

University of Waterloo
SENATE
Notice of Meeting

Date: Monday 21 June 2021
Time: 3:30 p.m.
Place: Teams Videoconference

	OPEN SESSION	Action
3:30	<p><u>Consent Agenda</u> Motion: To approve or receive for information by consent items 1-5 below.</p> <ol style="list-style-type: none"> 1. Minutes of the 17 May 2021 Meeting 2. Reports from Committees and Councils <ol style="list-style-type: none"> a. Graduate & Research Council b. Undergraduate Council 3. Report of the President <ol style="list-style-type: none"> a. Recognition and Commendation 4. Reports from the Faculties 5. Committee Appointments <p><u>Regular Agenda</u></p>	<p>Decision</p> <p>Information Decision/Information</p> <p>Information</p> <p>Information</p> <p>Decision</p>
3:35	6. Business Arising from the Minutes	Information
3:40	7. Presentation – Dan Brown, President of the Faculty Association of the University of Waterloo	Information
3:50	8. Reports from Committees and Councils	Decision
4:00	<ol style="list-style-type: none"> a. Graduate & Research Council b. Undergraduate Council 	Decision
4:10	9. Report of the President	Information
4:15	10. Q&A Period with the President	Information
4:20	<p>11. Report of the Vice-President, Academic & Provost</p> <ol style="list-style-type: none"> a. Assessment of Teaching Projects Updates <ol style="list-style-type: none"> i. Student Course Perception Project ii. Assessment of Graduate Supervision Project iii. Complementary Teaching Methods Project (CTAPT) iv. Holistic Assessment of Teaching and Institutional Teaching Priorities 	<p>Information</p> <p>Information</p> <p>Information</p> <p>Information</p>
4:40	12. Report of the Vice-President, Research & International	Information
4:45	13. Other Business	

CONFIDENTIAL SESSION		
4:50	14. Minutes of the 17 May 2021 Meeting	Decision
4:55	15. Business Arising from the Minutes	
5:00	16. Report from Nominating Committee for Honorary Degrees	Decision
5:05	17. Report of the President	Information
5:10	18. Other Business	
14 June 2021		Karen Jack University Secretary Secretary to Senate
KJJ/ees		

University of Waterloo
SENATE
Minutes of the Tuesday 17 May 2021 Meeting

Present: John Abraham, Nasser Mohieddin Abukhdeir, Sheila Ager, Jean Andrey, Sandra Banks, Lisa Bauer-Leahy, Michael Beauchemin, David Billedeau, Anne Bordeleau, Dan Brown, Carmen Bruni, Jeff Casello, Trevor Charles, Joan Coutu, Neil Craik, Lori Curtis, Kristine Dalton, Charmaine Dean, David DeVidi, Catherine Dong, Benjamin Easton, Paul Fieguth, Wendy Fletcher, George Freeman, Martha George, Mark Giesbrecht, Moira Glerum, Onurcan Gokkaya, Kelly Grindrod, David Ha, Feridun Hamdullahpur (chair), Kevin Hare, Dennis Huber, Natalie Hutchings, Martin Karsten, Achim Kempf, Jennifer Kieffer, Veronica Kitchen, Alysia Kolentsis, Karen Jack (secretary), Christiane Lemieux, Robert Lemieux, Xianguo Li, Lili Liu, Kristina Llewellyn, Ellen MacEachen, Blake Madill, Peter Meehan, Samantha Meyer, Ian Milligan, Zoran Miskovic, Richard Myers, Beth Namachchivaya, Cathy Newell Kelly, Erin O'Connell, Troy Osborne, Luke Potwarka, William Power, Neil Randall, James Rush, Emma Schuster, Matthew Schwarze, Marcus Shantz, Sivabal Sivaloganathan, Siva Sivoththaman, Chao Tan, Bruno Tremblay, Sharon Tucker, Graeme Turner, Twesh Upadhyaya, Cristina Vanin, Johanna Wandel, Paul Ward, Mary Wells, Stan Woo, Nancy Worth, En-Hui Yang, Samer Zu'Mot

Guests: Kathy Acheson, Jean Becker, Kathy Becker, Bruce Campbell, Aldo Caputo, Jennifer Coglin, Donna Ellis, Barbara Forrest, Brian Forrest, Candace Harrington, Narveen Jandu, Ross Johnston, Andrea Kelman, Meagan Lai, Nick Manning, Norah McRae, Kari Pasick Stewart, Chris Read, Ian Rowlands, Emily Schroeder, Nadia Singh, Allan Starr, Kerry Stryker, Sherri Sutherland, Brandon Sweet, Sean Thomas

Absent: Mike Ashmore, Dominic Barton, Robyn Clarke, Cindy Forbes, Graham Murphy, Oudy Noweir*, Daniel O'Connor, Joanne Shoveller*, Clarence Woudsma

*regrets

OPEN SESSION

CHAIR'S REMARKS

The president introduced new and returning members: John Abraham, Nasser Mohieddin Abukhdeir, Lisa Bauer-Leahy, David Billedeau, Trevor Charles, Joan Coutu, Kristine Dalton, Catherine Dong, Benjamin Easton, Moira Glerum, Onurcan Gokkaya, Kelly Grindrod, Kevin Hare, Martin Karsten, Alysia Kolentsis, Xianguo Li, Kristina Llewellyn, Ian Milligan, Oudy Noweir, Erin O'Connell, Luke Potwarka, Naima Samuel, Matthew Schwarze, Chao Tan, Graeme Turner, and Diana Vangelisti.

Consent Agenda

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

Hare and George.

1. MINUTES OF THE 19 APRIL 2021 MEETING

Senate heard a motion to approve the minutes of the meeting.

2. REPORTS FROM COMMITTEES AND COUNCILS

Graduate & Research Council. Senate received the report for information.

Undergraduate Council. Senate heard the following motions:

Faculty of Arts, Mutually Exclusive Plans

Motion 1: That Senate approve the proposed revision to regulations governing the combination of Liberal Studies with other majors, effective 1 September 2022.

Faculty of Arts, Categorization of Liberal Studies as a Major

Motion 2: That Senate approve the proposed categorization of Liberal Studies for the purposes of academic rules and regulations in the undergraduate calendar, effective 1 September 2022.

Faculty of Arts, Updates to the Transdisciplinary Studies List

Motion 3: That Senate approve the updates to the transdisciplinary studies list, effective 1 September 2022.

Faculty of Arts, Co-op Sequence

Motion 4: That Senate approve the changes to the co-op sequence for honours economics and honours mathematical economics, effective 1 September 2022.

Registrar's Office, Awards of Excellence

Motion 5: That Senate approve the revisions to the term distinction awards of excellence, retroactive to 1 September 2020.

The remaining items in the report were received for information.

3. REPORT OF THE PRESIDENT

Recognition and Commendation. Senate received the report for information.

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

University Research Chairs. Senate received the report for information.

5. REPORTS FROM THE FACULTIES

Senate received the reports for information.

6. COMMITTEE APPOINTMENTS

Senate heard a motion to approve the following appointments:

- **Executive Committee:** Cristina Vanin (St. Jerome's University) as the Affiliated and Federated Institutions of Waterloo (AFIW) faculty representative, term 1 May 2021 to 30 April 2022.
- **Nominating Committee for Honorary Degrees:** Troy Osborne (Conrad Grebel University College) as the AFIW faculty representative, term 1 May 2020 to 30 April 2022.
- **Graduate & Research Council:** Aiden Huffman (applied mathematics) as the graduate student representative from the Faculty of Mathematics, term 1 May 2021 to 30 April 2023.
- **University Committee on Student Appeals:** Aiden Huffman (applied mathematics) as the graduate student representative from the Faculty of Mathematics, term 1 May 2021 to 30 April 2023.

The question was called, and the motion carried unanimously.

Regular Agenda

7. BUSINESS ARISING FROM THE MINUTES

There was no business arising.

8. REPORTS FROM COMMITTEES AND COUNCILS

Graduate & Research Council

Program Changes, Faculty of Arts. Senate heard a motion to approve six updates (re: admission averages, admission requirements) to the Master of Accounting (MAcc), effective 1 May 2023, as presented at Attachment 1.

Dean and Ager. Carried unanimously.

Undergraduate Council

New Academic Plans, Faculty of Arts and Faculty of Environment. Senate heard a motion to approve the proposed new Bachelor of Sustainability and Financial Management (Co-op), Corporate Sustainability Specialization, and Government Policy and Financial Markets Specialization plans, as described below and in Volumes I and II, effective 1 September 2022.

Andrey and Ager. Carried unanimously.

New Academic Plans, Faculty of Environment. Senate heard a motion to approve the proposed new Bachelor of Science (BSc), Honours Climate and Environmental Change (regular and co-op), as described below and in Volumes I and II, effective 1 September 2022.

DeVidi and Andrey. Carried unanimously.

Major Modifications, Faculty of Arts and Renison University College, Social Development Studies. Senate heard a motion to approve the proposed changes to the Three-Year General Social Development Studies Major, Four-Year General Social Development Studies Major, Honours Social Development Studies Major, and Social Development Studies Minor as outlined below, effective 1 September 2022.

DeVidi and Llewellyn. Carried unanimously.

9. REPORT OF THE PRESIDENT

The president provided an update on recent pandemic-related activities, including an overview of last week's well-attended Town Hall. He spoke to continued plans for approximately 50% capacity this fall and advised that the University will continue to follow advice from Public Health. Members also heard some details about the government's tuition announcement and the recently updated policy on expenses. He encouraged senators to take part in this year's convocation ceremonies noting how immensely meaningful the experience is for those graduating.

The chair spoke to the memo distributed earlier this date regarding a slight change to Policy 76 – Faculty Appointments. Senate heard a motion to approve the following changes to Policy 76:
(~~strike through~~ = deleted text; **bold** = new text)

University Appointments Review Committee (UARC)

This Committee, appointed by the Vice-President, Academic & Provost in consultation with Deans' Council and the President of the Faculty Association, shall advise on regular faculty appointments of duration **more than** two years ~~or more~~. ...

