	Apr. 5 (T)	July 26 (T)
Make-up Day(s) for in-term holidays	N/A	N/A	July 25 (M) for May 23 (M) July 26 (T) for July 1 (F schedule)
Pre-Examination Study Day(s)	Dec. 8 (W)	Apr. 6,7 (W,R)	July 27, 28 (W,R)
Examinations Begin	Dec. 9 (R)	Apr. 8 (F)	July 29 (F)
In-Person Exam Days for Online/Remote Courses ~~Online Class Examination Days~~	TBD ~~Dec. 10,11 (F,S)~~	TBD ~~Apr. 8,9 (F,S)~~	TBD ~~Aug. 5, 6 (F,S)~~
Examinations on Sunday	Dec. 12 (U)	N/A	N/A
Examinations End (including Emergency Day)	Dec. 23 (R)	Apr. 26 (T)	Aug. 13 (S)
Co-operative Work Term Ends	Dec. 23 (R)	Apr. 22 (F)	Aug. 19 (F)
Teaching days	60	60	60
Pre-examination Study Day(s)	1	2	2
Examination days	13 (+1 Emergency Day)	13 (+1 Emergency Day)	11 (+1 Emergency Day)

Symbols and abbreviations:
(M) Monday, (T) Tuesday, (W) Wednesday, (R) Thursday, (F) Friday, (S) Saturday, (U) Sunday, N/A – Not Applicable

Guidelines for Determining Academic Calendar of Dates

The following are principles and guidelines either formally agreed upon by Senate or adopted as common practice in determining the dates for the academic year.

1. That the practice of setting dates for each academic year continues to be an annual exercise.

2. That there be no fewer than 60 teaching days (12 weeks) in a term. A clear rationale for fewer than 60 teaching days must be communicated to Senate at the time calendar dates are approved. In calculating teaching days in a term, Saturdays, Sundays, and statutory or University holidays are excluded.

3. That attention be given to balancing the number of meets in courses. Where an imbalance may occur because of statutory holidays, the class schedule for a day different than the calendar day can be used to balance the number of course meets.

4. That Fall Convocation be the Friday and Saturday that fall in the third full week (beginning Sunday) of October.

5. That Spring Convocation be the Tuesday to Saturday in the second full week (beginning Sunday) in June.

6. That the Reading Weeks occur in all Faculties and must begin on the Tuesday following Thanksgiving in October and the Tuesday following Family Day in February.

7. That Fall Term classes in September begin on the Wednesday following the Labour Day holiday. **Exception:** The Fall Term begins on Tuesday, September 8th when Labour Day is September 7th.

8. That the start date for Winter Term be set as follows:
    - If January 1st is a Sunday, then start of classes is Wednesday, January 4th.
    - If January 1st is a Monday, then start of classes is Wednesday, January 3rd.
    - If January 1st is a Tuesday, then start of classes is Monday, January 7th.
    - If January 1st is a Wednesday, then start of classes is Monday, January 6th.
    - If January 1st is a Thursday, then start of classes is Monday, January 5th.
    - If January 1st is a Friday, then start of classes is Tuesday, January 5th.
    - If January 1st is a Saturday, then start of classes is Wednesday, January 5th.

9. The start date for Spring Term be set as follows:
    - If May 1st is a Sunday, then start of classes is Monday, May 2nd.
    - If May 1st is a Monday, then start of classes is Monday, May 1st.
    - If May 1st is a Tuesday, then start of classes is Tuesday, May 1st.
    - If May 1st is a Wednesday, then start of classes is Wednesday, May 1st.
    - If May 1st is a Thursday, then start of classes is Monday, May 5th.
    - If May 1st is a Friday, then start of classes is Monday, May 4th.
    - If May 1st is a Saturday, then start of classes is Monday, May 3rd.

10. That there be no fewer than one pre-examination study day and when possible, two pre-examination study days (excluding Saturday, Sunday, and holidays) between the end of classes and the beginning of examinations. A clear rationale for using fewer than 2 days or Saturday, Sunday, and holidays as pre-examination study days, must be communicated to Senate at the time calendar dates are approved.

11. That there be no fewer than 13 examination days in the Fall and Winter Terms, and 11 examination days in the Spring Term. In addition, one Emergency Day with no scheduled examinations is added to the end of the examination period.

12. In calculating examination days, Saturdays which fall within the period are included, whereas Sundays and statutory or University holidays are excluded.
    Exceptions:
    Examinations will not be scheduled on the Saturday following Good Friday when that day falls within the examination schedule or the Saturday of the Civic Day weekend.
    The first Sunday within the examination period may be used when required to accommodate the prescribed number of examination days in the Fall Term.

13. That in the Fall Term no examinations be scheduled beyond December 22nd. The Emergency Day cannot be scheduled beyond December 23rd.

14. That Online Course Examination Days in each term be the first consecutive Friday and Saturday in the examination period.

15. Grades due dates for on campus courses are normally scheduled seven days from the date of the final examination. Grades for Online (Centre for Extended Learning) courses that have a scheduled final examination are due on the last day of the grades submission period. Grades for all courses without a scheduled final examination are normally due 14 days after the start of examinations.

16. Co-op work terms are expected to be 16 week in duration. Actual start and end dates may vary depending on employer or student requirements in consultation with Co-operative Education.

Prepared by:
C. Newell Kelly, Registrar
July, 2020

Rules that Require Exceptions:

Rule 10

… A clear rationale for using fewer than 2 days or Saturday, Sunday, and holidays as pre-examination study days, must be communicated to Senate at the time calendar dates are approved.

Rule 12

… The first Sunday within the examination period may be used when required to accommodate the prescribed number of examination days in the Fall Term.

… Examinations will not be scheduled on the Saturday following Good Friday when that day falls within the examination schedule or the Saturday of the Civic Day weekend.

Rule 14

… That Online Course Examination Days in each term be the first consecutive Friday and Saturday in the examination period.

Rationale for Exceptions

Rule 10

By introducing a Fall Reading Week (October 9-17), and also because the term does not begin until September 8, the number of study days had to be reduced to one day in order to ensure the number of required teaching days. A Sunday was also added to the examination period.

~~**Rule 12**~~

~~The Online Course Examinations for Spring 2022 2021 have been moved to the second consecutive Friday and Saturday in the examination period due to the Civic Day weekend.~~

Rule 14

As a result of the need for flexibility due to COVID-19 impacts, and expected increases in demand for in-person exams for online and remote courses, dates for in-person exams for online and remote courses will be determined at a later date. When scheduled, these exam dates will fall within the defined exam period (i.e. none will be scheduled before the "Examinations Begin" date, nor after the "Examinations End" date).

Some dates lack synchronicity with Laurier dates

Date	UWaterloo	WLU
December 23, 2021	Emergency Day for Fall Term Final Exams	Closed
January 3, 2022	Closed	First Day of Winter Term Classes
January 5, 2022	First Day of Winter Term Classes	N/A
April 4, 2022	Regular Classes	Study Day
April 5, 2022	Regular Classes	Study Day

April 6, 2022	Study Day	First Day of Winter Term Final Exams
April 7, 2022	Study Day	Winter Term Final Exams
April 8, 2022	First Day of Winter Term Final Exams	Winter Term Final Exams

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
16 November 2020

Senate Graduate & Research Council met on 5 October 2020 and agreed to forward the following item to Senate for approval as part of the regular agenda.

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

FOR APPROVAL

GRADUATE STUDIES - ACADEMIC CALENDAR CHANGES

1. **Motion:** To approve new Qualifying Examination Regulations (under Minimum Requirements for the PhD Degree), effective 1 January 2021, as presented at Attachment 1 (item 1).

   Rationale: Minimum requirements for University-level qualifying examination regulations have been developed to provide University-level guidance to students, faculty, and staff on qualifying examinations.

2. **Motion:** To approve changes to University Responsibilities regarding Supervisory Relationships, effective 1 January 2021, as presented at Attachment 1 (item 2).

   Rationale: The University Responsibilities regarding Supervisory Relationships (approved by Senate in April 2020) are being updated to provide better clarity of expectations for students and faculty as to what is expected when a relationship between a student and a supervisor ends.

/*kw*

Jeff Casello
Associate Vice-President, Graduate Studies and Postdoctoral Affairs

Charmaine Dean
Vice President, Research & International

UNIVERSITY OF WATERLOO

Graduate Studies and Postdoctoral Affairs
Waterloo, Ontario, Canada N2L 3G1
uwaterloo.ca/graduate-studies | gsoffice@uwaterloo.ca

Revised October 5, 2020

TO: Kathy Winter, Privacy Officer and Assistant University Secretary, Senate Graduate and Research Council

FROM: Jeff Casello, Associate Vice-President, Graduate Studies and Postdoctoral Affairs

RE: Graduate Studies Academic Calendar changes

Items for approval:

1) Minimum requirements for University-level qualifying examination regulations.
2) University responsibilities regarding supervisory relationships updates.

1) Qualifying examination regulations

Description and rationale for proposed changes:

Minimum requirements for University-level qualifying examination regulations have been developed to provide University-level guidance to students, faculty, and staff on qualifying examinations.

Proposed effective date: Term: Winter Year: 2021

Current Graduate Studies Academic Calendar (GSAC) page (include the link to the web page where the changes are to be made):

https://uwaterloo.ca/graduate-studies-academic-calendar/general-information-and-regulations/minimum-requirements-phd-degree

Proposed Graduate Studies Academic Calendar content:

Qualifying examination

Some PhD programs at the University of Waterloo require doctoral students to successfully complete a qualifying exam(s) instead of, or in addition to, a comprehensive exam as part of their academic requirements. The differentiating features between a qualifying exam and a comprehensive exam are:

- A qualifying exam is developed and administered for a cohort of students (e.g. all PhD students in a program) whereas the comprehensive exam is developed and administered for an individual student;
- A qualifying exam is developed, administered and evaluated by a committee formed for a cohort of students, whereas a comprehensive exam committee is constituted for an individual student.

The purpose of this document is to provide University-level guidance to students, supervisors and Departments / Schools (referred to as Departments in this document) on qualifying exams.

Qualifying examination purpose

Proposed Graduate Studies Academic Calendar content:

A qualifying exam is a cohort-based exam where all students being examined answer the same set of questions or problem(s) with a common time allotment. The purposes of qualifying exams at the University of Waterloo may include demonstrating that:

- PhD students have the appropriate academic background and foundation in the discipline within which their own research is going to be situated. This may include knowledge of established theories, concepts, methods or models and the necessary skill sets required before students can move to the research component of the program;
- PhD students have the capacity to engage in the scholarly communication necessary to be successful in their PhD studies.

The purpose(s) of the exam shall be communicated clearly to students.

Qualifying examination timing

The timing requirements of the qualifying exam – the latest date by which students must successfully complete the exam and the process for managing exceptions to this requirement – are equivalent to those specified for the comprehensive examination. Earlier deadlines are at the discretion of the Faculty, Department, or Program level. Please see the comprehensive examination regulations.

Qualifying examinations and students' academic requirements

The guidelines on supporting students' effort toward preparing for and completing the qualifying exam are equivalent to those for a comprehensive exam. Additional guidance for students serving as a TA are outlined in Policy 30.

Qualifying examining committee

A student's qualifying exam written and/or oral components are evaluated by an examining committee constituted for a given cohort. These rules govern the composition of such an examining committee.

The qualifying exam committee shall include those who can advance the purpose(s) of the exam. Committee members are subject matter experts in areas in which the students will be examined. The University requires that the committee includes at least three members:

- Who hold a PhD or an equivalent degree as approved by the Associate Vice-President, Graduate Studies and Postdoctoral Affairs;
- At least one of whom is a tenured or tenure-track member of the offering Department or Program, and
- At least two of whom hold regular faculty appointments at the University of Waterloo.

Additional committee members may be required at the discretion of the Department or Program. When examining committee members are external to the University of Waterloo, their purpose in the exam process shall be clearly communicated to the student(s) taking the exam.

Normally, the committee will not exceed five members.

Proposed Graduate Studies Academic Calendar content:

The qualifying exam committee shall be Chaired by a tenured or tenure-track faculty member at the University of Waterloo with Approved Doctoral Dissertation Supervision (ADDS) status, normally from the offering Department or Program. The Chair's role is at a minimum to ensure that the exam is conducted and evaluated fairly and equitably, consistent with academic best practices. The Chair is a non-voting member of the qualifying examining committee.

Members of the committee who are supervising student(s) completing the qualifying exam shall make this relationship known to the Chair and other members of the committee prior to evaluation of the student's (or students') exam(s).

The composition of the qualifying examination committee will be approved by the Associate Dean, Graduate Studies, or a delegate.

The method by which the qualifying examining committee is constituted and the timing of the examining committee formation shall be clearly articulated and communicated to students.

Qualifying examination format and content

The exam format is designed to test an entire cohort of students who attempt this milestone simultaneously, based on a common examination in a given time. The content of the qualifying exam shall be directly related to the stated purpose(s) of the exam. These elements shall be clearly articulated and communicated to students to ensure transparency and clarity of expectations. If a student in a program perceives a lack of clarity on these issues, these concerns should immediately be communicated to the student's Department's Graduate Officer.

Accommodations

Students may warrant an accommodation to allow for an alternative exam format other than that which is described by Department or Program. For accommodations related to health, the student shall provide supporting medical documentation to the University's AccessAbility Services. AccessAbility Services shall determine whether an accommodation is warranted. When an accommodation is determined to be appropriate, AccessAbility Services shall communicate the decision and the nature of the accommodation to the Graduate Officer in the student's home Department who will coordinate with the chair of the examining committee on the implementation of the Accommodation.

Requests for accommodation not related to health issues shall be made by students to the Graduate Officer in the students' home Department, who will coordinate the process by which the request for accommodation will be advanced.

Evaluation and outcomes of the qualifying examination

All voting members of the committee shall complete their assessment of students' submissions individually. Each student's submission shall be assessed by at least two members of the qualifying examination committee. All student submissions made available to the committee for review shall be anonymous. Normally, the committee will meet to deliberate the outcomes.

The permitted outcomes and re-examination process for a qualifying examination are equivalent to that of a comprehensive examination.

Proposed Graduate Studies Academic Calendar content:
Academic integrity and the qualifying examination The University considers academic integrity to be an integral part of all scholarship. Perceived violations of academic integrity are handled under University Policy 71. The guidelines surrounding process and academic integrity with respect to qualifying examinations are equivalent to that of comprehensive examinations.

2) Supervisory relationships updates

Description and rationale for proposed changes:

The University responsibilities regarding supervisory relationships are being updated to provide better clarity of expectations for students and faculty as to what is expected when a relationship between a student and a supervisor ends.

Proposed effective date: Term: Winter Year: 2021

Current Graduate Studies Academic Calendar (GSAC) page (include the link to the web page where the changes are to be made):

https://uwaterloo.ca/graduate-studies-academic-calendar/general-information-and-regulations/university-responsibilities-regarding-supervisory-relationships

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
University responsibilities regarding supervisory relationships In instances when a graduate student is progressing satisfactorily but when the relationship between the student and their supervisor becomes untenable, it is important that there is clarity on expectations and responsibilities for both the student and the supervisor moving forward. This section provides direction to this end. ~~The situation in which a student is not progressing satisfactorily is described~~ in the Guidelines for evaluating and providing feedback on graduate student progress in PhD and research Masters programs. Note that a loss of funding is not normally a valid reason for a faculty member to end a supervisory relationship. In those cases, it is the responsibility of the supervisor, the	**University responsibilities regarding supervisory relationships** In instances when a graduate student is progressing satisfactorily but when the relationship between the student and their supervisor becomes untenable, it is important that there is clarity on expectations and responsibilities for both the student and the supervisor moving forward. This section provides direction to this end. This section does not apply to students that have a documented history of not having met academic progress expectations including research goals. Rather, information for supporting students who are not meeting academic expectations is provided in the Guide for Graduate Research and Supervision and in the Guidelines for evaluating and providing feedback on graduate student progress in PhD and research Masters program.

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
department/school or program, and the Faculty to secure funding to support the student to the end of the funding commitment as articulated in the student's offer of admission or to the University-mandated program time limits. In some instances, funding for students is provided at the Faculty level. A. In cases where the supervisor wishes to discontinue the relationship: The supervisor will have provided the student with ongoing, constructive feedback such that the student has had an opportunity to react to and address the supervisor's concerns. Normally, a student should have a minimum of two terms with the supervisor in order to evaluate the goodness of fit between student and supervisor before a final determination is made on discontinuing the relationship. When the supervisor starts the process of ending the supervisory relationship, the supervisor shall communicate in writing to the student the rationale for the discontinuation. The intention of this communication is for the student to have the opportunity to meaningfully reflect on the situation and consider how this may influence future choices. If the student wishes to continue at the University of Waterloo, the University makes the following commitments in support of the student: 1. The previous supervisor will not take actions that negatively influence the likelihood of the student finding a new supervisor; 2. The supervisor, department/school or Faculty will provide funding at the University minimum levels to the student for up to two terms while the student seeks a new supervisor (within or outside the Faculty); these will be aligned with important University dates. 3. The Graduate Officer in the student's home department/school or program will: a) assist the student in developing materials (CV, research	Note that a loss of funding is not normally a valid reason for a faculty member to end a supervisory relationship. In those cases, it is the responsibility of the supervisor, the department/school (Graduate Officer) or program, and the Faculty to secure funding to support the student to the end of the funding commitment as articulated in the student's offer of admission or to the University-mandated program time limits. In some instances, funding for students is provided at the Faculty level. It is also essential to ensure that if a student is struggling within their program that every effort is made to assist the student and direct them to relevant resources on campus (e.g. Counselling Services). A. In cases where the supervisor wishes to discontinue the relationship: The supervisor will have provided the student with ongoing, constructive feedback such that the student has had an opportunity to react to and address the supervisor's concerns. Normally, a student should have a minimum of two terms with the supervisor in order to evaluate the goodness of fit between student and supervisor before a final determination is made on discontinuing the relationship. When the supervisor starts the process of ending the supervisory relationship, the supervisor shall communicate in writing to the student the rationale for the discontinuation. The intention of this communication is for the student to have the opportunity to meaningfully reflect on the situation and consider how this may influence future choices. If the student wishes to continue at the University of Waterloo, the University makes the following commitments in support of the student: 1. The previous supervisor will not take actions that negatively influence the likelihood of the student finding a new supervisor;

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
statement, etc.) that can be presented to potential new supervisors; b) contact academic colleagues and arrange meetings between potential supervisors and the student; c) serve as a temporary supervisor (the meaning of which is to sign forms, ensure courses are correct, but not provide academic input) until a new supervisor is found or the student's program ends. 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to obtain a new supervisor will be given the opportunity to voluntarily withdraw from their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw". B. In cases where a student wishes to discontinue the relationship: There are numerous reasons as to why a student may want to discontinue their relationship with their supervisor. Should there be reasons that relate to University Policy, options through those avenues should be shared with the student by the Graduate Officer. However, the University recognizes that sometimes there is not a good fit between the student and their supervisor. Hence, the student should have the opportunity to find another supervisor to continue their graduate studies at the University of Waterloo. The Graduate Officer in the student's home department/school or program will have actively been engaged with the student and the supervisor in an effort to sustain the relationship. When those efforts are deemed to not have been successful, and the student wishes to stay at the University of Waterloo, the	2. The supervisor, department/school or Faculty will provide funding <u>at least</u> at the University minimum levels to the student for up to two terms while the student seeks a new supervisor (within or outside the Faculty); these will be aligned with important University dates. <u>The intention is to provide the student with as close to two full terms as possible and should be provided in a manner that will support and benefit the student. This is provided that the student is within their program limits</u>. 3. The Graduate Officer in the student's home department/school or program will: a) assist the student in developing materials (CV, research statement, etc.) that can be presented to potential new supervisors; b) contact academic colleagues and arrange meetings between potential supervisors and the student; c) serve as a temporary supervisor (the meaning of which is to sign forms, ensure courses are correct, but not provide academic input) until a new supervisor is found or the student's program ends; d) <u>address issues around access to research, office space and direct students to campus resources regarding data ownership and authorship.</u> 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to obtain a new supervisor will be given the opportunity to voluntarily withdraw from their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw".

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
University makes the following commitments in support of the student: 1. The previous supervisor, faculty members, and staff in the student's home department/school or program will not take actions that negatively influence the likelihood of the student finding a new supervisor; 2. The department/school or Faculty will provide funding at the University minimum level for a maximum of one term while the student seeks a new supervisor (within or outside the Faculty); 3. The Graduate Officer in the student's home department/school or program will serve as a temporary supervisor during this period [see A. 3 (c), in the previous section]. 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to find a new supervisor will be given the opportunity to voluntarily withdraw from their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw".	B. In cases where a student wishes to discontinue the relationship: There are numerous reasons as to why a student may want to discontinue their relationship with their supervisor. Should there be reasons that relate to University Policy, options through those avenues should be shared with the student by the Graduate Officer. However, the University recognizes that sometimes there is not a good fit between the student and their supervisor. Hence, the student should have the opportunity to find another supervisor to continue their graduate studies at the University of Waterloo. The Graduate Officer in the student's home department/school or program will have actively been engaged with the student and the supervisor in an effort to sustain the relationship. When those efforts are deemed to not have been successful, and the student wishes to stay at the University of Waterloo, the University makes the following commitments in support of the student: 1. The previous supervisor, faculty members, and staff in the student's home department/school or program will not take actions that negatively influence the likelihood of the student finding a new supervisor; 2. The department/school or Faculty will provide funding at least at the University minimum level for a maximum of one term while the student seeks a new supervisor (within or outside the Faculty) provided the student is within their program limits; 3. The Graduate Officer in the student's home department/school or program will serve as a temporary supervisor during this period [see A. 3 (c, d), in the previous section]. 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to find a new supervisor will be given the opportunity to voluntarily withdraw from

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
	their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw". If there is uncertainty regarding which of the above two scenarios apply to the situation, the default will be to extend funding for two terms. More information is provided in the Guide for Graduate Research and Supervision regarding the pathways for graduate students to obtain support.

Graduate Operations Committee approval date (mm/dd/yy): 07/17/20

University of Waterloo
SENATE UNDERGRADUATE COUNCIL
Report to Senate
16 November 2020

Senate Undergraduate Council met on 6 October 2020 and agreed to forward the following items to Senate for approval in the regular agenda.

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

FOR APPROVAL

NEW ACADEMIC PLANS

Applied Health Sciences
Addictions, Mental Health, and Policy Minor

1. **Motion:** That Senate approve the new Addictions, Mental Health and Policy Minor as outlined below, effective 1 September 2021.

Background and Rationale:
To add an Addictions, Mental Health, and Policy Minor to the undergraduate program offerings of the School of Public Health and Health Systems. There is no minor on addictions, mental health, and policy offered at the University of Waterloo. The addition of this minor also addresses one of the recommendations from the 2017 Presidential Advisory Committee on Student Mental Health report, which encourages development of curriculum focused on mental health. The School of Public Health and Health Systems is well-suited to cover the multi-disciplinary aspects of addictions and mental health given our diverse training backgrounds, research, and course offerings, touching on: biology, neuroscience, sociology, epidemiology, health systems, policy, public health, and psychology. Permission to include the ARTS, PSYCH, BIOL, KIN, REC, SDS, SOC, SOCWK, and STAT courses has been granted by the departments/units in charge of the courses.

Calendar text:
Addiction and mental health issues are major public health concerns that require a multidisciplinary approach to understand and address challenges. This undergraduate minor will be of interest to students who want to understand the challenges of addictions and mental health and to advocate for their own and for the mental health of others.

The minor will ensure coverage of the neuroscience, biology, socio-behavioral, health system, and policy aspects of mental health and addictions. All participants in the minor will be required to take courses from each of these core content areas:

- Neuroscience and Biology
- Psychosocial and Policy
- Mental Health Literacy
- Methods and Statistics

Admission Requirements:
The Addictions, Mental Health, and Policy minor is open to all University of Waterloo students. Unless a higher minimum average is required in the undergraduate calendar for a specific course, an overall minimum average of 67% will be required for courses presented for the Minor. Students must be in level at least 2A to declare the Minor.

Requirements: 5.0 units from the following will be required:

A. Mental Health Literacy (0.5 units)
AHS 105

B. Neuroscience and Biology (1.0 unit)
HLTH 290
HLTH 358

C. Psychosocial and Policy (1.5 units)
HLTH 260/GSJ 260
HLTH 392
PSYCH 257/PSYCH 257R

D. Electives (1.0 unit) from the following list:
Neuroscience/Biology
HLTH 458/KIN 458
HTLH 461
HLTH 465
HLTH 471
BIOL 476
PSYCH 335
Psychosocial
HLTH 427
HLTH 448
HLTH 449
HLTH 479
PSYCH 317
PSYCH 451
REC 251
SOC 249/LS 226
SOCWK 365R
Policy
HLTH 410
SDS 312R/SWREN 312R
Thesis, Independent Study, or Seminar Courses
HLTH 373, HLTH 432A, HLTH 432B, HLTH 472, HLTH 473, KIN 431, KIN 432, KIN 472, KIN 433, PSYCH 483, PSYCH 484, PSYCH 499A/B/C (all three PSYCH honours thesis courses must be completed), REC 455, REC 471A, REC 471B, REC 472, SDS 450R, SDS 499A, SDS 499B, SOC 498, SOC 499A, SOC 499B

E. Research Methods Course (0.5 unit) from the following list:
HLTH 205, HLTH 333, BIOL 361, PSYCH 291, REC 373, SDS 251R, SOC 221

F. Statistics Course (0.5 unit) from the following list:
HLTH 204, KIN 232, ARTS 280, PSYCH 292, REC 371, SDS 250R, SOC 280, STAT 202, STAT 221, STAT 231

Notes:

1. It is recommended that students take HLTH 290 before the other neuroscience and biology courses.
2. The thesis, independent study, or seminar courses must be a topic on the neuroscience, biology,

psychosocial, or policy aspects of addictions or mental health that is approved by the School of Public Health and Health Systems associate director, undergraduate studies.