Brown and Hare.

In discussion: how the revision adds clarity and corrects some unintended consequences; agreement at the Faculty Relations Committee of the value of implementing this change immediately, with the understanding that the committee continues to work on other important potential revisions; the change will be implemented after approval by the Board and will not be retroactive.

The question was called and the motion carried unanimously.

10. Q&A PERIOD WITH THE PRESIDENT

There were no questions.

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

Roster of Graduands. Senate heard a motion to delegate approval of the roster of graduands to the Executive Committee at its 7 June 2021 meeting. [Secretary's note: On 7 June 2021, Senate Executive Committee approved the roster as delegated.]

Rush and Giesbrecht. Carried unanimously.

12. REPORT OF THE VICE-PRESIDENT, RESEARCH & INTERNATIONAL

Following kudos from Dean for the several winners of awards and distinctions, Senate received the report for information.

13. OTHER BUSINESS

There was no other business.

Senate convened in confidential session.

4 June 2021

Karen Jack
University Secretary

CONFIDENTIAL SESSION

The confidential minutes have been removed.

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
21 June 2021

Senate Graduate & Research Council met on 10 May 2021 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

RESEARCH CENTRES AND INSTITUTES

On behalf of Senate, due to challenges and delays to business processes caused by the COVID-19 pandemic, council approved:

- 12-month extension of the mandate of the Heritage Resource Centre (Faculty of Environment). The revised centre renewal date is 30 September 2022.
- 6-month extension of the Waterloo Institute for Complexity and Innovation (Faculty of Environment). The revised centre renewal date is 30 November 2021.

UNIVERSITY RESEARCH ETHICS

On behalf of Senate, council approved the following:

- Clinical Research Ethics Board – renewal of member (1) and new membership (1)

CURRICULAR SUBMISSIONS

On behalf of Senate, council approved a new courses and minor program revisions for the Faculty of Engineering (systems design engineering) and the Faculty of Science (pharmacy).

GRADUATE AWARDS

On behalf of Senate, council approved the Scotiabank Graduate Scholarship in Data Science (trust) and the Engineering COVID-19 Graduate Bursary (operating).

/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
21 June 2021

Senate Undergraduate Council met on 11 May 2021 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 APPROVAL

NEW ACADEMIC PLAN & RELATED INACTIVATIONS

Faculty of Mathematics
Applied Mathematics

1. **Motion:** That Senate approve the creation of an Applied Mathematics Engineering specialization with three themes and inactivate the three separate Applied Mathematics Engineering specializations created in error as of 1 September 2019.

Background and Rationale: This motion will take effect as of 1 September 2019 to correct the unintentional creation of three separate specializations where the intention was to convert an existing option with two themes into a specialization and add a third theme. Note: the conversion from “option” to “specialization” was required to conform to the common language terminology.

Current calendar text: <https://ugradcalendar.uwaterloo.ca/page/MATH-AM-Engineering-Specialization>

Proposed calendar text: (new = bold; deleted = strikethrough)

...

Enrolment in this Specialization is limited; a minimum cumulative average of 70% is strongly recommended.

The Engineering Specialization has three theme areas: Fluids and Heat, Communication and Control, Heat and Mass Transfer. Students must choose one.

The Engineering Specialization has the same requirements as Honours Applied Mathematics, **with the constraints on course selection for each theme as given below:**

...

FOR INFORMATION

OFFICES OF THE REGISTRAR AND ASSOCIATE VICE-PRESIDENT, ACADEMIC

Process for Approving Temporary Adjustments to Academic Programming in Response to COVID-19

In June 2020, Senate endorsed a process to be followed for temporary curricular changes made in response to the pandemic. (See pp.105-106 of the [June 2020 Senate Package](#) for more details.) The report contemplated that University activities would return to campus full-time by Winter or Spring 2021.

Because this has not happened, those involved in academic programming wanted to affirm to Senate that they will continue to follow the process outlined in June 2020 for adjustments made on a temporary basis, while continuing to bring forward ongoing/permanent changes through the usual approval processes.

OFFICE OF THE REGISTRAR

Undergraduate Scholarships, Awards and Bursaries. See attachment #1 for new undergraduate scholarships, bursaries and awards.

Effective Dates Chart. Council reviewed and accepted the attached chart which is presented to council annually and outlines dates by which a curricular change needs to be approved in order to appear in a given academic calendar. See attachment #2.

MINOR PLAN & CURRICULAR MODIFICATIONS

Council approved the following on behalf of Senate:

- minor plan changes for the faculty of mathematics (computer science human-computer interaction specialization, computer science software engineering specialization, mathematics/business information technology management degree, mathematics/business administration degree, computer science double degree, mathematics/business CPA, mathematics/business double degree).
- new courses for the faculty of mathematics (computer science).
- course changes for the faculty of mathematics (applied mathematics, computer science, dean of mathematics, statistics and actuarial science)

/rmw

David DeVidi
Associate Vice-President, Academic

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for May 11, 2021 meeting of Senate Undergraduate Council -

ENTRANCE AWARDS

Class of 1994 Engineering Scholarship

A scholarship, valued at \$2,000, will be provided annually to a full-time undergraduate student enrolled in Year One of any program in the Faculty of Engineering (excluding the School of Architecture). Selection to be based on academic excellence combined with extracurricular and leadership involvement assessed through the Admission Information Form. This fund is made possible by a donation from the Class of 1994 to support the next generation of engineers.

Method of Financing: one-time donation (to support scholarship for five years)

Tom Curry and Family Award

An award, valued at up to \$1,200, is awarded annually to a full-time undergraduate student enrolled in Year One of any program in the Faculty of Environment who has demonstrated financial need, as determined by the University of Waterloo. To be considered, students must complete the Waterloo Entrance Bursary application by April 15. This fund is made possible by a donation from alumnus J. Thomas Curry, to inspire and support the next generation of students to chart their path and shape their future through higher education.

Method of Financing: endowment

Tom and Sharee Fahidy Entrance Scholarship

A scholarship, valued at \$2,500, will be awarded annually to a full-time undergraduate student enrolled in Year One of the Chemical Engineering program. Selection is based on academic excellence combined with extracurricular and leadership involvement assessed through the Admission Information Form. This fund is made possible by a donation from Tom and Sharee Fahidy who would like to honour the 35+ career Tom had in the Department of Chemical Engineering and to recognize the academic achievements of future students.

Method of Financing: one-time donation plus monthly donations (on-going pledge)

Rich Media - Aivars Petersons Memorial Award

One award, valued at \$2,000, will be provided annually to an outstanding undergraduate student entering Year One of any program in the David R. Cheriton School of Computer Science (excluding Software Engineering). Selection will be based on a combination of academic excellence and financial need as determined by the University of Waterloo. To be considered, students must complete the Waterloo Entrance Bursary application by April 15. This fund is made possible by a donation from Rich Media in memory of Aivars Petersons.

Method of Financing: annual donation (five-year pledge)

Scotiabank Entrance Scholarship for Black and Indigenous Students

One scholarship, valued at \$10,000, will be awarded annually to a Black or Indigenous student entering Year One of any program within the Faculty of Mathematics (excluding Software Engineering). For the purpose of this scholarship, an Indigenous person is a person who self identifies as First Nations (Status/Non-Status), Métis, or Inuit as defined in the Canadian Constitution Act 1982. Selection is based on a combination of academic excellence (minimum admission average of 80%), and extracurricular involvement and/or volunteer activities. Preference will be given to students who are attempting to advance Black or Indigenous initiatives in their community. Interested students should submit an online application by April 1. This fund is made possible by a donation from Scotiabank with the goal to support marginalized students.

Method of Financing: annual donation (four-year pledge)

Scotiabank Women in Computer Science Entrance Scholarship

A scholarship, valued at \$10,000, will be awarded annually to a full-time female undergraduate student entering Year One in any program in the David R. Cheriton School of Computer Science (excluding Software Engineering), wherein women are underrepresented. Selection will be based on academic achievement (minimum 80% admission average), Admission Information Form, and contest scores as assessed through CEMC. This fund is made possible by a donation from Scotiabank with the goal to support female students who are studying Computer Science.

Method of Financing: annual donation (four-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES
to be added to the Undergraduate Awards Database
- submitted for May 11, 2021 meeting of Senate Undergraduate Council -

Bruce Sharp P.Eng Memorial Engineering Bursary

A bursary, valued at up to \$1,200, will be awarded annually to a full-time undergraduate student enrolled in Year One of the Mechanical Engineering program who has a demonstrated financial need as determined by the University of Waterloo. To be considered, students must complete the Waterloo Entrance Bursary application by April 15. This fund is made possible by donations made in memory of Bruce Sharp, P.Eng., from Bruce's wife and life partner, Toni E. Ritchie, and gifts received from family, friends, and professional colleagues.

Method of Financing: endowment

Kevin Strain International Entrance Scholarship

One scholarship, valued at \$15,000 over two academic years, will be awarded annually to an international undergraduate student entering Year One of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics, or Science. Selection will be based on academic excellence (minimum 80% admission average) among students who are studying on an international study visa. Recipients will receive \$3,750 per term from 1A to 2B if they remain studying on an international visa. This fund is made possible by a donation from alumnus Kevin Strain (MAcc '90).

Method of Financing: annual donation (three-year pledge)

AWARDS FOR CURRENT STUDENTS

Harvey Bains and Ben Kaak Award

One award, valued at \$15,000, will be provided annually to a deserving full-time undergraduate student entering Year Two of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics, or Science. Selection will be based on a combination of academic achievement (minimum 80% cumulative average), financial need, and volunteer activities at school or within the community. Interested students should apply online by October 1. This fund is made possible by a donation from Harvey Bains and alumnus Ben Kaak (BA '82).