Arts – St. Paul's University College
Indigenous Entrepreneurship

2. **Motion:** That Senate approve the proposed Indigenous entrepreneurship minor and diploma in Indigenous entrepreneurship as outline below, effective 1 September 2021.

Background and Rationale: St. Paul's is host to both the Waterloo Indigenous Student Centre (WISC) and the Minor in Indigenous Studies. As part of its Indigenization and reconciliation efforts, the College seeks to deliver additional academic programming that will be nationally distinctive and that will draw on the strengths of both the College and the University of Waterloo. For the past year, faculty and staff and STP have been collaborating with partners across the broader campus to develop a proposal for new programming in the area of Indigenous entrepreneurship. We have been assisted in this process by the Canadian Council for Aboriginal Business (CCAB), which will also assist with the development of a bank of case studies in Indigenous entrepreneurship.

St. Paul's is also the home of GreenHouse, Canada's pre-eminent student social enterprise incubator. Some experts argue that Indigenous entrepreneurship is a form of social entrepreneurship. GreenHouse provides unparalleled expertise in the delivery of experiential learning in the field of social entrepreneurship.

The combination of these four assets -- The WISC, GreenHouse, the Minor in Indigenous Studies, and the partnership with CCAB -- puts St. Paul's in a unique position to offer new programming in Indigenous Entrepreneurship that is very consistent with the innovative spirit at the University of Waterloo and that will put both the College and the Faculty of Arts in a position of national leadership in Indigenization.

In terms of resources, St. Paul's commits to making a full-time academic appointment in the field of Indigenous Entrepreneurship and to offering all six INDENT courses once in each academic year.

The proposal for these new plans has been reviewed by Institutional Analysis & Planning at the University of Waterloo and the Senior Director, Indigenous Initiatives (Interim AVP, Human Rights, Equity & Inclusion).

Program Structure

The minor consists of eight courses. Five are required courses. The remaining three courses are drawn from two distinct categories of electives. The diploma consists of the same five required courses and one elective chosen from either elective category.

Required Courses

INDENT 200 The Past, Present and Future of Indigenous Entrepreneurship
INDENT 210 The Fundamentals of Indigenous Entrepreneurship
INDENT 225 Practicum in Indigenous Entrepreneurship I
INDENT 310 Case Studies in Indigenous Venture Creation
INDENT 325 Practicum in Indigenous Entrepreneurship II

Electives

Students must take two of the following context electives.

INDG 201 The Indigenous Experience in Canada
INDG 272 Issues in Indigenous Communities in Canada
INDG 301 Critical Theories of Indigeneity in a Global Perspective
INDG/RS 318 Indigenous Worldviews and Spirituality
HIST 269 Indigenous Histories in Canada
HIST 271 Global Indigenous Issues

Students must take one of the following courses in economics/economic development

ECON 100 Principles of Economics
ECON 101 Introduction to Microeconomics
INDENT 320 Indigenous Economic Development Corporations

….

Indigenous Entrepreneurship Minor – Plan Requirements:

Students registered in any degree program may pursue a minor designation in Indigenous Entrepreneurship.

The Indigenous Entrepreneurship Minor requires successful completion of a minimum of four academic course units (eight courses) with a minimum cumulative average of 65%, including:

• INDENT 200, INDENT 210, INDENT 225, INDENT 310, INDENT 325
• Two of INDG 201, INDG 272, INDG 301, INDG 318/RS 318, HIST 269, HIST 271
• One of ECON 100, ECON 101, INDENT 320

Diploma in Indigenous Entrepreneurship – Plan Requirements

Students registered in degree programs or any non- or post-degree academic plan may pursue the Diploma in Indigenous Entrepreneurship.

The Diploma in Indigenous Entrepreneurship requires successful completion of a minimum of three academic course units (six courses) with a minimum cumulative average of 65%, including:

• INDENT 200, INDENT 210, INDENT 225, INDENT 310, INDENT 325
• One of ECON 100, ECON 101, INDENT 320, INDG 201, INDG 272, INDG 301, INDG 318/RS 318, HIST 269, HIST 271

Engineering
Computing Option

3. **Motion:** That Senate approve the new computing option as outlined below, effective 1 September 2021.

Background and Rationale: A package of options is designed to be a comprehensive and integrated approach to computing for students in the Faculty of Engineering (outside of Computer Engineering and Software Engineering). This package includes: the revised SE Option, the re-introduced Computer Engineering Option, and the new Computing Option. These Options are designed with a degree of overlap, so that students can switch their emphasis or have a fallback position without having to disregard all of their prior work. These Options are designed to recognize all of the computing courses taught in the Faculty of Engineering, so they are truly attainable by all students in the Faculty.

While the revised SE Option (Motion 7) and the re-introduced CE Option (Motion 4) are now practically attainable to students across FOE in the sense that the revised definitions recognize computing/software courses taught across FOE, the amount of additional work on top of their core degree might be onerous for students in some programs. The amount of computing/software courses in the core curriculum varies significantly across the FOE, from none in Architecture to 6 courses in Mechatronics or Management. But for a student in Architecture, attaining the SE or CE Option would require 10 courses on top of their core degree, which is practically unattainable (10 courses because they do not have the two prerequisites in their core curriculum, plus the 8 courses required for the options). The situation is similar, but not so extreme, for students in Civil, Environmental, Geological, Chemical, Mechanical, and so on.

This new Computing Option is intended to primarily serve students in these programs that have relatively little software/computing in their core curriculum. This Option plays a role similar to the Computing Minor offered by the Cheriton School of Computer Science. The SCS Computing Minor is not practical for these Engineering students because it does not recognize the computing courses taught in Engineering. This new Computing Option explicitly includes all of the CS courses that count towards the SCS Computing Minor, and informs the Engineering students of this so that they can consider if the SCS Computing Minor is a good choice for them. For example, the SCS Computing Minor might make sense for Architecture students, since they have almost no computing in their curriculum.

This new Computing Option also serves as a fallback position for students in programs such as SYDE, Biomedical, Nano, Mechatronics, or Management, that have a medium amount of software/computing in their core curriculum. If one of these students starts pursuing the SE Option or CE Option, but decides to change direction, they can switch to this Computing Option to get some recognition for the work they have done.

In many other respects the design of this Computing Option mirrors the design of the revised SE Option and CE Option (elsewhere in this agenda), and the rationale for specific design choices is the same. Having these three Options designed with similar structure gives students flexibility to build a foundation in computing/software and to select a specific area of focus that aligns with their interests.

Calendar Text:

The Computing Option is available to all students in the Faculty of Engineering (including Architecture), except students in Computer Engineering or Software Engineering. It requires six courses:

- At least one introductory programming course
- At least one data structures and algorithms course
- At least two topics courses
- Two additional courses selected from any list below

The courses chosen to satisfy this Option must satisfy four additional constraints:

- They must satisfy Canadian Engineering Accreditation Board (CEAB) requirements.
- They must be approved by the option co-ordinator.
- Three of the courses must be considered elective (that is, not core requirements) in the student's academic plan. For the purposes of this Option, a course that a student could choose to graduate without will be considered elective.
- The student must have earned a 75% average in the selected courses in order to have earned the Option.

Students may not declare this Option until they have completed both an introductory programming course and a data structures and algorithms course. Students must have an average of 75% in these two courses in order to declare this Option.

The lists below are intended to be the same as the Computer Engineering Option and Software Engineering Option. These lists are also intended to include courses that are normally part of the Computing Minor offered by the Cheriton School of Computer Science. Other courses from Computer Science may be used towards this Option with permission of the option co-ordinator. Students may declare at most one of the Computing Option, Computer Engineering Option, or Software Engineering Option. Students may change which of the three Options they declare by contacting the option co-ordinator(s).

Introductory Programming

Course	Title
AE 121	Computational Methods
BME 121	Digital Computation
CS 115	Introduction to Computer Science 1
CS 116	Introduction to Computer Science 2
CS 135	Designing Functional Programs
CS 145	Designing Functional Programs (Advanced Level)
CHE 120	Computer Literacy and Programming for Chemical Engineers
CIVE 121	Computational Methods
ECE 150	Fundamentals of Programming
ENVE 121	Computational Methods
GEOE 121	Computational Methods
ME 101	Introduction to Mechanical Engineering Practice 2
MSCI 121	Introduction to Computer Programming
MTE 121	Digital Computation
NE 111	Introduction to Programming for Engineers
SYDE 121	Digital Computation

Data Structures and Algorithms

Course	Title
BME 122	Data Structures and Algorithms
CS 136	Elementary Algorithm Design and Data Abstraction
CS 146	Elementary Algorithm Design and Data Abstraction (Advanced Level)
CS 231	Algorithmic Problem Solving
CS 234	Data Types and Structures
ECE 250	Algorithms and Data Structures
ECE 406	Algorithm Design and Analysis
MSCI 240	Algorithms and Data Structures
MTE 140	Algorithms and Data Structures
SYDE 223	Data Structures and Algorithms

Topics

The following list of topics are organized into specific areas for readability.

Logic

Course	Title
CS 245	Logic and Computation
ECE 208	Discrete Mathematics and Logic 2
SE 212	Logic and Computation

Databases

Course	Title
CS 338	Computer Applications in Business: Databases
ECE 356	Database Systems
MSCI 245	Databases and Software Design

Operating Systems

Course	Title
ECE 350	Real-Time Operating Systems
MTE 241	Introduction to Computer Structures & Real-Time Systems
SE 350	Operating Systems

Computing Systems

Course	Title
ECE 252	Systems Programming and Concurrency
ECE 351	Compilers
ECE 454	Distributed Computing
ECE 455	Embedded Software
ECE 459	Programming for Performance

Networks

Course	Title
ECE 358	Computer Networks
MSCI 445	Telecommunication Systems: from protocols to applications

Digital Hardware

Course	Title
BME 393	Digital Systems
CS 230	Introduction to Computers and Computer Systems
ECE 124	Digital Circuits and Systems
ECE 222	Digital Computers
ECE 224	Embedded Microprocessor Systems
ECE 320	Computer Architecture
ECE 327	Digital Hardware Systems
ECE 423	Embedded Computer Systems
ME 262	Introduction to Microprocessors and Digital Logic
MTE 262	Introduction to Microprocessors and Digital Logic
MTE 325	Microprocessor Systems and Interfacing for Mechatronics Engineering
SYDE 192	Digital Systems

Software Engineering

Course	Title
CS 445/ECE 451	Software Requirements Specification and Analysis
CS 446/ECE 452	Software Design and Architectures
CS 447/ECE 453	Software Testing, Quality Assurance and Maintenance
MSCI 342	Principles of Software Engineering
SE 463	Software Requirements Specification and Analysis
SE 464	Software Design and Architectures
SE 465	Software Testing and Quality Assurance

Human-Computer Interaction

Course	Title
MSCI 343	Human-Computer Interaction
MSCI 541	Search Engines
MSCI 543	Analytics and User Experience
SYDE 542	Interface Design
SYDE 543	Cognitive Ergonomics
SYDE 548	User Centred Design Methods

Security and Privacy

Course	Title
ECE 409	Cryptography and System Security
ECE 458	Computer Security

Pattern Analysis and Machine Intelligence

Course	Title
ECE 417	Image Processing
ECE 457A	Cooperative and Adaptive Algorithms
ECE 457B	Fundamentals of Computational Intelligence
ECE 457C	Reinforcement Learning
MSCI 436	Decision Support Systems
MSCI 446	Introduction to Machine Learning
MSCI 546	Advanced Machine Learning
SYDE 522	Foundations of Artificial Intelligence
SYDE 552	Computational Neuroscience
SYDE 556	Simulating Neurobiological Systems
SYDE 572	Introduction to Pattern Recognition
SYDE 575	Image Processing

Numerical Methods

Course	Title
BME 411	Optimization and Numerical Methods
CHE 322	Numerical Methods for Process Analysis and Design
CIVE 422	Finite Element Analysis
EARTH 456	Numerical Methods in Hydrogeology
ECE 204	Numerical Methods
ECE 204A and ECE 204B	Numerical Methods 1 and Numerical Methods 2
ENVE 225	Environmental Modelling
ME 559	Finite Element Methods
ME 566	Computational Fluid Dynamics for Engineering Design
MTE 204	Numerical Methods
NE 336	Micro and Nanosystem Computer-aided Design
SYDE 411	Optimization and Numerical Methods

Special topics courses as approved by the option co-ordinator.

Engineering
Computer Engineering Option

4. **Motion:** That Senate approve the new Computer Engineering Option as outlined below, effective 1

September 2021.

Background and Rationale: A package of Options is designed to be a comprehensive and integrated approach to computing for students in the Faculty of Engineering (outside of Computer Engineering and Software Engineering). This package includes: the revised SE Option, the re-introduced Computer Engineering Option, and the new Computing Option. These Options are designed with a degree of overlap, so that students can switch their emphasis or have a fallback position without having to disregard all of their prior work. These Options are designed to recognize all of the computing courses taught in the Faculty of Engineering, so they are truly attainable by all students in the Faculty.

This change re-introduces the Computer Engineering Option that existed from 1982 until 2019. That old CE Option was defined to be available to SYDE students only, and the definition was also significantly out of date. That old CE Option was removed from the calendar to make room for this revision.

The design of this CE Option mirrors the design of the revised SE Option, and the rationale for many aspects is the same. What differs is that instead of requiring the three core SE courses, this CE Option requires two upper year ECE courses in digital hardware or embedded computing. In order to meet prerequisites for these courses students will need to take some lower/middle-year courses in digital hardware, so a certain proportion of the remaining 7 technical courses in this CE Option will be derived from this upper year goal. This CE Option is designed to recognize lower/middle year digital hardware courses taught across the Faculty of Engineering.

Calendar Text:
The Computer Engineering Option is available to all students in the Faculty of Engineering (including Architecture), except students in Computer Engineering. It requires a total of eight courses:

- Two of:

Course	Title
ECE 320	Computer Architecture
ECE 327	Digital Hardware Systems
ECE 423	Embedded Computer Systems
ECE 455	Embedded Software

- Five additional courses from the topics list below, one of which may be substituted with a course from the data structures and algorithms list.
- One course from List A Complementary Studies Requirements for Engineering Students that considers application of computing technology, or an alternative approved by the option co-ordinator.

The courses chosen to satisfy this Option must satisfy four additional constraints:

- They must satisfy Canadian Engineering Accreditation Board (CEAB) requirements.
- They must be approved by the option co-ordinator.
- Five of the courses must be considered elective (that is, not core requirements) in the student's academic plan. For the purposes of this Option, a course that a student could choose to graduate without will be considered elective.
- The student must have earned a 75% average in the selected courses in order to have earned the Option.

Students pursuing this Option are recommended to select courses in the areas of logic, digital hardware, operating systems, computing systems, databases, networks, and security and privacy.

Students may not declare this Option until they have completed both an introductory programming course and a data structures and algorithms course. Students must have an average of 75% in these two courses in order to

declare this Option.

The lists below are intended to be the same as for the Computing Option and the Software Engineering Option. These lists are also intended to include courses that are normally part of the Computing Minor offered by the Cheriton School of Computer Science. Other courses from Computer Science may be used towards this Option with permission of the option co-ordinator. Students may declare at most one of the Computing Option, Computer Engineering Option, or Software Engineering Option. Students may change which of the three Options they declare by contacting the option co-ordinator(s).

Introductory Programming

Course	Title
AE 121	Computational Methods
BME 121	Digital Computation
CHE 120	Computer Literacy and Programming for Chemical Engineers
CIVE 121	Computational Methods
CS 115	Introduction to Computer Science 1
CS 116	Introduction to Computer Science 2
CS 135	Designing Functional Programs
CS 145	Designing Functional Programs (Advanced Level)
ECE 150	Fundamentals of Programming
ENVE 121	Computational Methods
GEOE 121	Computational Methods
ME 101	Introduction to Mechanical Engineering Practice 2
MSCI 121	Introduction to Computer Programming
MTE 121	Digital Computation
NE 111	Introduction to Programming for Engineers
SYDE 121	Digital Computation

Data Structures and Algorithms

Course	Title
BME 122	Data Structures and Algorithms
CS 136	Elementary Algorithm Design and Data Abstraction
CS 146	Elementary Algorithm Design and Data Abstraction (Advanced Level)
CS 231	Algorithmic Problem Solving
CS 234	Data Types and Structures
ECE 250	Algorithms and Data Structures
ECE 406	Algorithm Design and Analysis
MSCI 240	Algorithms and Data Structures
MTE 140	Algorithms and Data Structures
SYDE 223	Data Structures and Algorithms

Topics

The following list of topics are organized into specific areas for readability.

Logic

Course	Title
CS 245	Logic and Computation
ECE 208	Discrete Mathematics and Logic 2
SE 212	Logic and Computation

Databases

Course	Title
CS 338	Computer Applications in Business: Databases
ECE 356	Database Systems
MSCI 245	Databases and Software Design

Operating Systems

Course	Title
ECE 350	Real-Time Operating Systems
MTE 241	Introduction to Computer Structures & Real-Time Systems
SE 350	Operating Systems

Computing Systems

Course	Title
ECE 252	Systems Programming and Concurrency
ECE 351	Compilers
ECE 454	Distributed Computing
ECE 455	Embedded Software
ECE 459	Programming for Performance

Networks

Course	Title
ECE 358	Computer Networks
MSCI 445	Telecommunication Systems: from protocols to applications

Digital Hardware

Course	Title
BME 393	Digital Systems
CS 230	Introduction to Computers and Computer Systems
ECE 124	Digital Circuits and Systems
ECE 222	Digital Computers
ECE 224	Embedded Microprocessor Systems
ECE 320	Computer Architecture
ECE 327	Digital Hardware Systems
ECE 423	Embedded Computer Systems
ME 262	Introduction to Microprocessors and Digital Logic
MTE 262	Introduction to Microprocessors and Digital Logic
MTE 325	Microprocessor Systems and Interfacing for Mechatronics Engineering
SYDE 192	Digital Systems

Software Engineering

Course	Title
CS 445/ECE 451	Software Requirements Specification and Analysis
CS 446/ECE 452	Software Design and Architectures
CS 447/ECE 453	Software Testing, Quality Assurance and Maintenance
MSCI 342	Principles of Software Engineering
SE 463	Software Requirements Specification and Analysis
SE 464	Software Design and Architectures
SE 465	Software Testing and Quality Assurance

Human-Computer Interaction

Course	Title
MSCI 343	Human-Computer Interaction
MSCI 541	Search Engines
MSCI 543	Analytics and User Experience
SYDE 542	Interface Design
SYDE 543	Cognitive Ergonomics
SYDE 548	User Centred Design Methods

Security and Privacy

Course	Title
ECE 409	Cryptography and System Security
ECE 458	Computer Security

Pattern Analysis and Machine Intelligence

Course	Title
ECE 417	Image Processing
ECE 457A	Cooperative and Adaptive Algorithms
ECE 457B	Fundamentals of Computational Intelligence
ECE 457C	Reinforcement Learning
MSCI 436	Decision Support Systems
MSCI 446	Introduction to Machine Learning
MSCI 546	Advanced Machine Learning
SYDE 522	Foundations of Artificial Intelligence
SYDE 552	Computational Neuroscience
SYDE 556	Simulating Neurobiological Systems
SYDE 572	Introduction to Pattern Recognition
SYDE 575	Image Processing

Numerical Methods

Course	Title
BME 411	Optimization and Numerical Methods
CHE 322	Numerical Methods for Process Analysis and Design
CIVE 422	Finite Element Analysis
EARTH 456	Numerical Methods in Hydrogeology
ECE 204	Numerical Methods
ECE 204A and ECE 204B	Numerical Methods 1 and Numerical Methods 2
ENVE 225	Environmental Modelling
ME 559	Finite Element Methods
ME 566	Computational Fluid Dynamics for Engineering Design
MTE 204	Numerical Methods
NE 336	Micro and Nanosystem Computer-aided Design
SYDE 411	Optimization and Numerical Methods

Special topics courses as approved by the option co-ordinator.

MAJOR MODIFICATIONS

Applied Health Sciences
Bachelor of Science, Honours Health Studies

5. **Motion:** That Senate approve the proposed changes to the Bachelor of Science, Honours Health Studies, effective 1 September 2022.

Background and Rationale:
To revise the name of the Bachelor of Science, Health Studies degree to Bachelor of Science, Health Sciences, which better reflects the curriculum. Current students in Health Studies will not automatically be changed into the Health Sciences plan; they will still graduate from Health Studies. However, as is custom, current students can choose to switch to the Health Sciences plan after September 1, 2022 but they will be required to follow the 2022-2023 plan requirements.

Similar to other Health Sciences programs in Ontario, the Bachelor of Science, Health Studies is an interdisciplinary degree program that combines courses from the following three thematic areas: Public & Population Health Sciences, Health Research Methods & Data Sciences, and Life Sciences & Human Biohealth, as detailed below:

- Public & Population Health Sciences: All of the comparator programs have a mixture of courses on Determinants of Health (Psycho-social, environmental, physical/biological, ecological, socio-political, etc.), Canadian/Global Health Systems, Health Promotion/Communication, Health Policy, Health Ethics, and Health issues across the lifespan. For the Health Studies program, these courses are: HLTH 101 (Intro to Health, HLTH 102 (Intro to Health 2), HLTH 201 (Aging and Health), HLTH 260 (Social Determinants of Health), HLTH 245 (Canadian Health Systems), HLTH 280 (Applied Public Health Ethics), HLTH 370 (Ecological Determinants of Health), HLTH 480 (Competencies in Health capstone), one course in the Social-Behavioural Sciences cluster, and one course in the Health Systems and Policy cluster.
- Health Research Methods & Data Sciences: All of the comparator programs have courses on Health Research Methods, Epidemiology, and Statistics/Data Sciences. For the Health Studies program, these courses are: HLTH 204 (Quantitative approaches to Health Sciences with lab), HLTH 205 (Introduction to Health Research – 2021 Calendar), HLTH 230 (Health Informatics with Lab), HLTH 335 (Intro to Statistical Analytics in Health with SAS lab), HLTH 333 (Principles of Epidemiology with lab) and one additional Methods/Application course (Qualitative Methods, Experimental Methods, Program Planning and Evaluation, etc.).
- Life Sciences & Human Biohealth: All of the comparator programs have required courses in Biology, Chemistry, Physiology, and Human Biohealth. For the Health Studies program, these courses are: BIOL 130/BIOL 130L (Intro Cell Bio & Cell Bio Lab), CHEM 120/CHEM 120L (Physical and Chemical Properties of Matter; Chemical Reaction Laboratory 1), CHEM 123/123L (Chemical Reactions, Equilibria, and Kinetics; Chemical Reaction Laboratory 2), BIOL 273 (Principles of Human Physiology 1), BIOL 373 (Principles of Human Physiology 2 – 2021 Calendar), KIN 217 (Human Biochemistry), BIOL 239 (Genetics), HLTH 310 (Development, Aging, and Health), HLTH 340 (Environmental Toxicology and Public Health) or 341 (Principles of Pathobiology), and one additional Biohealth course.

Similar to the comparator Health Sciences programs, the Bachelor of Science, Health Studies program prepares students for further education in clinical health professions (Medicine, Nursing, Occupational Therapy, Physician Assistant, Speech-language Pathology, etc.) or graduate programs in Health Sciences, Epidemiology & Biostatistics, Public Health, Health Administration, etc. The Bachelor of Science, Health Studies program has similar admissions requirements to other Health Sciences programs, including Grade 12 Math, English, Biology,

and Chemistry. The comparator programs also have options for specializations or minors for students who wish to take additional biology, chemistry, math, physics, and other courses as required for some clinical health profession programs (such as the Pre-clinical Specialization in Health Studies).

The name Health Studies does not appropriately reflect the curriculum and future career options, thus creating confusion for prospective high school students interested in Health Sciences programs. In addition, there are Health Studies programs in Ontario that a re more similar to our Bachelor of Public Health degree (BPH), which all require Grade 12 English but not Biology or Chemistry. These programs include: The Honours Bachelor of Arts (Humanities, Social Sciences) in Health Studies at the University of Toronto, St. George campus; the Honours Bachelor of Arts (Social Sciences & Humanities) in Health Studies – Health Policy at the University of Toronto, Scarborough campus, and the Bachelor of Arts Honours degree in Health Studies at Queens University.

The Bachelor of Science, Health Studies program has also been revised in the last year to include more laboratory courses as well as lab components within HLTH courses. The additional labs bring the curriculum more in line with other health sciences programs that have higher BIU weightings from the province, hence higher funding. We are in the process of applying to the province to be evaluated for a higher BIU weighting. The name Health Studies (which is more associated with Arts rather than Sciences programs) will make it more difficult to make a strong case for the higher BIU valuation.

In conclusion, changing the name of the Bachelor of Science, Health Studies degree to Bachelor of Science, Health Sciences will more accurately reflect the actual curriculum, admissions requirements, and future career options and lessen confusion for prospective high school students. In addition, the name change will strengthen our case to receive higher BIU valuation and funding from the Province, which would allow us to create even more capacity in experiential learning and labs.

Applied Health Sciences
Bachelor of Science, Kinesiology

6. **Motion:** That Senate approve the proposed changes to the Bachelor of Science, Kinesiology, effective 1 September 2022.

Background and Rationale: To revise admission requirements. The proposed changes to our admission requirements are viewed to be less restrictive for prospective students while still reflecting the requirements to prepare students for success in our program. Importantly, the proposed changes will bring our admission requirements more in-line with similar Bachelor of Science, Kinesiology programs in Canada. As a result, these changes should result in increased applications to our program and the calculated admission average of applicants.

Required courses:
- ~~Advanced Functions 4U - a minimum final grade of 70 is required~~
- ~~Chemistry 4U - a minimum final grade of 70 is required~~
- Any English 4U - a minimum final grade of 70 is required

~~One~~ **Two** of the following:
- Biology 4U - a minimum final grade of 70 is required
- Physics 4U - a minimum final grade of 70 is required
- **Chemistry 4U - a minimum final grade of 70 is required**

One of the following:
- **Advanced Functions 4U - a minimum final grade of 70 is required**
- **Calculus and Vectors 4U - a minimum final grade of 70 is required**

Engineering
Software Engineering Option

7. **Motion:** That Senate approve the proposed changes to the software engineering option, effective 1 September 2021.