Method of Financing: residual funds from a previous donation

Harvey Bains and Ben Kaak Undergraduate Bursary

A bursary, valued at \$5,000, will be awarded annually to a full-time undergraduate student enrolled in Year Two, Three, or Four of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics, or Science who has a demonstrated financial need as determined by the University of Waterloo. To be considered, students must complete the Waterloo Full-time Bursary online application and demonstrate academic excellence (minimum 75% cumulative average). This fund is made possible by a donation from Harvey Bains and alumnus Ben Kaak (BA '82).

Method of Financing: annual donation (five-year pledge)

Joanna Duong Chang Memorial Award

An award, valued at \$2,000, will be provided annually to a full-time female undergraduate student enrolled in Year Two, Three, or Four of a program in the Faculty of Mathematics wherein women are underrepresented. Selection is based on academic excellence (minimum 75% cumulative average) and a demonstrated passion for entrepreneurship as evidenced by extracurricular activities such as the completion of a business project, participation in entrepreneurial competitions, etc. Preference will be given to candidates who best demonstrate the impact this award will have on their ability to pursue excellence both in the classroom and in their entrepreneurial endeavours. Interested students should submit an online application by November 1. This fund is made possible by a donation from the memorial foundation established by Stanley Chang (BMath '00) and his family, in memory of his late wife, Joanna Duong Chang (BMath '04). Joanna was the founder of the highly successful fashion company Henkaa, which produces convertible apparel and accessories for women. Joanna is remembered for her exceptional generosity, tremendous business acumen, and as the 2016 Young Alumni Achievement Award Winner in the Faculty of Mathematics.

Method of Financing: annual donation (five-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for May 11, 2021 meeting of Senate Undergraduate Council -

Linda and Scott Davis Award

An award, valued at \$1,500, will be provided annually to a full-time undergraduate student enrolled in Year Two or Three of any program in the Faculty of Environment. Selection is based on academic achievement (minimum 75% cumulative average) combined with extracurricular or volunteer activities. Students will also be required to provide an essay describing the impact this award will have on their ability to pursue their educational goals. Interested students should submit an online application by November 15. This fund is made possible by a donation from Linda and Scott Davis to support students in the Faculty of Environment.

Method of Financing: annual donation (six-year pledge renewal)

Dupont-Peppler Award for Black or Indigenous Students

One award, valued at up to \$1,000, will be provided annually to a full-time Black or Indigenous undergraduate student enrolled in Year Three or Four of the Faculty of Arts or the Faculty of Engineering. To be eligible for consideration, students must be Canadian Citizens or Permanent Residents. Selection is based on academic achievement (minimum 75% cumulative average) and an essay describing the impact this award will have on their ability to pursue their educational goals. Preference will be given to students who are part of the first generation in their family to attend postsecondary education. Interested students should submit an application by October 1. This fund is made possible by a donation from Ian (BASC '94) and Donna (BA '94) LeGrow. The award is named after the location of Ian and Donna's first apartment together on the corner of Dupont and Peppler Streets in Waterloo.

Method of Financing: endowment

Faculty of Mathematics Co-op for Social Good Awards

One or more awards, valued at up to \$3,000 each, will be provided to full-time undergraduate students enrolled in a co-op program in the Faculty of Mathematics embarking on an unpaid, underpaid and/or flexible work term with a charity or not-for-profit organization in the community, in Canada, or abroad. Selection is based on the level of need, as determined by an assessment of the salary and/or compensation being received, a statement describing why the student is pursuing this co-op employment opportunity as well as the student's statement of anticipated expenses during the work term. Preference will be given to students with placements in the social service sector and/or to students who have been involved in extracurricular or volunteer activities in the service of others. Interested students should submit an online application by April 1/August 1/December 1 to the Office of the Associate Dean of Co-op for the Faculty of Mathematics. Awards are limited. Decisions made by the selection committee are final.

Method of Financing: pooled donations (on-going based on availability of funds)

Faculty of Mathematics First Co-op Support Awards

One or more awards, valued at up to \$3,000 each, will be provided to full-time undergraduate students enrolled in a co-op program in the Faculty of Mathematics embarking on their first co-op work term which is deemed to be unpaid, underpaid and/or flexible according to Co-operative Education. Selection is based on the level of need, as determined by an assessment of the salary and/or compensation being received, a statement describing why the student is pursuing this co-op employment opportunity as well as the student's statement of anticipated expenses during the work term. Interested students should submit an online application by April 1/August 1/December 1 to the Office of the Associate Dean of Co-op for the Faculty of Mathematics. Awards are limited. Decisions made by the selection committee are final.

Method of Financing: pooled donations (on-going based on availability of funds)

Faculty of Mathematics International Student Work Term Support Awards

One of more awards, valued at up to \$3,000 each, will be provided to full-time international undergraduate students enrolled in a co-op program in the Faculty of Mathematics who are embarking on a work term which is deemed to be unpaid, underpaid and/or flexible according to Co-operative Education. Selection is based on the level of need, as determined by an assessment of the salary and/or compensation being received, a statement describing why the student is pursuing this co-op employment opportunity as well as the student's statement of anticipated expenses during the work term. Interested students should submit an online application by April 1/August 1/December 1 to the Office of the Associate Dean of Co-op for the Faculty of Mathematics. Awards are limited. Decisions made by the selection committee are final.

Method of Financing: pooled donations (on-going based on availability of funds)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

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Herbert Fernando Memorial Award

Two awards, valued at \$500 each, are available annually for Black or Indigenous undergraduate students enrolled in a field-based course in the Department of Biology, in the Faculty of Science. Selection is based on academic excellence in ecology-based courses (minimum 3 courses taken). To be considered, interested students are asked to self-identify their eligibility by completing an online form through the Department of Biology by January 15. This award is made possible by donations from faculty, staff, alumni, and friends of the University and of Professor Herbert Fernando, who supported diversity and equity for students in the Department of Biology.

Method of Financing: annual donation (five-year pledge)

Fleming Family Biology Co-op Award

An award, valued at \$2,500, will be provided annually to a full-time undergraduate co-op student enrolled in Year Two of the Biology program in the Faculty of Science who is beginning their first co-op work experience. Selection is based on academic achievement (minimum 75% cumulative average) among students who are pursuing a position that is being compensated below the Faculty of Science co-op salary average. No application required. This fund is made possible by a donation from the Fleming family to recognize outstanding students and help to alleviate some of the pressures of finding the first co-op position.

Method of Financing: annual donation (five-year pledge)

Haitham Kamil Engineering Bursary

Up to two bursaries, valued at \$2,000 each, will be awarded annually to full-time undergraduate students enrolled in Year Two, Three, or Four of any program in the Faculty of Engineering who have a demonstrated financial need as determined by the University of Waterloo. To be considered, students must complete the Full-time Bursary application by October 15. This fund was created by Haitham Kamil to support students in need in the Faculty of Engineering.

Method of Financing: one-time donation (to support bursary for three years)

Kearns Family Aviation Award

Two awards, valued at \$1,000 each, will be provided annually to full-time undergraduate students enrolled in Year One of the Aviation program in the Faculty of Environment or the Faculty of Science. The successful recipients will have achieved the two highest grades in AVIA 100 (Introduction to Aviation). This fund is made possible by a donation from Suzanne, Mike, Katie, Sam, and Andy Kearns to support students in Waterloo Aviation.

Method of Financing: one-time donation (to support awards for five years)

Rico Mariani Scholarship for Black and Indigenous Students in Computer Science

One scholarship, valued at up to \$2,000, will be awarded annually to an outstanding Black or Indigenous undergraduate student enrolled in Year Two, Three, or Four in the David R. Cheriton School of Computer Science. Selection will be based on academic excellence (minimum 80% cumulative average) and extracurricular involvement. Preference will be given to students making an effort to advance Black or Indigenous initiatives either on campus (e.g., involvement in UW BASE, African, or Caribbean Student Associations, Indigenous Student Association, etc.) or in the community. Interested students should submit an online application by October 15. This fund is made possible by Rico Mariani (BMath '88) who is committed to removing barriers for Black and Indigenous students in Computer Science.

Method of Financing: endowment

Rexall Pharmacy Group Community Involvement Award

An award, valued at \$3,000, will be provided annually to a full-time Black or Indigenous undergraduate student enrolled in Year Two, Three, or Four of the PharmD program in the School of Pharmacy. Selection will be based on academic excellence (minimum 75% cumulative average) and demonstrated exemplification of Rexall's iCARE values of integrity, accountability, respect, and excellence through volunteer involvement in the community. Preference will be given to candidates who best demonstrate the impact this award will have on their ability to pursue excellence in the classroom and community. Interested students should submit an online application by May 1. This fund is made possible by a donation from Rexall Canada.

Method of Financing: annual donation (five-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES
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Kevin Strain Undergraduate Award

Two awards, valued at \$7,500 each, will be provided annually to full-time undergraduate students enrolled in Year Two, Three, or Four of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics or Science. Candidates must be in good academic standing (minimum 70% cumulative average). Preference will be given to students who have immigrated to Canada or who are second-generation Canadians and who have financial need; to that end, candidates will be invited to explain what it would mean to them to receive this award. Interested students should submit an online application by October 1. This fund is made possible by a donation from alumnus Kevin Strain (MAcc '90).

Method of Financing: annual donation (three-year pledge)

Pearl Sullivan Emerging Global Leadership Award

An award, valued at \$50,000, will be presented annually to an outstanding undergraduate student leader who is graduating from any program in the Faculty of Engineering (excluding the School of Architecture). This award recognizes a student who has a proven record of leadership through participation in extracurricular and volunteer activities at the University of Waterloo, and who demonstrates the potential to grow as a leader, inspire others to action, and to make a difference in their community. Candidates must have a minimum overall average of 80%. Interested students should submit an application by March 1 to the Faculty of Engineering. This fund is made possible by a donation from Sanjay Malaviya in honour and remembrance of Pearl Sullivan, former dean of Waterloo Engineering, and the first woman serve in that role. Under her leadership, Sullivan ensured that Waterloo continued as a global leader in engineering education.