Background and Rationale: A package of options is designed to be a comprehensive and integrated approach to computing for students in the Faculty of Engineering (outside of Computer Engineering and Software Engineering). This package includes: the revised SE Option, the re-introduced Computer Engineering Option, and the new Computing Option (Motions 3 and 4). These Options are designed with a degree of overlap, so that students can switch their emphasis or have a fallback position without having to disregard all of their prior work. These Options are designed to recognize all of the computing courses taught in the Faculty of Engineering, so they are truly attainable by all students in the Faculty.

The Software Engineering Option was out of date, both in details and in design. This Option was introduced in 1996, and it was originally intended to be applicable to only ECE students. Today, most of the interest in this Option comes from students outside ECE, who are frustrated because it is practically impossible for them to attain the Option. For example, the current Option definition does not adequately recognize the software courses in the core curriculum of Mechatronics, Systems Design, Biomedical, Management, and so on. These courses are often anti-requisite to the ECE courses that are listed in the current Option definition. This revision recognizes all software courses across the FOE appropriately, which means that all students will have an opportunity to pursue this Option. Rationale for some specific aspects of the revisions follows:

8 course workload and 3 electives. The current SE Option definition requires 17 courses for Engineering students. The current definition of the SE Option for BCS students nominally requires only 8 elective courses, but substantitively requires 15 if one counts the prerequisites to those 8 (but those prerequisites are also mandatory part of the BCS degree).

The requirement for at least three electives in addition to the three core SE courses makes this definition similar to the definition for BCS students, which requires 8 electives. Bringing the number of required electives down to 6 from 8 reflects the reality that Engineering students have fewer elective slots than do BCS students. A BCS student can earn the SE Option without overloading.

Most of the Engineering programs that have students who are expected to pursue this Option teach at least 3 software/computing related electives to their students, and those courses are included on the lists that count towards this Option. Hence, most students completing this Option would need only 3 three courses from ECE/CS (the three core SE courses), and could get the other three required electives from their home program.

Inclusion of FOE Software/Computing Courses. This revision lists almost every software/computing related course in FOE in order to make this Option practically attainable to every student in FOE. The revision requires the three core SE courses (Requirements, Design, Testing) that have always been the essence of SE at UW. Beyond that, it recognizes that there can be some natural variety in the 6 additional technical courses required for the Option, according to the student's main degree plan.

Inclusion of CS Courses. CS Director Undergraduate Kate Larson suggested that it would be appropriate for this Option to explicitly include all courses that are ordinarily part of the Computing Minor offered by CS, because these are explicitly open to students outside CS. Larson also recommended keeping CS245 in the Option for historical reasons. Additionally, within FOE Architecture had explicitly requested that CS courses be included because their students do not have computing courses within their core curriculum.

75% Average. The default position for Options in FOE is that they require a 60% average in the Option courses. This Option has a higher requirement in order to make it accessible across the FOE. There are 11 introductory programming courses in the FOE, as well as 5 data structures courses. There is significant variety in these introductory foundations. But Engineering students generally do not have any individual choice in their introductory courses. The current definition of the Option requires the ECE introductory courses, which are rigorous but logistically impossible for most FOE students to enroll in. This 75% average requirement ensures that students will have an adequate preparation to continue in the Option. This is not an onerous barrier: 75% is close to the median average in FOE.

The ECE Undergraduate Studies Committee feels strongly about this 75% requirement. If they are going to adjust the prerequisites for their course to have more students from outside ECE taking them, they want those students to be properly prepared.

Numerical Methods. Numerical methods were not historically included in the SE Option, and are not part of the core SE degree program. Nevertheless, numerical methods are a central part of the role that computing plays in most traditional engineering disciplines, and FOPS felt strongly that these courses should be included.

Linkage Elective: Professional responsibility is an important part of Engineering, and the SE Option has always recognized this by requiring linkage electives. The current SE Option for Engineering students requires 4 linkage electives, whereas the definition for BCS students requires only 1 linkage elective. This revision includes just one linkage elective, aligning with the definition of the SE Option/Specialization for BCS students. The list of permissible linkage electives has been updated.

Current Calendar Text: http://ugradcalendar.uwaterloo.ca/page/ENG-Software-Engineering-Option

New Calendar Text (clean because of the number of changes)
The Software Engineering Option is available to all students in the Faculty of Engineering (including Architecture), except students in Software Engineering.

This Option is offered jointly by the Faculty of Engineering and the David R. Cheriton School of Computer Science in the Faculty of Mathematics. Given that the Option involves two faculties, it has slightly different realizations in those faculties.

For students in the Faculty of Engineering, this Option requires a total of eight courses.

• Three required courses:

Course	**Title**
CS 445/ECE 451 or SE 463	Software Requirements Specification and Analysis
CS 446/ECE 452 or SE 464	Software Design and Architectures
CS 447/ECE 453 or SE 465	Software Testing, Quality Assurance and Maintenance Software Testing and Quality Assurance

• Four additional courses from the topics list below, one of which may be substituted with a course from the data structures and algorithms list.
• One course from List A Complementary Studies Electives for Engineering Students that considers application of computing technology, or an alternative approved by the option co-ordinator.

The courses chosen to satisfy this option must satisfy four additional constraints:

• They must satisfy Canadian Engineering Accreditation Board (CEAB) requirements.
• They must be approved by the option co-ordinator.
• Five of the courses must be considered elective (that is, not core requirements) in the student's academic plan. For the purposes of this Option, a course that a student could choose to graduate without will be considered elective.
• The student must have earned a 75% average in the selected courses in order to have earned the Option.

Students pursuing this Option are recommended to select courses in the areas of logic, operating systems, computing systems, databases, networks, human-computer interaction, and security and privacy.

Students may not declare this Option until they have completed both an introductory programming course and a data structures and algorithms course. Students must have an average of 75% in these two courses in order to declare this Option.

The lists below are intended to be the same as for the Computing Option and the Computer Engineering Option. These lists are also intended to include courses that are normally part of the Computing Minor offered by the Cheriton School of Computer Science. Other courses from Computer Science may be used towards this Option with permission of the option co-ordinator. Students may declare at most one of the Computing Option, Computer Engineering Option, or Software Engineering Option. Students may change which of the three Options they declare by contacting the option co-ordinator(s).

Introductory Programming

Course	Title
AE 121	Computational Methods
BME 121	Digital Computation
CHE 120	Computer Literacy and Programming for Chemical Engineers
CIVE 121	Computational Methods
CS 115	Introduction to Computer Science 1
CS 116	Introduction to Computer Science 2
CS 135	Designing Functional Programs
CS 145	Designing Functional Programs (Advanced Level)
ECE 150	Fundamentals of Programming
ENVE 121	Computational Methods
GEOE 121	Computational Methods
ME 101	Introduction to Mechanical Engineering Practice 2
MSCI 121	Introduction to Computer Programming
MTE 121	Digital Computation
NE 111	Introduction to Programming for Engineers
SYDE 121	Digital Computation

Data Structures and Algorithms

Course	Title
BME 122	Data Structures and Algorithms
CS 136	Elementary Algorithm Design and Data Abstraction
CS 146	Elementary Algorithm Design and Data Abstraction (Advanced Level)
CS 231	Algorithmic Problem Solving
CS 234	Data Types and Structures
ECE 250	Algorithms and Data Structures
ECE 406	Algorithm Design and Analysis
MSCI 240	Algorithms and Data Structures

MTE 140	Algorithms and Data Structures
SYDE 223	Data Structures and Algorithms

Topics

The following list of topics are organized into specific areas for readability.

Logic

Course	Title
CS 245	Logic and Computation
ECE 208	Discrete Mathematics and Logic 2
SE 212	Logic and Computation

Databases

Course	Title
CS 338	Computer Applications in Business: Databases
ECE 356	Database Systems
MSCI 245	Databases and Software Design

Operating Systems

Course	Title
ECE 350	Real-Time Operating Systems
MTE 241	Introduction to Computer Structures & Real-Time Systems
SE 350	Operating Systems

Computing Systems

Course	Title
ECE 252	Systems Programming and Concurrency
ECE 351	Compilers
ECE 454	Distributed Computing
ECE 455	Embedded Software
ECE 459	Programming for Performance

Networks

Course	Title
ECE 358	Computer Networks
MSCI 445	Telecommunication Systems: from protocols to applications

Digital Hardware

Course	Title
BME 393	Digital Systems
CS 230	Introduction to Computers and Computer Systems
ECE 124	Digital Circuits and Systems
ECE 222	Digital Computers
ECE 224	Embedded Microprocessor Systems
ECE 320	Computer Architecture
ECE 327	Digital Hardware Systems
ECE 423	Embedded Computer Systems
ME 262	Introduction to Microprocessors and Digital Logic
MTE 262	Introduction to Microprocessors and Digital Logic

MTE 325	Microprocessor Systems and Interfacing for Mechatronics Engineering
SYDE 192	Digital Systems

Software Engineering

Course	Title
CS 445/ECE 451	Software Requirements Specification and Analysis
CS 446/ECE 452	Software Design and Architectures
CS 447/ECE 453	Software Testing, Quality Assurance and Maintenance
MSCI 342	Principles of Software Engineering
SE 463	Software Requirements Specification and Analysis
SE 464	Software Design and Architectures
SE 465	Software Testing and Quality Assurance

Human-Computer Interaction

Course	Title
MSCI 343	Human-Computer Interaction
MSCI 541	Search Engines
MSCI 543	Analytics and User Experience
SYDE 542	Interface Design
SYDE 543	Cognitive Ergonomics
SYDE 548	User Centred Design Methods

Security and Privacy

Course	Title
ECE 409	Cryptography and System Security
ECE 458	Computer Security

Pattern Analysis and Machine Intelligence

Course	Title
ECE 417	Image Processing
ECE 457A	Cooperative and Adaptive Algorithms
ECE 457B	Fundamentals of Computational Intelligence
ECE 457C	Reinforcement Learning
MSCI 436	Decision Support Systems
MSCI 446	Introduction to Machine Learning
MSCI 546	Advanced Machine Learning
SYDE 522	Foundations of Artificial Intelligence
SYDE 552	Computational Neuroscience
SYDE 556	Simulating Neurobiological Systems
SYDE 572	Introduction to Pattern Recognition
SYDE 575	Image Processing

Numerical Methods

Course	Title
BME 411	Optimization and Numerical Methods
CHE 322	Numerical Methods for Process Analysis and Design
CIVE 422	Finite Element Analysis
EARTH 456	Numerical Methods in Hydrogeology
ECE 204	Numerical Methods
ECE 204A and ECE 204B	Numerical Methods 1 and Numerical Methods 2

ENVE 225	Environmental Modelling
ME 559	Finite Element Methods
ME 566	Computational Fluid Dynamics for Engineering Design
MTE 204	Numerical Methods
N0E 336	Micro and Nanosystem Computer-aided Design
SYDE 411	Optimization and Numerical Methods

Special topics courses as approved by the option co-ordinator.

Environment
Geography and Environmental Management

8. **Motion:** That Senate approve the admission, progression and other academic requirements outlined in the 2+2 agreement with Shandong University of Economics and Finance (SDUFE), China, effective as of the effective date of the agreement. See Attachment #1.

Background and Rationale: This is a standard 2+2 program, but it involves a new partner for our faculty (SDUFE) and it is the first 2+2 program in Geography and Environmental Management specifying the Economy & Society Specialization. It is also larger than our other GEM 2+2 programs, involving up to 40 students per cohort (rather than 20). These 40 students will come from 100 students -- who are recruited from high school and have completed 2 years' study at SDUFE -- in an international education program approved by China's Ministry of Education.

Like other programs, the expected outcomes include the following:
• Raise and promote the international reputation of Waterloo;
• Attract talented students; and
• Increase opportunities for Chinese students to experience Canadian higher education and expose Waterloo's students to China's culture and customs through interaction with the students from SDUFE

Mathematics
Computing and Financial Management

9. **Motion:** That Senate approve the proposed changes to the Computing and Financial Management (CFM) plan, effective 1 September 2021.

Background and Rationale:
The proposed changes reflect parallel changes made by the School of Accounting and Finance (SAF) in the Accounting and Financial Management (AFM) curriculum.

1. Replace AFM 101 with the new course AFM 191 that SAF students will take in place of AFM 101.
2. Remove AFM 102 since it focuses on accounting within the company for management decision making. This is not a route that CFM students take, nor are they required to take courses with AFM 102 as a prerequisite.
3. Replace AFM 121 with CFM 101. Both are introductory finance courses however CFM 101 is designed specifically to recognize the needs and skills of CFM students.
4. Replace AFM 131 with AFM 132, the course that SAF students now take in place of AFM 131.
5. Remove AFM 231. A program review determined that this course is no longer necessary to meet program objectives. The newly created AFM 334 – Business Law for Financial Managers, may be taken as an elective.
6. Replace AFM 372/ACTSC 391 with AFM 275/ACTSC 391. AFM 372 has been re-numbered by SAF to reflect when the course will be taken and has been taking for 4 years by students in the CFM and Math/CPA programs. The title of the course has been changed to reflect the name change of AFM 272.