Method of Financing: annual donation (four-year pledge)

STUDENT-ATHLETE AWARDS

Barbad Bidarian Athletic Excellence Award for Men's Basketball

Two awards, valued at \$4,000 each, are given to members of the varsity men's basketball team. Preference will be given to student-athletes enrolled in Computer Science or more generally, the Faculty of Mathematics. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Men's Basketball, and their community. This award is supported by University of Waterloo alumnus, Nakisa Bidarian, in memory of his brother Barbad Bidarian. Barbad, who attended Ohio State University, was a successful student and athlete with numerous interests, including a passion for basketball, track & field, music, art, and Computer Science.

Method of Financing: annual donation + matching funds (three-year pledge)

Barbad Bidarian Athletic Excellence Award for Track & Field

Two awards, valued at \$4,000 each, are given to members of the varsity track & field team. Preference will be given to student-athletes enrolled in Computer Science or more generally, the Faculty of Mathematics. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Track & Field, and their community. This award is supported by University of Waterloo alumnus, Nakisa Bidarian, in memory of his brother Barbad Bidarian. Barbad, who attended Ohio State University, was a successful student and athlete with numerous interests, including a passion for basketball, track & field, music, art, and Computer Science.

Method of Financing: annual donation + matching funds (three-year pledge)

Paul Craven Engineering and Athletics Excellence Awards

Three awards will be provided annually to full-time undergraduate student athletes enrolled in the Faculty of Engineering who are members of a varsity team. Two awards, valued at \$4,500 each, are designated to first-year students while one award, valued at \$3,000, is designated to an upper-year student. Preference will be given to student athletes on the Warrior men's volleyball team. This fund is made possible by a donation from Paul Craven, '84 Systems Design Engineering alumnus who was also Waterloo's Student Athlete of the Year in 1984.

Method of Financing: annual donation (five-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES
to be added to the Undergraduate Awards Database
- submitted for May 11, 2021 meeting of Senate Undergraduate Council -

Hawkshaw Family Men's Hockey Excellence Award

One award valued at \$2,000, or two awards valued at \$1,000, are given to members of the varsity men's hockey team. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Men's Hockey, and their community. This fund is made possible by a donation from alumnus Ron Hawkshaw (BA'75).

Method of Financing: annual donation (five-year pledge)

Biuck Morad Athletic Excellence Award

Two awards, valued at \$3,000 each, are given to exceptional student-athletes enrolled in the School of Accounting and Finance, or more generally the Faculty of Arts, who best display the values and mission of the interuniversity athletics program. Preference will be given to candidates who best demonstrate the impact this award will have on their ability to pursue excellence both in the classroom and on their respective field of play. Recipients must be qualified student-athletes, enrolled in full-time studies both at the time of application and payment of the award, with a minimum academic average of 80%. An application is required by November 1. This award is supported by University of Waterloo alumnus, Nakisa Bidarian (BA'01, Economics), in memory of his grandfathers, Biuck Agha "Babje" Ashtaryeh and Morad Ali "Agha Jhune" Bidarian, who instilled in him the core values of integrity, excellence, and family.

Method of Financing: annual donation + matching funds (three-year pledge)

Prudham Family Football Excellence Award

One or more awards, valued at up to \$4,500, will be given annually to varsity athletes on the football team. These awards recognize athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by University of Waterloo alumnus Brian Prudham.

Method of Financing: annual donation + matching funds (five-year pledge renewal)

Prudham Family Field Hockey Excellence Award

One or more awards, valued at up to \$4,000, will be given annually to varsity athletes on the women's field hockey team. These awards recognize athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by University of Waterloo alumnus Brian Prudham.

Method of Financing: annual donation + matching funds (five-year pledge)

Somerville Family Football Excellence Award

Two or more awards, valued at up to \$4,500 each, will be given annually to members of the varsity football team. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Football, and their community. This fund is made possible by a donation from alumnus Greg Somerville (BA'78).

Method of Financing: annual donation (five-year pledge)

Bancroft Wright Memorial Award

One award, valued at \$4,500, is given to a member of the varsity women's basketball team. Preference will be given to student-athletes who have overcome adversity, possess excellent teamwork and leadership qualities, and serve their community through volunteer activities. This fund is made possible by a donation from Allan Bush in memory of his close friend Bancroft Wright. Bancroft was a fixture in the women's basketball community throughout the Tri-County Region, and his daughters Candice and Courtney are currently assistant coaches with Warriors Women's Basketball.

Method of Financing: annual donation + matching funds (five-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES
to be added to the Undergraduate Awards Database
- submitted for May 11, 2021 meeting of Senate Undergraduate Council -

INTERNATIONAL EXPERIENCE AWARDS

Eric Breugst International Exchange Award

Two awards, valued at \$1,000 each, will be awarded annually to full-time undergraduate students enrolled in Year Three or Four of any program in the Faculty of Arts (excluding the School of Accounting and Finance) who will be participating in an eligible international exchange/study abroad program. Candidates must have a minimum overall average of 70%. Preference will be given to students with financial need for the term(s) abroad. Interested students should submit an application by July 15. This fund is made possible by a donation from Eric Breugst, who served the Faculty of Arts as an academic advisor for twenty-five years. He wishes to support the University of Waterloo's efforts to educate globally literate and world-ready graduates.

Method of Financing: annual donation (five-year pledge)

Marga I. Weigel International Experience Award

Several awards, valued at up to \$2,500 each, will be awarded annually to students registered full time in an undergraduate program in any Faculty, excluding the Faculty of Engineering. Students must be in good academic standing and participating in an approved, for credit, international experience in Germany or Austria which may include study abroad, exchange, summer or short-term programs, or low-paying co-op/internship terms. Preference will be given to candidates who have taken a German language or culture course. Upon their return, recipients will be encouraged to provide a summary (1-2 page maximum) of their experience abroad to be shared with the donor. Candidates must complete the general International Experience Award application form by March 15, July 15 or November 15. This award was made possible through the generosity of University of Waterloo Arts alumna Dr. Marga I. Weigel (BA '71, MA '73 and PhD '80 with a major in German literature).

Method of Financing: annual donation (ten-year pledge)

Senate Undergraduate Council - Effective Dates Chart

Meetings: 2021 - 2022

SUC meeting dates	EARLIEST EFFECTIVE DATE		EARLIEST EFFECTIVE DATE		SENATE meeting dates
	Motions for COURSES not listed in UG Calendar (see Note 3)	Motions for COURSES listed in UG Calendar (see Note 3)	Plans/programs, regulations: New, changes, inactivations	New entry programs (enrol in 1A)	
September 2021	Sept 2022	Sept 2022	Sept 2022	Sept 2023	October 2021
October 2021	Sept 2022	Sept 2022	Sept 2022	Sept 2023	November 2021
November 2021	Sept 2022	Sept 2023	Sept 2023	Sept 2023	December 2021
December 2021	Sept 2022	Sept 2023	Sept 2023	Sept 2023	January 2022
January 2022	Sept 2022	Sept 2023	Sept 2023	Sept 2023	February 2022
February 2022	Sept 2022	Sept 2023	Sept 2023	Sept 2023	March 2022
March 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2023	April 2022
April 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2023	May 2022
May 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2024	June 2022
June 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2024	September 2022

Notes:

- Dates listed above are the earliest effective date **possible** for any given motion; option to use later dates exists.
- If an **earlier** effective date is desired, consultation with the Office of the Registrar is **required** to ensure it is feasible; a rationale for the exception is required.
- Courses appearing in **ANY plan pages** of the Undergraduate Calendar are considered "listed in the UG Calendar" (whether "required" or part of an electives list).
- For changes to courses not requiring SUC approval: the earliest effective date is September 1 that matches SUC meeting (of when the change is requested). For example, a change requested on March 1, would follow a Sept 2023 effective date.
- Motions for courses are approved at SUC on behalf of Senate.

Last opportunity to	SUC meeting
Make changes to 2022-2023 Calendar (plans/regulations)	October 2021
Make changes to 2022-2023 Calendar (courses listed in Calendar)	October 2021
Make changes to 2022-2023 Calendar (courses not listed in Calendar)	February 2022
Create new entry program for fall 2023	April 2022
Make changes to 2023-2024 Calendar (plans/regulations)	October 2022
Make changes to 2023-2024 Calendar (courses listed in Calendar)	October 2022
Make changes to 2023-2024 Calendar (courses not listed in Calendar)	February 2023

University of Waterloo
SENATE
Report of the President
21 June 2021

FOR INFORMATION

Recognition and Commendation

The **International Tobacco Control (ITC) Project** has been awarded one of six **Governor General's Innovation Awards for 2021**. Celebrating excellence in innovation that makes a positive impact on quality of life in Canada, the honour is awarded jointly to the interdisciplinary ITC team including Faculty of Arts' **Geoffrey Fong** (Psychology), Faculty of Mathematics' **Mary Thompson** (Statistics and Actuarial Science), and Faculty of Health's **David Hammond** (School of Public Health and Health Systems).

"With the persistent leadership of Dr. Geoffrey Fong, the ITC Project, centered at the University of Waterloo, is globally renowned for its innovative research supporting and defending effective tobacco control policies such as graphic health warnings, smoke free laws, advertising bans, and tobacco taxes," states the Governor General's Innovation Award citation.

"This pioneering research, across 29 countries covering over half of the world's population, has led Canada and many other countries to strengthen their tobacco control efforts, improving the health of millions of people worldwide," the citation continued.

Fong, a professor of social psychology, founded the ITC Project in 2002, and has been its Chief Principal Investigator heading the ITC team of more than 150 researchers across its 29 countries. Both Thompson and Hammond have been key project collaborators since then.

Evaluating key policies of the WHO Framework Convention on Tobacco Control (FCTC), the ITC Project has conducted over 170 surveys collecting nearly 400,000 completed surveys, to measure the impact of tobacco control policies of the FCTC including more recent policies such as plain packaging and bans on additives and flavourings in cigarettes. Over the past 20 years, Fong and his colleagues have built the evidence base to promote stronger actions to tackle tobacco smoking — which kills 47,000 people a year in Canada and more than 8 million people a year globally.

About the Governor General's award, Hammond said, "It's a testament to the importance of basic public health research and of international collaborations to understand how global risk factors for chronic disease can be addressed."

(adapted from the *Daily Bulletin*, 4 May 2021)

The Canadian Cancer Society has just announced that Professor **Geoffrey Fong** is the **2021 recipient of the O. Harold Warwick Prize for outstanding research achievements in cancer control in Canada**. The prize recognizes Fong's leadership of the International Tobacco Control Policy Evaluation Project (ITC Project).

"Smoking tobacco is a leading cause of cancer not just in Canada, but globally," says Dr. Stuart Edmonds, Executive Vice-President, Mission, Research and Advocacy at CCS. "We commend Dr Fong

on his research and advocacy efforts, which have helped reduce tobacco use and had an unparalleled impact on the health of millions of people around the world.”

Fong is founder and chief principal investigator of the ITC Project, based in the Department of Psychology. From the more than 300,000 completed surveys that have been conducted since 2002, the ITC team has published over 600 scientific papers, many of which have evaluated the effectiveness of FCTC policies, including smoke-free laws, graphic warnings, and higher tobacco taxes.

Recent ITC evaluation studies in Canada include plain packaging and ban of menthol cigarettes, which found that Canada’s menthol ban led to substantially greater quitting among menthol smokers and lower relapse among former menthol smokers. In fact, on April 29, the US FDA announced that the US would also ban menthol cigarettes, highlighting the ITC study and Fong’s estimates based on the Canadian findings that the US menthol cigarette ban would lead an additional 923,000 US smokers to quit.

The O. Harold Warwick Prize is named after the pioneering researcher in cancer control and treatment, who became the first executive director of both the former National Cancer Institute of Canada and the Canadian Cancer Society. The award is given annually to honour distinguished investigators in cancer control research.

(adapted from the *Daily Bulletin*, 13 May 2021)

The **Association of University Technology Managers (AUTM)** has recognized a University of Waterloo staff member with an award for leadership in the professional community. **Mike Szarka**, Director of Research Partnerships in the Office of Research, received the Canadian award at the virtual AUTM Canadian Region meeting on Wednesday. The annual award recognizes a Canadian member who has served the greater technology transfer community in Canada and contributed to technology transfer in a meaningful way.

“Mike checked all the boxes. He’s a model contributor and is always there to provide wise advice,” said Darren Fast, Chair of the AUTM Canadian Committee and Director of Partnerships and Innovation at the University of Manitoba. “He represents something we all aspire to.”

Mike’s leadership and support for fellow technology transfer managers includes organizing events for Canadian members, advocating for a larger Canadian AUTM presence to address specific Canadian issues, and working to develop peer networks through his previous role as Chair of the Canadian committee of AUTM. On a more informal level Mike is an active contributor to a Canadian technology transfer chat board and regularly shares his knowledge and expertise with other tech transfer professionals.

Mike joined Waterloo in 2015 with nearly 20 years of experience in academic research partnerships and technology transfer at Queen’s University, University of Ontario Institute of Technology, University of Toronto, and Ontario Centres of Excellence. He holds a bachelor’s degree and master’s degree in chemistry from the University of Waterloo and a PhD in physical chemistry from the University of Toronto.

(adapted from the *Daily Bulletin*, 13 May 2021)

The **Waterloo Centre for German Studies** is pleased to announce the recipients of its first-ever **Diversity and Inclusion Grants**. These grants have been created to support scholars and programs in their efforts to diversify German studies in Canada. The recipients are:

- **Maria Mayr** (Workshop: Anti-Racist Pedagogies in the Language Classroom)
- **Angelica Fenner** (East Germans: (Re)Claiming Black Identities Through Cultural Activism)
- **Elizabeth Nijdam** (Indigenizing the Canadian German Studies Curriculum)
- **Michael Boehringer** (Dis/ability in German Culture)
- **John Plews** (CSSG Content Diversification)

\$12,000 in total has been awarded. The award holders will be making the results of their work public, and the Waterloo Centre for German Studies will publicize this information as it comes available.

(adapted from the *Daily Bulletin*, 21 May 2021)

On Friday May 7, 2021, eight teams of students from across Canada competed in the **Map the System Canadian Finals** for the chance to present their research on a global stage. For their incredible presentation and systematic investigation of the precarious foreign labour conditions in Malaysian palm oil plantations, **Leah Feor**, **Ewomazino Iyanu Oluwa Odhigbo**, and **Muhammed Ahsanur Rahim** will be representing the University of Waterloo as one of four Canadian teams at the finals from June 9 to 11.

Organized by the University of Oxford, Map the System is a global pitch competition that encourages students to “apprentice with the problem”, by thoroughly investigating the existing research, stakeholders and contexts behind a problem to identify gaps and address them in a meaningful, sustainable way. Unlike more traditional pitch competitions, Map the System aims to “incentivize people to deeply learn about and understand a problem,” before conceptualizing solutions.

Teams representing 16 institutions across Canada came together virtually from May 3 to 7, 2021, organized by the Institute for Community Prosperity at Mount Royal University with the support of McConnell’s Re-Code program and the Trico Charitable Foundation. Since joining this global competition for the first time in 2019, UWaterloo’s presence at Map the System has only continued to grow through the **Kindred Credit Union Centre for Peace Advancement**’s mentorship and support. In fact, students from the University of Waterloo accounted for almost one third of Map the System submissions from across Canada in 2021.

Leah Feor, Ewomazino Iyanu Oluwa Odhigbo and Muhammed Ahsanur Rahim represented Waterloo with their presentation on foreign labour conditions in Malaysian palm oil plantations. By focusing on the international supply and value chain for palm oil, they identified the need for further supervisory regulations, greater labour representation mechanisms, and consumer-targeted pull strategies to stabilize and improve labour conditions going forward. When asked why they focused on these possible solutions over others, Feor and Rahim explained that the team wanted to approach the topic realistically, and therefore targeted feasible changes that can be implemented to address the current system.

Global finalists can win additional cash prizes and are eligible for further “Apprenticing with the Problem” support to help develop their ideas. However, during her keynote presentation at the Canadian Finals, Map the System creator, Daniela Papi-Thornton emphasized that the impact of Map the System goes beyond cash prizes and accolades: “if this has opened any doors for you or changed how you think about something, you are winning.”

(adapted from the *Daily Bulletin*, 25 May 2021)

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF ARTS TO SENATE
June 21, 2021

FOR INFORMATION

A. APPOINTMENTS

Probationary Term Appointments – Change in Date

TURNBULL, Sarah, Assistant Professor, Department of Sociology and Legal Studies, *from* July 15, 2019 to June 30, 2022 *to* July 15, 2019 to June 30, 2023.

Probationary Term Reappointments

LANOSZKA, Alexander, Assistant Professor, Department of Political Science, July 1, 2021 to June 30, 2024.

Continuing Lecturer Appointments

AL ETHARI, Lamees, (BA 1999 Alto Moman University College, Baghdad Iraq, MA 2001 University of Baghdad, MA 2008 Kansas State University, PhD 2014 University of Waterloo), Department of English Language and Literature, May 1, 2021.

FORRESTER, Clive, (BA 2002 University of West Indies, MPhil 2005 University of West Indies, PhD 2011 University of West Indies), Department of English Language and Literature, May 1, 2021.

HA, David, (BA 2008 MAcc 2009 University of Waterloo), School of Accounting and Finance, May 1, 2021.

HAYES, Frank, (BBA 1977 University of New Brunswick, MBA 1983 University of Alberta), School of Accounting and Finance, May 1, 2021.

Post-Doctoral Appointment

KALASHNIKOV, Antony, Department of History, July 1, 2022 to June 30, 2025.

RALPH, Brandon, Department of Psychology, May 1, 2021 to August 31, 2021.

RIZK, Jessica, Department of Sociology and Legal Studies, January 1, 2021 to July 31, 2022.

RHOUMA, Rafik, Department of Economics, May 1, 2021 to April 30, 2022.

Transfer

YOUNG, Vershawn, Professor, *from* Communication Arts (1.0 FTE) *to* joint appointment between Department of English Language and Literature (.51 FTE) and Department of Communication Arts (0.49FTE).

Adjunct Appointments – Instruction

AFOLABI, Liz, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

ARORA, Upkar, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

FARRELL, Martha, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

KARKY, Ramesh, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

MACDONALD, Kelly, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

OEY, Edbert, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

Adjunct Reappointments – Instruction

ABULLARADE GAMEZ, Hector, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

ALEKBEROV, Elshan, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

ARNOLD, Brian, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

BALAISIS, Nicholas, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

BERGSTROM, Anton, Lecturer, Arts First Program, May 1, 2021 to August 31, 2021

BOUCHER, Maxime, Lecturer, Department of Political Science, May 1, 2021 to August 31, 2021.

CALDERON, Jesus, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

CALVERT, Alyssa, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

CARVER, Matthew, Lecturer, Department of Fine Arts, May 1, 2021 to August 31, 2021.

CASTANEDA OCHOA, Jorge Vladimir, Lecturer, Department of Spanish and Latin American, May 1, 2021 to August 31, 2021.

COOK, Brad, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

COREY, Dylan, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

CORREIA, Vanessa, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

CYR, Dylan, Lecturer, Department of History, May 1, 2021 to August 31, 2021.