7. A new set is being added which will allow students to select which "set" of courses they want to take to complete the additional 1.5 AFM units, including taking CFM 401.

Current Calendar text: http://ugradcalendar.uwaterloo.ca/page/MATH-Computing-Financial-Mngt-Overview-Degree-Req

New Calendar text:
bold= new, strikeout= delete
[…]
All of
~~AFM 101 Introduction to Financial Accounting~~
~~AFM 102 Introduction to Managerial Accounting~~
~~AFM 121 Introduction to Global Financial Markets~~
~~AFM 131 Introduction to Business in North America~~
AFM 132 Introduction to Business Stages
AFM 191 Foundations for Financial Reporting
~~AFM 231 Business Law~~
AFM 272/ACTSC 291 Global Capital Markets
AFM 275/ACTSC 391 Corporate Finance
AFM 322 Derivative Securities
~~AFM 372/ACTSC 391 Corporate Finance 2~~
AFM 424 Equity Investments
AFM 425 Fixed Income Securities
CFM 101 Introduction to Financial Markets and Data Analytics
CFM 301 Financial Data Analytics
CS 240 Data Structures and Data Management
CS 241 Foundations of Sequential Programs
CS 245 Logic and Computation
CS 246 Object-Oriented Software Development
CS 341 Algorithms
ECON 101 Introduction to Microeconomics
ECON 102 Introduction to Macroeconomics
STAT 373 Regression and Forecasting Methods in Finance

Two of
AFM 291 Intermediate Financial Accounting 1
Any AFM course at the 300- or 400-level not listed above
CFM 401 Topics in Financial Technology
ECON 201 Microeconomic Theory for Business and Policy
ECON 206 Money and Banking 1
ECON 207 Economic Growth and Development 1
ECON 231 Introduction to International Economics
ECON 332 International Finance
MGMT 244 Principles of Marketing
PHIL 215 Professional and Business Ethics

~~Two additional AFM courses (1.0 unit) at the 300- or 400-level not listed above.~~
One of these sets of three additional courses
• Two additional AFM courses (1.0 unit) at the 300-level or higher, not listed above, and CFM 401 if not taken to

fulfil a requirement above
• Three additional AFM courses (1.5 units) at the 300-level or higher, not listed above
[…]
Mathematics
Mathematics/Chartered Professional Accountancy (Math/CPA)

10. **Motion:** That Senate approve the following changes to the Math/CPA plan, effective 1 September 2021.

Background and Rationale:
The proposed changes to the Math/CPA plan reflect parallel changes made by the School of Accounting and Finance (SAF) in the Accounting and Financial Management (AFM) curriculum. These changes are approved by CPA Ontario and are necessary to maintain CPA accreditation and Masters of Accounting (MAcc) eligibility. A reduction in the number of CPA accreditation–required AFM courses allows for the addition of MATH 237 to the math core for Math/CPA, and a subsequent increase to the minimum math requirement from 18 to 19 courses. Most math plans require at least 26 math courses. A reduction in the number of CPA accreditation–required AFM courses allows for an increase in the number of AFM, COMM, ECON, MSCI, or math electives from 1 to 2.

In addition to the above, the communication skills requirements are being updated to replace AFM 211 with AFM 111, because AFM 211 is no longer being offered. The admissions page for this plan will also be updated to reflect new first year provisional requirements.

Current Calendar text for degree requirements: http://ugradcalendar.uwaterloo.ca/page/MATH-Math-or-Chart-Prof-Accounting-co-Requirements

New Calendar text:
bold= new, strikeout= delete

~~*AFM 131 may be substituted with consent of the department.~~

Students in this plan must fulfil all the requirements in Table I. This must include at least 18 19 math courses, and the following specific requirements:

One of
CS 115 Introduction to Computer Science 1
CS 135 Designing Functional Programs
CS 145 Designing Functional Programs (Advanced Level)

One of
CS 116 Introduction to Computer Science 2
CS 136 Elementary Algorithm Design and Data Abstraction
CS 146 Elementary Algorithm Design and Data Abstraction (Advanced Level)

One of
MATH 127 Calculus 1 for the Sciences
MATH 137 Calculus 1 for Honours Mathematics
MATH 147 Calculus 1 (Advanced Level)

One of
MATH 128 Calculus 2 for the Sciences
MATH 138 Calculus 2 for Honours Mathematics

MATH 148 Calculus 2 (Advanced Level)

One of
MATH 135 Algebra for Honours Mathematics
MATH 145 Algebra (Advanced Level)

One of
MATH 136 Linear Algebra 1 for Honours Mathematics
MATH 146 Linear Algebra 1 (Advanced Level)

One of
MATH 237 Calculus 3 for Honours Mathematics
MATH 247 Calculus 3 (Advanced Level)

One of
STAT 230 Probability
STAT 240 Probability (Advanced Level)

One of
STAT 231 Statistics
STAT 241 Statistics (Advanced Level)

All of
AFM 272/ACTSC 291 ~~Corporate Finance~~ **Global Capital Markets**
AFM ~~372~~ **275**/ACTSC 391 Corporate Finance ~~2~~
AFM 476/ACTSC 471 ~~Advanced Corporate Finance~~ **Corporate Financial Decision Making**
STAT 373 Regression and Forecasting Methods in Finance

One of
~~AFM 231/LS 283~~ **AFM 335** Business Law **for Financial Managers**
COMM 231 Commercial and Business Law for Mathematics Students

All of
~~AFM 101 Introduction to Financial Accounting~~
~~AFM 102 Introduction to Managerial Accounting~~
AFM 111 Professional Pathways and Problem-solving
~~AFM 132 Introduction to Business Stages*~~
AFM 182 Foundations for Management Accounting
AFM 191 Foundations for Financial Reporting
AFM 206 Introduction to Tax and AFM 208 Introduction to Assurance (0.25 units each)
AFM 212 Financial Analysis and Planning
AFM 291 Intermediate Financial Accounting 1
AFM 311 Connections to Ethical Context
AFM 321 Personal Financial Planning
AFM 341 Accounting Information Systems
~~AFM 362 Taxation 1 – Foundations~~ **Corporate Taxation**
~~AFM 363 Taxation 2 - Integration~~
~~AFM 481~~ **AFM 382** Cost Management Systems
AFM 391 Intermediate Financial Accounting 2
~~AFM 401 Accounting Theory~~

AFM 433 Business Strategy
~~AFM 351~~ **AFM 451** Audit Strategy
AFM 462 ~~Taxation 3 - Tax Planning Topics~~ **Specialized Topics in Taxation**
~~AFM 479 Cases and Applications in Finance II~~
AFM 482 Performance Measurement and Organization Control
AFM 491 Advanced Financial Accounting
COMM 103/ECON 100 Principles of Economics or (ECON 101 Introduction to Microeconomics and ECON 102 Introduction to Macroeconomics)
SPCOM 111 Leadership, Communication, and Collaboration

~~Two of~~
~~AFM 205 Introduction to Financial Services~~
~~AFM 206 Introduction to Tax~~
~~AFM 207 Introduction to Analytics~~
~~AFM 208 Introduction to Assurance~~

Six additional math courses (3.0 units)
~~One~~ **Two** additional AFM, COMM, ECON, MSCI, or math course**s** (~~0.5~~ **1.0** unit).
Notes
1. ~~AFM 363, AFM 401,~~ AFM 462, AFM 482, AFM 491 may be substituted with an acceptable 300-/400-level AFM elective, with the understanding that any such substitution would forfeit Master of Accounting (MAcc) admission eligibility and will impact the path to a CPA designation pursued through CPAOntario.
~~2. Students may take AFM 322 and AFM 424 to replace the AFM 479 and the "One additional AFM, COMM, ECON, MSCI, or math course" degree requirements.~~
[…]

Current Calendar text for admissions requirements: http://ugradcalendar.uwaterloo.ca/page/MATH-Math-or-Chartered-Professional-Accountancy-co

New Calendar text:
bold= new, strikeout= delete

Admissions
Students normally apply for direct admission from high school into the first year of the Mathematics/CPA plan. Upon successful completion of a provisional first year, students will formally proceed into the Mathematics/CPA plan in second year. Successful completion of the provisional year requires all of the following:

• Successful completion of at least 5.0 units including the following courses: AFM 101 AFM 102 AFM 111; AFM 182; AFM 191; AFM 131; COMM 103/ECON 100 or (one of ECON 101, ECON 102); one of CS 115, CS 135, CS 145; one of MATH 135, or MATH 145; one ofMATH136, or MATH 146; one of MATH 127, MATH 137, or MATH 147; one of MATH 128, MATH138, or MATH 148; SPCOM 111. These courses must be completed within 12 months of admission into the provisional year.
[…]

Mathematics
Mathematics/Chartered Professional Accountancy – Finance Specialization

11. **Motion:** That Senate approve the proposed changes to the Math/CPA – Finance Specialization, effective 1 September 2021.

Background and Rationale:
The proposed changes to the Math/CPA-Finance Specialization plan decrease the total number of courses required (42 to 41) and provide more flexibility and selection with finance courses.
1. MATH 237 to be included in Math/CPA core math requirement.
2. An increase in the number of finance-related math courses from 2 ('Two of') to 3 ('Three of') reflects the increase in the minimum math course requirement for Math/CPA from 18 to19.
3. Expansion of 'Three of' list of math courses to include courses deemed to be of relevance to finance and to provide students with more scheduling flexibility.
4. Inclusion in the 'Two of' AFM list of several recently developed courses gives the student more scheduling flexibility and a broader selection of finance-related AFM courses.
5. A reduction in the Math/CPA-required AFM courses allows for a decrease in the numberof required courses for Math/CPA – Finance Specialization from 42 to 41.

Current Calendar text: http://ugradcalendar.uwaterloo.ca/page/MATH-Chart-Prof-Accounting-Finance-Spec-Coop

New Calendar text:
bold= new, strikeout= delete

[…]

~~One of~~
~~MATH 237 Calculus 3 for Honours Mathematics~~
~~MATH 247 Calculus 3 (Advanced Level)~~

~~All of~~
ACTSC 231 Introductory Financial Mathematics
~~AFM 205 Introduction to Financial Services~~

~~Two~~ **Three** of
~~ACTSC 371 Introduction to Investments~~
AMATH 350 Differential Equations for Business and Economics
CS 335 Computational Methods in Business and Finance
CO 372 Portfolio Optimization Models*
MATBUS 470 Derivatives
MATBUS 471 Fixed Income Securities
MATBUS 472 Risk Management
STAT 334 Probability Models for Business and Accounting
STAT 341 Computational Statistics and Data Analysis
NEW NOTE: (additional CO course may be required to meet CO 372 prerequisite)

Two of
AFM 321 Personal Financial Planning AFM 322 Derivative Securities
AFM 328 and AFM 329, or AFM 328 and AFM 428, or AFM 329 and AFM 429 Invstmt. Mgmt. (0.25 unit each)
AFM 324 Wealth Management
AFM 334 International Study Experience
AFM 377 Private Equity and Venture Capital
AFM 415 Special Topics or AFM 416 Special Topics in Finance **or AFM 417 Special Topics in Accounting**
AFM 423 Topics in Financial Econometrics
AFM 424 Equity Investments

AFM 434 Governance and Enterprise Risk Management for Global Organizations
AFM 470 Financial Mgmt. of High Growth Companies
AFM 477 Mergers and Acquisitions
AFM 478 International Financial Management
AFM 492 Financial Statement Analysis

Two additional math courses (1.0 unit).

Notes
~~1. Students in this Specialization may take AFM 322 and AFM 424 to replace the AFM 479Math/CPA requirement. If so, students need only take one of the remaining AFM courses in the above "Two of" list of AFM courses.~~
1. In order to meet the requirements of both the Faculty of Mathematics and the School of Accounting and Finance, theMathematics/CPA - Finance Specialization requires the successful completion of ~~42~~ **41** courses.

PLAN INACTIVATIONS

Mathematics
Pure Math

12. **Motion:** That Senate approve the inactivation of the pure mathematics/teaching plan, effective 1 September 2021.

Rationale and Background:
Background and Rationale: In recent years, there has been on average only one student graduating from this plan per year. Students desiring a teaching credential are largely choosing the Mathematics/Teaching plan. There will still remain multiple paths for students desiring a teaching credential combined with Pure Mathematics courses, such as adding the Teaching Option to the full Honours Pure Mathematics plan, or adding a Pure Mathematics minor to the Mathematics/Teaching plan.