DAL CASTEL, Kate, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

DATARDINA, Malik, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

DATTA, Shubham, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

DE ROOIJ MOHLE, Geertruida, Lecturer, Department of Germanic and Slavic Studies, May 1, 2021 to August 31, 2021.

DEHGHANI, Morteza, Lecturer, Department of Communication Arts, and Department of English Language and Literature, May 1, 2021 to August 31, 2021.

DOLSON, Mark, Lecturer, Department of Anthropology, May 1, 2021 to August 31, 2021.

DOYLE, Jennifer, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

EHRENTAUT, Judy, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

EVERINGTON, Scott, Lecturer, Department of Fine Arts, May 1, 2021 to August 31, 2021.

EZEH, Alphonsus, Lecturer, Department of Germanic and Slavic Studies, May 1, 2021 to August 31, 2021.

FATIMA, Nafeez, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

FULLENWIEDER, Lara, Lecturer, Department of Sociology and Legal Studies, May 1, 2021 to August 31, 2021.

GAZZOLA, Lynn, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

GERNON, Mark, Lecturer, Department of Psychology, May 1, 2021 to August 31, 2021.

GLADKOVA, Olga, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

HAIDAR, Saliha, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

HALPERN ZISMAN, Laine, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

HANCOCK, Michael, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

HILL, Heather, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

HUANG, Yichun, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

HUNTER, Natalie, Lecturer, Department of Fine Arts, May 1, 2021 to August 31, 2021.

JAIMES-DOMINGUEZ, Luis, Lecturer, Department of Spanish and Latin American Studies, May 1, 2021 to August 31, 2021.

KAPOOR, Akash, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

KARIMZADA, Muhebull, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

KRAFT, James, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

KUMASE, Wokiatoazi, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

LABADIE, Colin, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

LEKO, Vesna, Lecturer, Department of Germanic and Slavic Studies, May 1, 2021 to August 31, 2021.

LEROUX, Carlie, Lecturer, Department of Sociology and Legal Studies, May 1, 2021 to August 31, 2021.

LIAQAT, Zara, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

LIN, David, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

LOCHNER, Martin, Lecturer, Department of Psychology, May 1, 2021 to August 31, 2021.

MANJI, Noorin, Lecturer, Department of Sociology and Legal Studies and Arts First Program, May 1, 2021 to August 31, 2021.

MCDERMOTT, Neil, Lecturer, Department of Psychology, May 1, 2021 to August 31, 2021.

MCLEVEY, John, Lecturer, Master of Public Service Program, May 1, 2021 to August 31, 2021.

MIAN, Haaris, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

NEEDHAM, Brent, Lecturer, Department of Political Science, May 1, 2021 to August 31, 2021.

NORTON, Roy, Lecturer, Department of Political Science, May 1, 2021 to August 31, 2021.

OFILI, Patricia, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

OZKARDAS, Ahmet, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

PACEY, Dean, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

PAWLAK, Konrad, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

PEARCE, Joanna, Lecturer, Department of History, May 1, 2021 to August 31, 2021.

PEARCE, Kathleen, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

PECKHAM, Will, Lecturer, Department of Psychology, May 1, 2021 to August 31, 2021.

PETRESCU, Maria, Lecturer, Department of French Studies, May 1, 2021 to August 31, 2021.

RAJSIC, Predrag, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

RANA, Saeed, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

REDDOCK, Jennifer, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

RICKERT, Jennifer, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

ROBINSON, Rowland, Lecturer, Department of Political Science and Department of Sociology and Legal Studies, May 1, 2021 to August 31, 2021.

RUFFUDEEN, Zamal, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

SARKANY, Laszlo, Lecturer, Department of Political Science, May 1, 2021 to August 31, 2021.

SCHWARTZ, Shira, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

SHAKESPEARE, Robert, Lecturer, Department of Communication Arts and Department of English Language and Literature, May 1, 2021 to August 31, 2021.

SIMEONI, Laura, Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

STETTNER, Shannon, Lecturer, Department of Philosophy, May 1, 2021 to August 31, 2021.

TANQUAY, Greg, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

TODOROVIC, Daniel, Lecturer, Department of Psychology, May 1, 2021 to August 31, 2021.

TRENTIN, Lisa, Lecturer, Department of Classical Studies, May 1, 2021 to August 31, 2021.

WARRINER, G. Keith, Lecturer, Department of Sociology and Legal Studies, May 1, 2021 to August 31, 2021.

WHITE, Matthew, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

WIENS, Brianna, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

ZHANG, Qianyu (Lawrence), Lecturer, School of Accounting and Finance, May 1, 2021 to August 31, 2021.

Adjunct Reappointments – Graduate Supervision

SMOLEWSKA, Kathy, Department of Psychology, May 1, 2021 to August 31, 2021.

Adjunct Reappointments – Miscellaneous (research, consultations, etc.)

LAWRENCE, Michael, Department of Political Science, May 1, 2021 to August 31, 2021.

Graduate Students Appointed as Part-Time Lecturers

BREY, Elizabeth, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

CARPENTER, Justin, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

CARTMELL, Carley, Lecturer, Department of Political Science, May 1, 2021 to August 31, 2021.

ELLIOT, Caitlin, Lecturer, Department of Sociology and Legal Studies, May 1, 2021 to August 31, 2021.

GIBSON, Ian, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

HINTON, Lucy, Lecturer, Department of Political Science, May 1, 2021 to August 31, 2021.

JOHNSON, Melissa, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

KARKI, Chitra, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

KOEPCKE, Jana, Lecturer, Department of Germanic and Slavic Studies, May 1, 2021 to August 31, 2021.

MEYERS, Ethan, Lecturer, Department of Psychology, May 1, 2021 to August 31, 2021.

MILNE, Elizabeth, Lecturer, Department of Germanic and Slavic Studies, May 1, 2021 to August 31, 2021.

RYAN, Ashley, Lecturer, Department of Sociology and Legal Studies, May 1, 2021 to August 31, 2021.

SIDHU, Tandeep, Lecturer, Department of Sociology and Legal Studies, May 1, 2021 to August 31, 2021.

TODD, Elisabeth, Lecturer, Department of French Studies, May 1, 2021 to August 31, 2021.

TORBICA, Masa, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

UHER, Valerie, Lecturer, Department of English Language and Literature, May 1, 2021 to August 31, 2021.

Staff Appointments to Faculty

CAMPBELL, Greg, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

DIGRAVIO, Katrina, Lecturer, Department of Psychology, May 1, 2021 to August 31, 2021.

NUNEZ, Camelia, Lecturer, Department of Economics, May 1, 2021 to August 31, 2021.

RAINVILLE, Janelle, Lecturer, Department of Communication Arts, May 1, 2021 to August 31, 2021.

B. ADMINISTRATIVE APPOINTMENTS

CHAUSSE, Pierre, Associate Chair, Undergraduate Studies, Department of Economics, July 1, 2021 to June 30, 2023.

FULFER, Katy, Associate Chair Undergraduate Studies, Department of Philosophy, July 1, 2021 to June 30, 2024.

LOWRY, Chris, Associate Chair, Graduate Studies, Department of Philosophy, July 1, 2021 to June 30, 2024.

Administrative Reappointment

BETZ, Emma, Associate Chair, Undergraduate Studies, Department of Germanic & Slavic Studies, July 1, 2021 to June 30, 2023.

CURRY, Phil, Associate Chair, Graduate Studies, Department of Economics, July 1, 2021 to June 30, 2023.

CHANGE in DATES

HABIB, Jasmin, Associate Director, PhD in Global Governance, *from* January 1, 2021 to June 30, 2022 *to* January 1, 2021 to August 31, 2021.

C. SABBATICAL LEAVES

Approved by the Board of Governors:

ANDISON, Lois, Associate Professor, Department of Fine Arts, July 1, 2021 to December 31, 2021, six months at 85% salary.

SABBATICAL LEAVE – Cancelled

COX, Jordana, Assistant Professor, Department of Communication Arts, July 1, 2021 to December 31, 2021.

A handwritten signature in black ink, reading "Sheila Ager". The signature is written in a cursive style with a large, stylized 'S' and 'A'.

Sheila Ager
Dean, Faculty of Arts

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF ENGINEERING TO SENATE
June 21, 2021

FOR INFORMATION

A. *APPOINTMENTS*

Definite-Term Reappointment

HOWCROFT, Jennifer, Lecturer, Department of Systems Design Engineering, July 1, 2021 – June 30, 2024. PhD, Systems Design Engineering, (Human Biological Engineering), University of Waterloo, Waterloo, ON, 2016; MHSc, Clinical Engineering, University of Toronto, Toronto, ON, 2011; BSc, Biological Engineering, (Co-op) with a specialization in Biomechanical Design, University of Guelph, Guelph, ON, 2009.

IBRAHIM, Nadine, Lecturer, Department of Civil and Environmental Engineering, January 1, 2022 – December 31, 2024. PhD, Civil Engineering, University of Toronto, Toronto, ON, 2015; MASc, Civil Engineering, University of Toronto, Toronto, ON, 2003; Certificate in Preventive Engineering and Social Development, University of Toronto, Toronto, ON, 2000; BASc (Honours), Civil Engineering, (Collaborative Environmental Option), University of Toronto, Toronto, ON, 2000.

ZURELL, Cory, Lecturer, Department of Civil and Environmental Engineering, January 1, 2022 – December 31, 2024. PhD in Civil Engineering, Department of Civil Engineering, University of Ottawa, Ottawa, ON, 2004; BASc, (Honours), in Civil Engineering, Department of Civil and Environmental Engineering, University of Waterloo, Waterloo, ON, 1997.

Continuing Appointments

GIANNIKOURIS, Allyson, Continuing Lecturer, Department of Mechanical and Mechatronics Engineering, commencing July 13, 2021. MASc, (Honours), Computer and Electrical Engineering, University of Waterloo, Waterloo, ON, 2011; BASc, (Honours), Computer Engineering with option in Management Science, University of Waterloo, Waterloo, ON, 2009.