/rmw

David DeVidi
Associate Vice-President, Academic

2+2 PROGRAM AGREEMENT

BETWEEN

SHANDONG UNIVERSITY OF FINANCE AND ECONOMICS
CHINA

AND

UNIVERSITY OF WATERLOO
CANADA

2+2 PROGRAM AGREEMENT

This 2+2 Program Agreement is made between:

SHANDONG UNIVERSITY OF FINANCE AND ECONOMICS,a university jointly supported by the Ministry of Finance, the Ministry of Education and the provincial government of Shandong, with its main campus located at 7366 Erhuan Donglu, Jinan, Shandong, China, 250014.
("**SDUFE**")

- AND -

UNIVERSITY OF WATERLOO, a university established by an Act of the Legislature of the Province of Ontario, with its main campus located at 200 University Avenue West, Waterloo, Ontario, Canada N2L 3G1.
("**Waterloo**")

CONTEXT:

A. SDUFE and Waterloo (singularly an "**Institution**", or collectively the "**Institutions**") wish to establish a collaborative 2+2 Program, under which successful students will be awarded an academic credential from each Institution.

B. The Institutions recognize the benefits of internationalizing their educational programs through joint academic programming aimed at developing global citizenship and thereby increasing student adaptability, cultural sensitivity, intercultural communication skills, and employability.

C. The Institutions acknowledge that activities under this Agreement support their intent to participate in a greater collaborative joint academic program in the areas of resources and environmental economics supported by SDUFE and China's Ministry of Education.

D. Within their interests and abilities, the Institutions agree to (i) the exchange of information necessary for educational activities; (ii) the encouragement of educational activities involving the other Institution; and (iii) the interchange of students.

THEREFORE, both Institutions agree to provide for a Program (hereinafter defined) under the following conditions:

1. DEFINITIONS

1.1 In this Agreement, in addition to terms defined elsewhere in this Agreement, the following terms shall have the following meanings:

"Academic Year" refers to a period of twelve months from 1st September until 31st August, unless otherwise stated.

"Agreement" refers to this 2+2 Program Agreement and any schedules and appendices attached, and includes any amendments the Institutions may agree to in writing.

"Applicant(s)" refers to Undergraduate student(s) enrolled at SDUFE who formally apply to participate in the Program, but who have not yet met admissions criteria and have not been admitted to the Program.

"EFAS" refers to the Renison University College's English for Academic Success program.

"ELP" refers to the English Language Proficiency requirements for admission to the Program.

"Indemnitees" refers to any or all of each Institution's governors, directors, officers, faculty, students, employees, alumni, independent contractors, agents, and volunteers.

"Participating Student(s)" refers to the Undergraduate student(s) admitted into, and participating, in the Program.

"Program" refers to the overall 2+2 program operated under this Agreement.

"Signatories" refers to the individual representatives of the Institutions who have legal signing authority to bind their respective Institutions into the Agreement.

"Term(s)/Semester(s)" refers to the broad study segments of the Academic Year at the Institutions.

In regards to SDUFE, a dual semester system of study is in place with start dates in September and January. For full details, refer to the SDUFE Academic Calendars:

https://www.sdufe.edu.cn/xyfw/zxxl.htm

In regards to Waterloo, a tri-semester system of study is in place with start dates in September, January, and May. For full details, refer to the Waterloo Academic Calendars:

Undergraduate: http://ugradcalendar.uwaterloo.ca/page/uWaterloo-Undergraduate-Calendar-Access

"Undergraduate" refers to any student who is in pursuit of a bachelor's degree that is a minimum of three (3) years in length.

2. SCOPE OF PROGRAM

2.1 Program Duration

Participating Students will complete two (2) years of study as a SDUFE student and spend a minimum of two (2) years as a Waterloo student.

2.2 Institutional Involvement

Applicants can apply the following eligible Waterloo Faculty of Environment Undergraduate regular program of Geography and Environmental Management:

Honors Geography and Environmental Management with Economy & Society Specialization.

Applicants will be enrolled in SDUFE's Resource and Environmental Economics Program (in the SDUFE School of Economics).

2.3 Program Quota

2.3.1 For each Academic Year of the Program, SDUFE and Waterloo will work together to select up to forty (40) Participating Students.

2.3.2 Program quota may be adjusted by written mutual agreement of both Institutions. Once an Applicant is enrolled in the Program, they shall be included in the overall quota of Participating Students in that Academic Year, even if they withdraw from the Program for any reason.

2.4 Program Advertisement

SDUFE is responsible for making Applicants aware of the Program in order to attract the most qualified students.

3. ADMISSIONS

3.1 Potential Participants

Prior to application to the Program, potential Applicants will have been admitted to SDUFE through its standard procedures into any eligible programs at SDUFE.

3.2 Selection of Applicants

3.2.1 SDUFE will pre-select Applicants according to Waterloo qualification criteria and Waterloo's minimum admission requirements. Where possible, SDUFE will encourage pre-selected Applicants to take part in extracurricular English language training and other preparatory activities while at SDUFE. When possible, Waterloo staff will visit SDUFE annually during Waterloo's Fall Term (September to December) to examine and interview Applicants for English language skills. Waterloo will be responsible for travel and living expenses of its staff while visiting SDUFE.

3.3 Admissions Decisions and Requirements

Admission decisions will be made by Waterloo in accordance with this Agreement, subject to Waterloo's policies, procedures, and regulations in effect at the time of said decisions.

3.3.1 Applicants must satisfy the following Waterloo minimum admission requirements before entering the Program:

3.3.1.1 Academic Requirements

Applicants must have successfully completed the first two (2) years of jointly recognized curriculum at SDUFE, including completing all courses with a minimum overall average of 75%.

3.3.1.2 **English Language Proficiency Requirements**

Applicants must complete an official ELP test with satisfactory scores or qualify for an ELP waiver. Waterloo's required ELP tests and scores are outlined on Waterloo's admissions website: https://uwaterloo.ca/future-students/admissions/english-language-requirements

(i) Applicants who do not achieve satisfactory ELP scores, but who have satisfied all other conditions for admission, may meet the minimum required ELP scores to be considered for EFAS. Waterloo will coordinate placement of qualifying Applicants into the 6-week EFAS program. Students must obtain an overall average of 75% in the EFAS program to begin full-time Undergraduate studies in the Program at Waterloo.

(ii) Applicants who did not successfully complete EFAS will require additional intensive English language training and may request to have their conditional offer of admission deferred for one term (or two terms maximum) in order to meet ELP criteria.

(iii) Applicants who are exempt from providing ELP test scores, as well as those who have successfully met the ELP test criteria, are exempt from completing EFAS, although they are strongly recommended to take part in EFAS.

(iv) Applicants who qualify for EFAS are responsible for applying, enrolling in, and attending EFAS, which begins annually in mid to late July.

(v) Applicants are responsible for all costs associated with English language training.

3.3.1.3 **Transfer Credits**

Waterloo will grant eligible transfer credits for the first two years of course work to Participating Students who obtain marks with a minimum final grade of 70% in each course taken at SDUFE, to a maximum of 10.0 credit units (or 20 semester courses).

3.3.1.4 **Transfer Credit Assessment**

SDUFE will provide sufficient course information, including course syllabi, typical exam questions and student responses, to allow Waterloo to determine which of its courses qualify for Waterloo transfer credits.

3.4 Application Fees and Form

Applicants are responsible for all relevant application fees at each Institution.

3.5 Application Deadlines and Required Documents

Waterloo admission deadlines and required supporting documents are subject to change. Waterloo will advise SDUFE of relevant deadlines and required supporting documents on an annual basis.

3.6 Right to Refuse

Waterloo may refuse Applicants based on space limitations, fiscal constraints, Applicant's failure to meet admission standards, or external factors such as failure of the Applicant to obtain valid travel and study documents.

3.7 Inclusivity

Neither Institution will deny participation to, or unlawfully discriminate against, Applicants or Participating Students on the grounds of race, colour, age, religion, national origin, sex, sexual orientation, creed, disability, or any other factor prohibited by the applicable laws of Canada or Ontario or China or Shangdong.

4. REGISTRATION

4.1 Continuous Registration

Participating Students are responsible for maintaining continuous registration at both Institutions for the duration of their studies at Waterloo.

4.2 Program Length

The Program is designed for completion within four years of consecutive full-time study comprised of two years of full-time residence at SDUFE followed by four full-time academic Terms/Semesters (two Academic Years) at Waterloo. The actual length of study at Waterloo will depend on the number of transfer credits and the number of courses a Participating Student takes each Term/Semester.

4.3 Program Transfer

4.3.1 Participating Students must pursue the approved Program's course of study for the agreed period.

4.3.2 Participating Students are not permitted to apply for transfer to other Waterloo programs or Faculties, unless comparable 2+2 program agreements already exist with SDUFE and the transfer is agreed to in writing by both Institutions.

4.4 Full-Time Enrolment

Participating Students must maintain full-time enrolment for the duration of their studies at Waterloo.

4.5 Degree Progression

Waterloo is solely responsible for decisions regarding Participating Students' progression in years three and four of the Program.

4.6 Regulations

Notwithstanding any provisions in Section 9, Participating Students must comply with Waterloo's regulations, including the following (as same may be supplemented and/or updated from time to time):

4.6.1 Academic Regulations contained in the Undergraduate Studies Academic Calendar: http://ugradcalendar.uwaterloo.ca, and the Graduate Studies Academic Calendar: https://uwaterloo.ca/graduate-studies-academic-calendar/;

4.6.2 Academic and non-academic misconduct regulations contained in Policy 71 – Student Discipline: https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71;

4.6.3 Ethical conduct of research through the Office of Research: https://uwaterloo.ca/research/office-research-ethics;

4.6.4 Academic integrity through the Office of Academic Integrity: https://uwaterloo.ca/academic-integrity/; and

4.6.5 All other applicable rules and regulations governing student discipline, academic misconduct, ethical research, and academic integrity.

4.7 Travel and Study Documentation

Participating Students are solely responsible for obtaining and maintaining valid travel and study documents for the duration of their studies.

5. TUITION AND EXPENSES

5.1 Tuition and Incidental Fees

Participating Students will pay tuition and incidental fees to the Institution at which they are in residence, as set by that Institution according to its usual procedures. While at Waterloo, Participating Students will be charged according to the relevant international student tuition standard.

5.2 Health Insurance

Participating Students are responsible for obtaining appropriate personal health and hospitalization insurance coverage (and other insurance, if required) while in residence at the Host Institution:

5.2.1 In regards to Waterloo, Participating Students are required to enrol in, and maintain coverage through, the University Health Insurance Plan (UHIP) and Waterloo's student health and dental plan or equivalent.

5.3 Expenses

Neither Institution is responsible for expenses incurred by Participating Students or visiting faculty and staff, including, but not limited to, travel/study documents, living, accommodation, medical care, ELP training, and personal expenses, except as may be arranged for specific cases, or such grants explicitly agreed upon by the Institutions.

5.4 Facilities and Services

Waterloo facilities and support services will be available to Participating Students on the same conditions and, where applicable, at the same incidental fees as for domestic students.

5.5 Accommodation

Waterloo is not responsible for providing accommodation for Participating Students, but may offer advice and assistance in securing housing during their participation in the Program.

5.5.1 Participating Students who receive a formal offer of admission are eligible to apply for, but are not guaranteed, Waterloo accommodation. More information on both Waterloo's on-campus accommodation and private housing can be found on Waterloo's Housing and Residences webpage: https://uwaterloo.ca/housing/.

5.6 Entrance Awards

At Waterloo's discretion, Participating Students may be awarded Waterloo entrance awards.

5.7 Scholarships and Bursaries

While in residence at Waterloo, Participating Students are entitled to apply for any Waterloo scholarship or bursary funds for which they are eligible.

6. RECORDS

6.1 Official Records and Transcripts

Each Institution will maintain official records for Participating Students during their enrolment in the Program and Terms/Semesters of residence.

6.1.1 Participating Students will be issued official transcripts by each Institution as appropriate.

6.1.2 Should translations of official transcripts and/or other documents be required, Applicants and Participating Students shall be responsible for this requirement and any associated costs.

6.2 Privacy and Data Sharing

Subject to applicable laws or regulations regarding privacy and access to student information, each Institution will transmit to the other:

6.2.1 Grades for all courses completed or attempted by Participating Students;

6.2.2 Disciplinary case summaries when a penalty has been imposed; and

Each Institution will use reasonable efforts to obtain Participating Students' consent to the release of information described in this Section.

6.3 Curricular Co-operation

Where possible, SDUFE will incorporate courses, information and materials from Waterloo into its curricula in order to help Participating Students to meet Waterloo prerequisites for upper year courses.

6.3.1 Waterloo and SDUFE will work together to facilitate curriculum compatibility in support of the Program.

6.4 Degree Completion

6.4.1 In regards to SDUFE, the appropriate SDUFE credential will be issued to Participating Students who successfully fulfill all SDUFE degree requirements, including requirements relating to enrolment, progression, and coursework.

6.4.2 In regards to Waterloo, the appropriate Waterloo Honours Bachelor's Degree will be issued to Participating Students who successfully fulfill all Waterloo degree

requirements, including requirements relating to enrolment, progression, and coursework.

6.5 Program Non-Completion

SDUFE agrees to accept returning Participating Students who cannot, for academic or other reasons, continue their study at Waterloo. For any Participating Student who returns having not completed Waterloo degree requirements, SDUFE will assess successfully completed Waterloo courses for possible credit transfer, so that these courses may count towards degree completion at SDUFE.