Visiting Appointments

JONOABI, Mehdi, Associate Professor, Department of Chemical Engineering, October 1, 2021 – September 30, 2022.

LIU, Hailiang, Scholar, Department of Chemical Engineering, December 1, 2021 – November 30, 2022.

PROVENZANO, Nik, Scholar, Department of Systems Design Engineering, May 10, 2021 – August 20, 2021.

WEN, Quan, Scholar, Department of Chemical Engineering, April 15, 2021 – April 14, 2022.

Visiting Reappointments

RIZVI, Zarghaam, Researcher, Department of Civil and Environmental Engineering, July 1, 2021 – August 31, 2022.

Adjunct Appointments

Graduate Supervision and Research

JEONG, Heejeong, Associate Professor, Department of Electrical and Computer Engineering, April 1, 2021 – June 30, 2024.

Adjunct Reappointments

Graduate Supervision and Research

ANDERSON, William, A. Professor, Department of Chemical Engineering, July 1, 2021 – June 30, 2024.

PRITZKER, Mark, D., Professor, Department of Chemical Engineering, September 1, 2021 – March 31, 2025.

ROBERTS, Edward, Professor, Department of Chemical Engineering, November 30, 2021 – November 30, 2024.

SHAHGALDI, Samaneh, Associate Professor, Department of Mechanical and Mechatronics Engineering, June 1, 2021 – May 31, 2024.

SOLIMAN, Mostafa, Assistant Professor, Department of Systems Design Engineering, March 1, 2021 – February 29, 2024.

WASLANDER, Steven, Associate Professor, Department of Mechanical and Mechatronics Engineering, May 1, 2021 – April 30, 2024.

B. Changes in Appointments

Probationary Term Extension

HICKEY, Jean-Pierre, Assistant Professor, Department of Mechanical and Mechatronics Engineering, July 1, 2019 – June 30, 2023. (One-year extension from June 30, 2022- June 30, 2023).

Mary Wells

Mary A. Wells, Dean
Faculty of Engineering

University of Waterloo
REPORT OF THE DEAN OF ENVIRONMENT TO SENATE
June 21, 2021

FOR INFORMATION

A. APPOINTMENTS

Definite Term Reappointment

DICKINSON, Brock, Entrepreneur in Residence, Faculty of Environment, September 1, 2021 to August 31, 2024.

Adjunct Appointments

Graduate Supervision and Research

KISH, Kaitlin, Assistant Professor, School of Environment, Resources and Sustainability, November 1, 2020 to October 31, 2023.

YANTZI, Nicole, Professor, Department of Geography and Environmental Management, May 1, 2021 to December 31, 2024.

Graduate Supervision

ESTEVES DIAS, Ana Carolina, Assistant Professor, School of Environment, Enterprise and Development, March 1, 2021 to February 28, 2023.

HAMBERG, Jonas, Assistant Professor, School of Environment, Resources and Sustainability, May 1, 2021 to April 30, 2024.

HERMANUTZ, Luise, Professor, School of Environment, Resources and Sustainability, May 1, 2021 to April 30, 2024.

MACAMO RAIMUNDO, Ines, Assistant Professor, School of Environment, Enterprise and Development, May 1, 2021 to April 30, 2023.

MATTHEWS, Darcy, Assistant Professor, School of Environment, Resources and Sustainability, May 1, 2021 to April 30, 2024.

MCTAVISH, Michael, Assistant Professor, School of Environment, Resources and Sustainability, May 1, 2021 to April 30, 2024.

Graduate Teaching

MCDIARMID, Heather, Lecturer, Department of Geography and Environmental Management, September 1, 2021 to December 31, 2021.

Undergraduate Teaching

LEDREW, Ellsworth, Professor, Department of Geography and Environmental Management, September 1, 2021 to December 31, 2021.

PARKER, Scott, Lecturer, School of Environment, Resources and Sustainability, September 1, 2021 to December 31, 2021.

Graduate Students Appointed as Part-Time Lecturers

ANAGNOSTOU, Michelle, Lecturer, Department of Geography and Environmental Management, September 1, 2021 to December 31, 2021.

BADEWA, Emmanuel, Lecturer, School of Environment, Resources and Sustainability, September 1, 2021 to December 31, 2021.

KRAUS, Daniel, Lecturer, School of Environment, Resources and Sustainability, September 1, 2021 to December 31, 2021

B. ADMINISTRATIVE APPOINTMENTS

BURCH, Sarah, Executive Director, Interdisciplinary Centre for Climate Change, April 1, 2021 to March 31, 2026.

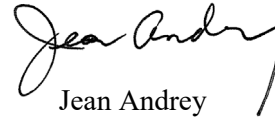
FLETCHER, Christopher, Associate Chair, Graduate Studies, Department of Geography and Environmental Management, July 1, 2021 to June 30, 2024.

QIAN, Joe, Interim Associate Director, Graduate Studies, School of Planning, July 1, 2021 to June 30, 2022.

C. SABBATICAL LEAVES

For approval by the Board of Governors

Li, Jonathan, Professor, Department of Geography and Environmental Management, January 1, 2022 to June 30, 2022 at 85% salary.



Jean Andrey
Dean

University of Waterloo
REPORT OF THE DEAN OF FACULTY OF HEALTH TO SENATE
June 21, 2021

FOR INFORMATION

A. APPOINTMENTS

Change in appointments

IBEY, Robyn, conversion from Definite Term Lecturer to Continuing Lecturer, Department of Kinesiology, effective January 1, 2022.

JANDU, Narveen, conversion from Definite Term Lecturer to Continuing Lecturer, School of Public Health and Health Systems, effective August 1, 2021.

WILSON, Wade, conversion from Definite Term Lecturer to Continuing Lecturer, Department of Kinesiology, effective January 1, 2022.

Adjunct Appointments

Graduate Supervision

FISMAN, David, Professor, School of Public Health and Health Systems, May 1, 2021 – June 30, 2024.

PARKER, Christina, Assistant Professor, School of Public Health and Health Systems, May 1, 2021 – April 30, 2023.

WIDENER, Michael, Associate Professor, School of Public Health and Health Systems, May 1, 2021 – December 31, 2021.

Graduate Supervision and Research

HUGHSON, Richard, Professor Emeritus, Department of Kinesiology, May 1, 2021 – December 31, 2024.

LIM, Andrew, Associate Professor, Department of Kinesiology, May 2, 2022 – April 30, 2024.

RIOS RINCON, Adriana, Assistant Professor, Faculty of Health, School of Public Health and Health Systems, May 1, 2021 – April 30, 2024.

TONG, Catherine, Assistant Professor, School of Public Health and Health Systems, June 1, 2021 – May 31, 2023.

Adjunct Reappointments

Graduate Supervision

VARGA, Csaba, Assistant Professor, School of Public Health and Health Systems, June 1, 2021 – May 31, 2023.

Graduate Supervision and Research

LAMBRAKI, Irene, Assistant Professor, School of Public Health and Health Systems, July 1, 2021 – June 30, 2022.

Special Lecturer Appointments

CASTANEDA, Judy, Lecturer, School of Public Health and Health Systems, September 1, 2021 – December 31, 2021.

McBEATH, Margaret, Lecturer, Faculty of Health, May 1, 2021 – August 31, 2021.

PASTERKIEWICZ, Urszula, School of Public Health and Health Systems, May 1, 2021 – August 31, 2021.

Postdoctoral Appointment

OSTERTAG, Sonja, School of Public Health and Health Systems, April 1, 2021 – August 31, 2022.

EAST, Katie, School of Public Health and Health Systems, June 1, 2021 – May 31, 2022.

Approved by the Board of Governors

B. SABBATICALS

DICKERSON, Clark, Professor, Department of Kinesiology, July 1, 2022 – December 31, 2022, six months at 100% salary.

DODD, Warren, Assistant Professor, School of Public Health and Health Systems, January 1, 2022 – June 30, 2022, six months at 100% salary.

FISCHER, Steve, Associate Professor, Department of Kinesiology, September 1, 2021 – August 31, 2022, one year at 100% salary.

HAMMOND, David, Professor, School of Public Health and Health Systems, September 1, 2021 – February 28, 2022, six months at 100% salary.



Lili Liu, Dean, Faculty of Health

University of Waterloo
REPORT OF THE DEAN OF MATHEMATICS TO SENATE
June 21, 2021

FOR INFORMATION

A. APPOINTMENTS (already approved by the Board of Governors)

Probationary-Term Appointments

CHEN, Wenhui (BSc, 2014, Huazhong University of Science and Technology; MSc, 2016, Aachen University; PhD, exp 2021, University of California, Santa Barbara), Assistant Professor, David R. Cheriton School of Computer Science, July 1, 2022 – June 30, 2025. Mr. Chen is currently completing his PhD in the Computer Science Department at the University of California, Santa Barbara. Mr. Chen's work aims to design more powerful natural language processing models to bridge the gap between human language and real-world data including text, graphs, tables and images. In particular, Mr. Chen has made substantial advances in the three areas: 1) neuro-symbolic reasoning for explainability, 2) multi-hop and single hop reasoning for inference from heterogeneous data and, 3) externalizing factual knowledge in language modelling. Mr. Chen will strengthen the artificial intelligence, machine learning and data systems research groups within the School.

ZHANG, Hongyang (BSc, 2012, China University of Geosciences; MSc, 2015, Peking University; MSc, 2018; PhD, 2019, both from Carnegie Mellon University), Assistant Professor, David R. Cheriton School of Computer Science, July 1, 2021 – June 30, 2024. Currently, Dr. Zhang is a PostDoc Fellow at the Toyota Technological Institute at Chicago. Dr. Zhang's research is on the study of robust, secure, and trustworthy machine learning. In particular, he focuses on the design of new learning algorithms that are provably and empirically robust to adversarial attacks, outliers, and various forms of noise and has achieved record-breaking performance in this area. Besides making solid theoretical contributions, Dr. Zhang also emphasizes combining theory with practice and has additional expertise in statistics, optimization, and image processing. He will strengthen machine learning and security research within the School.