7. COORDINATOR(S)

7.1 Administrative Coordinator

Each Institution agrees to appoint an Administrative Coordinator for the Program to serve as the contact person for matters related to admissions and the academic progression of Participating Students

7.1.1 In regards to SDUFE, the Administrative Coordinator of this Program is:

Wang Jianbo
Dean
International Office
Phone: +86 531 88596192
Email: wangjianbo@sdufe.edu.cn

7.1.2 In regards to Waterloo, the Administrative Coordinator of this Program is:

Dual Degree Admissions Specialist
Registrar's Office
Telephone: +1 (519) 888-4567, ext. 41768
Email: registrar.jointacademic@uwaterloo.ca

7.2 Partnership Coordinator

Each Institution agrees to appoint a Partnership Coordinator to serve as the contact person for matters related to the institutional level relationship and other Partnership details.

7.2.1 In regards to SDUFE, the Partnership Coordinator for this Agreement is:

ZHANG Lei
Associate Dean
International Office
Phone: +86 531 88525287
Email: zlgary@foxmail.com

7.2.2 In regards to Waterloo, the Partnership Coordinator for this Agreement is:

Suping Zhao
International Relations Manager
Waterloo International
Phone: +1 (519) 888-4567, ext. 45486
Email: s3zhao@uwaterloo.ca

7.3 **Faculty-level Coordinator**

Each Institution may appoint a Faculty-level Coordinator. The Faculty-level Coordinator will work with the Administrative Coordinator to ensure that Participating Students are progressing appropriately. The Faculty-level Coordinator will also serve as the contact person for matters related to Program administration, arrangements associated with SDUFE visits, and to ensure the general welfare of Participating Students.

7.3.1 In regards to SDUFE, the Faculty Coordinator of this Program is:

QI Yang
Associate Dean
School of Economics
Phone: +86 531 82617697
Email: qy3385@163.com

7.3.2 In regards to Waterloo, the Faculty Coordinator of this Program is:

Fulu Mao
International Education Coordinator & 2+2 Program Officer
Faculty of Environment
Phone: +1 518 888 4567 ext. 33871
Email: fmao@uwaterloo.ca

8. NOTICES

8.1 Any notice to be given under this Agreement shall be in writing and addressed to the appropriate Contact for Notices.

8.1.1 In regards to SDUFE, the Contact for Notices of this Agreement is:

WANG Jianbo
International Office
Shandong University of Finance and Economics
7366 Erhuan Donglu,
Jinan, Shandong Province, China, 250014
Phone: (86-531) 88596192
Email: wangjianbo@sdufe.edu.cn

8.1.2 In regards to Waterloo, the Contact for Notices of this Agreement is:

Manager, International Agreements
Waterloo International
University of Waterloo
200 University Avenue West
Waterloo, Ontario, Canada, N2L 3G1
Phone: +1 (519) 888-4567, ext. 40151
Email: international.agreements@uwaterloo.ca

8.2 Notice will be deemed given when verified by written receipt if sent by courier, or electronic log if sent by email.

9. INTELLECTUAL PROPERTY

9.1 Participating Students shall be subject to the intellectual property policy of the Institution in which they are in residence. The Participating Student's physical residence for the purposes of completing this Program will determine which institutional Intellectual Property policy will be applied. For further clarity, if a Participating Student is residing at a SDUFE campus, the SDUFE Intellectual Property Policy will apply to the Participating Student. Further, if a Participating Student is residing at a Waterloo campus, the Waterloo Intellectual Property Policy will apply to the Participating Student.

9.1.1 In regards to SDUFE, ownership of intellectual property is governed by Patent Law, Copyright Law and Trademark Law of the People's Republic of China and their amendments, which operates under the principle that works of Chinese citizens, whether published or not, shall enjoy copyright, and works of foreigners first published in the territory of the People's Republic of China shall enjoy copyright in accordance with the Laws.

9.1.2 In regards to Waterloo, ownership of intellectual property is governed by Policy 73 – Intellectual Property Rights, as it is amended from time to time, which operates under the principle that intellectual property rights created in the course of teaching and research activities belong to the creator. Where a Participating Student wishes to enter into an agreement that waives, limits or assigns intellectual property rights, that agreement must be reviewed and approved by Waterloo's Vice-President, Research & International or delegate and, if graduate students are parties to the research, Waterloo's Associate Vice-President, Graduate Studies & Postdoctoral Affairs, or delegate. Waterloo's Policy 73: http://www.secretariat.uwaterloo.ca/Policies/policy73.htm.

10. COMMENCEMENT, TERM, AND TERMINATION

10.1 Term

This Agreement will be effective from the date of the last required signature on the signing page of this Agreement.

10.2 **Renewal, Extension, and Amendment**

This Agreement may be renewed, extended, or amended by written mutual agreement of the Institutions.

10.3 **Termination**

This Agreement will terminate on August 31 of the fifth calendar year from the Effective Date. This agreement may be terminated at any time upon the written request of either Institution with at least six (6) months' notice in accordance with the following provisions, provided such termination shall not affect any other existing contracts:

10.3.1 The terminating Institution will deliver a signed notice of termination to the designated Contact for Notice of the non-terminating Institution, which notice will expressly state it is a "Notice of Termination".

10.3.2 If an Institution elects to terminate this Agreement, all Program arrangements will cease on the effective date of termination, save and except for arrangements regarding Participating Students in the process of completing the Program at such time. The Institutions agree to reasonably permit any such Participating Student to complete their Program on the terms and conditions of this Agreement.

10.4 This Program may require approval from the Senate at Waterloo prior to the admission and enrolment of Participating Students.

11. OTHER TERMS AND CONDITIONS

11.1 **Entire Agreement**

This Agreement constitutes the entire agreement between the Institutions pertaining to the subject matter of this Agreement and supersedes all prior agreements, understandings, negotiations and discussions, whether oral or written, of the Institutions.

11.2 **Non-Exclusivity**

This agreement in no way restricts the Institutions from participating in similar activities or arrangements with others.

11.3 **Independent Institutions**

Nothing contained in this Agreement should be construed to create or imply any joint venture, partnership, principal-agent, trust, or employment relationship between the Institutions, and an Institution may not make, or allow to be made, any representation that any such relationship exists between the Institutions. An Institution shall not have the authority to act for, or to incur any obligation on behalf of, the other Institution, except as expressly provided for in this Agreement.

11.4 **Confidentiality**

Each Institution recognizes that, in connection with this Agreement, it may receive information regarding the business, affairs, operations and finances of the other Institution and personal information of Participating Students or Applicants (collectively, "**Confidential Information**"). Except as set out in this Agreement, each Institution agrees to not disclose any Confidential Information provided to it by the other Institution to any other person or party and agrees to use such Confidential Information solely for the limited purpose for which it was provided. Each Institution shall make all reasonable security arrangements necessary to protect the Confidential Information provided to it by the other Institution and will not copy or disclose the Confidential Information to a third party without the prior written consent of the Institution that provided it or as may be required by applicable law.

11.5 **Force Majeure**

Neither Institution shall be in breach of this Agreement if it is unable to carry out any obligation hereunder for any reason beyond its control including (without limiting the generality of the foregoing) acts of God, legislation, resource shortages, war, fire, flood, drought, failure of power supply, civil commotion, and/or employee action.

11.6 **News Releases and Publications**

Each Institution grants to the other Institution a non-exclusive, non-transferable, royalty-free license to use, reproduce, publish and display that Institution's logo and name during the term of this Agreement solely (i) in conjunction with the materials created during the term of, and in connection with, this Agreement by either, or both, of the Institutions; and (ii) in conjunction with marketing and promotion of the Program described in this Agreement. All such displays of the logo and name of one Institution by another will comply with reasonable guidelines that may be provided by either Institution to the other Institution from time to time.

11.7 **Governing Law**

This Agreement, and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) (each, a "**Dispute**"), shall be governed by, and construed in accordance with, the laws of England and Wales applicable therein.

11.8 **Dispute Resolution**

11.8.1 In the event of any Dispute, the Institutions shall first meet and use reasonable efforts to resolve the Dispute by negotiation between the Institutions acting in good faith.

11.8.2 If a Dispute is not resolved by good faith negotiations, then the Dispute will be finally determined by a sole arbitrator under the London Court of International Arbitration rules. The seat, or legal place, of arbitration shall be London, England.

11.9 **Indemnification**

Each Institution (the "**Indemnifying Institution**") shall indemnify and hold the other Institution (the "**Indemnified Institution**") harmless in respect of any claim, demand, action, investigation, proceeding, cause of action, damage, loss, injury, cost, liability, or expense, which may be made or brought against the Indemnified Institution or which the Indemnified Institution or its Indemnitees may suffer or incur as a result of or arising out of:

11.9.1 Any breach or non-fulfillment of any representations, warranties, covenants, or other contractual obligations under this Agreement on the part of the Indemnifying Institution; or

11.9.2 Any negligence or willful misconduct on the part of the Indemnifying Institution or anyone for whom the Indemnifying Institution is responsible at law, except intellectual property.

Neither Institution will be liable for any indirect, special, incidental, consequential, punitive or exemplary damages or damages for loss of revenue or profit arising in any way from a breach of this Agreement or the performance of an Institution's duties and responsibilities under this Agreement.

The foregoing indemnity shall survive the termination of this Agreement notwithstanding any provisions of this Agreement to the contrary.

11.10 **Insurance**

During the term of this Agreement, each Institution shall maintain professional liability insurance and comprehensive general liability insurance, or equivalent protections, for itself, its students, faculty, staff, and employees, as applicable, on a basis and in amounts sufficient to provide coverage in respect of all matters related to this agreement, and in no event, less than CAD two million dollars ($2,000,000.00), or equivalent, per occurrence.

Each Institution shall provide to the other Institution with proof of its insurance confirming this coverage.

11.11 **Translations**

11.11.1 The official operational language of this Agreement is English.

11.11.2 Should a translation of this Agreement be completed:

(i) The translation must be completed by a certified translator. Waterloo will be solely responsible for the hiring and cost of translation services.

(ii) Any differences in interpretation of this Agreement shall defer to the official English language version; and

(iii) Any translations of this Agreement will not require a signature page.

11.12 **Counterparts**

This Agreement is executed in two [2] English counterparts, each of which is deemed as original, but all of which taken together constitute one of the same Agreement and two [2] certified Chinese translations. The Agreement may be executed by exchange of a signed and scanned signature page in PDF format.

[Signature Page follows]

In signing hereunder, the Signatories affirm their legal authority to bind their respective Institutions into, and execute, this Agreement on the dates shown hereunder.

SHANDONG UNIVERSITY OF FINANCE AND ECONOMICS

per: _____ date: _____
ZHAO Zhongxiu
President

per: _____ date: _____
HAN Zuosheng
Vice-President

UNIVERSITY OF WATERLOO

per: _____ date: _____
Dr. Feridun Hamdullahpur
President & Vice-Chancellor

per: _____ date: _____
Dr. Ian Rowlands
Associate Vice-President, International

per: _____ date: _____
Dr. Jean Andrey
Dean, Faculty of Environment

University of Waterloo
UNIVERSITY COMMITTEE ON STUDENT APPEALS (UCSA)
REPORT TO SENATE
16 November 2020

FOR INFORMATION

In accordance with Policy 72 – Student Discipline, the UCSA is to provide an annual report to Senate on the number of student discipline cases heard at the University and faculty levels, their nature and such recommendations as it sees fit to make with respect to matters under its jurisdiction. Provided in this report is the required information for 1 September 2019 to 31 August 2020, as well as the required information for the two years prior.

The numbers reported in the chart below include findings of guilt for graduate and undergraduate students at the University and faculty levels.

In an attempt to preserve confidentiality, cases are not reported by faculty, unit or program. Annual summaries (with identifying student and faculty names removed) of discipline cases, grievances and appeals are posted to the Secretariat's website: https://uwaterloo.ca/secretariat/committees-and-councils/university-committee-student-appeals.

DISCIPLINE OFFENCE	2017-2018	2018-2019	2019-2020
ACADEMIC			
Academic or admission fraud	14	14	0
Altering of falsifying a relevant document	13	26	0
Cheating	324	544	1340*
Contravention of statute	0	0	0
Impersonation	38	25	57
Misrepresentation	125	92	25
Obtaining confidential academic materials	0	0	4
Plagiarism	1477	1625	1922
Theft of intellectual property	53	26	98
Unauthorized aids or assistance	56	93	604*
Unauthorized co-operation or collaboration	821	1464	1366
Unauthorized resubmission of work	75	49	12
Violation of examination regulations	40	27	159*
Other	12	12	1
NON-ACADEMIC			
Contravention of a statute	0	0	0
Disruptive, dangerous, aggressive or threatening behaviour	31	21	14
Infringing unreasonably on the work of others	9	0	1
Mischief	0	1	0
Misuse of University resources	1	21	2
Theft	0	0	0
Unauthorized use of equipment	4	0	0
Unethical behaviour	61	5	0
Other	10	37	10

* Breakdown of offences by term:

	Fall 2019	**Winter 2020**	**Spring 2020**	**TOTAL**
Cheating	40	833	467	1,340
Unauthorized aids or assistance	18	423	163	604
Violation of examination regulations	10	57	92	159

5 November 2020
/ns

Jeff Casello
Chair