Change in Probationary-Term Reappointments

ABARI, Omid, Assistant Professor, David R. Cheriton School of Computer Science, (*ref.* Dean's Report to Senate, September 2017)

From: January 15, 2018 – June 30, 2021

To: January 15, 2018 – June 30, 2022

Definite Term - Reappointments

DIAO, Liquan, Research Assistant Professor, Dept. of Statistics and Actuarial Science, March 1, 2022 – April 30, 2022.

Visiting Appointments

CHEN, Francis (Google), Researcher, David R. Cheriton School of Computer Science, May 1, 2021 – April 30, 2023.

MUNSON, William, Research Associate, Dept. of Combinatorics and Optimization, May 1, 2021 – April 30, 2023.

NEILL, Brian, Research Associate, Dept. of Combinatorics and Optimization, April 1, 2021 – March 31, 2022.

POURAHMPADI, Vahid, Research Associate, David R. Cheriton School of Computer Science, May 1, 2021 – October 31, 2021.

RAVICHANDRAN, Thambirajah, Research Associate, Dept. of Applied Mathematics, May 1, 2021 – August 31, 2021.

SUCHOLUTSKY, Ilia, Researcher, Dept. of Statistics and Actuarial Science, July 1, 2021 – December 31, 2021.

Adjunct Appointments

Research

WALLMAN, Joel, Assistant Professor, Dept. of Applied Mathematics, June 1, 2021 – May 31, 2026.

Adjunct Reappointments

Instructor

DE JONG, Jamie, Lecturer, Office of the Dean, May 1, 2021 – August 31, 2021.

MARSHMAN, Beverly, Lecturer, Office of the Dean, May 1, 2021 – Aug 31, 2021.

Research

De ALBA, Enrique (Instituto Tecnológico Autónomo de México), Professor, Dept. of Statistics and Actuarial Science, September 1, 2021 – August 31, 2024.

LARSON, Paul, Professor, David R. Cheriton School of Computer Science, May 1, 2021 – June 30, 2024.

THOMPSON, Mary, Professor Emeritus, Dept. of Statistics and Actuarial Science, September 1, 2021 – August 31, 2024.

Cross Appointments

NEHANIV, Chrystopher (Professor, Systems Design Engineering), in the Dept. of Applied Mathematics, May 1, 2021 – April 30, 2022.

Graduate Students reappointed as Part-time Lecturers

FERREIRA TOLEDO, Rafael, David R. Cheriton School of Computer Science, May 1, 2021 – August 31, 2021.

Postdoctoral Fellows appointed as Part-time Lecturers

KOWALENKO, Ethan, Dept. of Pure Mathematics, September 1, 2021 – August 31, 2023.

B. ADMINISTRATIVE APPOINTMENTS

ASOKAN, N., Executive Director, Cybersecurity and Privacy Institute, David R. Cheriton School of Computer Science, May 1, 2021 – April 30, 2026.

- C. SABBATICALS** (already approved by the Board of Governors)
- KRIVODONOVA, Lilia**, Associate Professor, Dept. of Applied Mathematics, September 1, 2021 – August 31, 2022, with 100% salary.
- NELSON, Peter**, Associate Professor, Dept. of Combinatorics and Optimization, September 1, 2021 – August 31, 2022, with 85% salary.
- SCHOST, Eric**, Professor, David R. Cheriton School of Computer Science, September 1, 2021 – August 31, 2022, with 85% salary.
- STEBILA, Douglas**, Associate Professor, Dept. of Combinatorics and Optimization, July 1, 2021 – December 31, 2021, with 100% salary. This is a special early sabbatical.
- VAVASIS, Stephen**, Professor, Dept. of Combinatorics and Optimization, September 1, 2021 – August 31, 2022, with 100% salary.
- WAGNER, David**, Professor, Dept. of Combinatorics and Optimization, September 1, 2021 – August 31, 2022, with 85% salary.

Changes in Appointments

LIN, Jimmy (Professor), David R. Cheriton School of Computer Science, (*ref.* Dean's Report to Senate, June 2020)

From: September 1, 2020 – August 31, 2021

To: September 1, 2020 – April 30, 2021

- D. SPECIAL LEAVE**
- GORBUNOV, Sergey**, Assistant Professor, David R. Cheriton School of Computer Science, September 1, 2021 – August 31, 2022. This is an unpaid leave.
- ILYAS, Ihab**, Professor, David R. Cheriton School of Computer Science, September 1, 2021 – August 31, 2022. This is an unpaid leave.
- VAVASIS, Stephen**, Professor, Dept. of Combinatorics and Optimization, September 1, 2022 – November 30, 2022. This is an administrative leave.
- E. DEATHS**
- COLEMAN, Thomas**, Professor, Dept. of Combinatorics and Optimization, effective April 20, 2021.



Mark Giesbrecht
Dean

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF SCIENCE TO SENATE
June 21, 2021

For information:

A. *APPOINTMENTS*

Definite Term Reappointment

BRIGHT, Jenna, Lecturer, School of Optometry and Vision Science, July 1, 2021 to August 31, 2022. [B.Sc. Honours Science, University of Waterloo (2005); M.Sc. Vision Science, University of Waterloo (2007); OD, University of Waterloo (2011).]

Adjunct Appointments

Graduate Supervision

BACKHOUSE, Chris, Professor, Department of Biology, May 1, 2021 to June 30, 2024.

MARSH, Philip, Professor, Department of Earth and Environmental Sciences, April 1, 2021 to March 31, 2024.

Graduate Supervision and Research

ROSE, David, Professor, Department of Biology, January 1, 2022 to June 30, 2025.

Adjunct Reappointments

Graduate Supervision

HIGGINS, Scott, Professor, Department of Earth and Environmental Sciences, April 1, 2021 to March 31, 2024.

JACKSON, Richard, Professor, Department of Earth and Environmental Sciences, April 1, 2021 to March 31, 2024.

RENNIE, Michael, Associate Professor, Department of Biology, September 1, 2021 to June 30, 2024.

Cross Reappointments

MIELKE, John, Associate Professor, School of Public Health and Health Systems, cross appointed to Department of Biology, September 1, 2021 to June 30, 2024.

REIMER, Michael, Assistant Professor, Department of Electrical and Computer Engineering, cross appointed to Department of Physics and Astronomy, April 1, 2021 to March 31, 2024.

ROY, Pierre-Nicholas, Professor, Department of Chemistry, cross appointed to Department of Physics and Astronomy, May 1, 2021 to April 30, 2024.

Special Appointment

AMADIO, Anthony, Lecturer, School of Pharmacy, September 1, 2021 to December 31, 2021.

Special Reappointments

GURSKA, Jola, Lecturer, Department of Biology, May 1, 2021 to August 31, 2021.

RICCI, Olivia, Lecturer, School of Optometry and Vision Science, May 17, 2021 to August 20, 2021.

B. ADMINISTRATIVE APPOINTMENTS

LUPASCU, Adrien, Associate Chair, Undergraduate Studies, Department of Physics and Astronomy, September 1, 2021 to August 31, 2024.

ADMINISTRATIVE REAPPOINTMENTS

CHARLES, Trevor, Director, Waterloo Centre for Microbial Research (WCMR), July 1, 2021 to June 30, 2024.

JONES, Lyndon, Director, Centre for Ocular Research and Education (CORE), May 1, 2021 to April 30, 2026.

C. FOR APPROVAL BY THE BOARD OF GOVERNORS**SABBATICAL LEAVE**

BALOGH, Michael, Professor, Department of Physics and Astronomy, May 1, 2022 to April 30, 2023, 100% salary arrangements.

DUNCKER, Bernard, Professor, Department of Biology, September 1, 2021 to July 31, 2022, 100% salary arrangements.

LAKSHMINARAYANAN, Vasudevan (Vengu), Professor, School of Optometry and Vision Sciences, September 1, 2021 to August 31, 2022, 93.3% salary arrangements.

RUDOLPH, David, Professor, Department of Earth and Environmental Sciences, September 1, 2021 to December 31, 2022, 100% salary arrangements.

SLAVCEV, Roderick, Associate Professor, School of Pharmacy, Early Leave (July 1, 2021 to December 31, 2021, 85% salary arrangements.



RP. Lemieux
Dean

University of Waterloo
SENATE
Report to Senate
21 June 2021

FOR APPROVAL

Committee Appointments

Motion: To approve the following appointments:

- **Executive Committee:** Kristina Llewellyn (Renison University College) as the Affiliated and Federated Institutions of Waterloo (AFIW) faculty representative, replacing Cristina Vanin, term to 30 April 2022.
- **Finance Committee:** Cristina Vanin (Renison University College) as the Affiliated and Federated Institutions of Waterloo (AFIW) faculty representative, term to 30 April 2022.

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
21 June 2021

Senate Graduate and Research Council met on 12 April 2021 and 10 May 2021 and agreed to forward the following items 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

POSTHUMOUS DEGREES

Authority for Awarding Posthumous Degrees

1. **Motion:** That Senate delegate authority to the co-chairs of Senate Graduate & Research Council to approve posthumous degrees and to report on such activity by ensuring these individuals are included in the lists of graduands that Senate approves in June and October each year.

Rationale: Per Section 22.(g) of the [*University of Waterloo Act*](#), Senate has final authority to confer University of Waterloo degrees.

Regrettably, from time-to-time cases arise where a request is made for the University to grant a posthumous degree. Both Undergraduate Council and Graduate & Research Council have been considering and working on documenting processes and considerations for awarding such degrees for inclusion in the undergraduate and graduate academic calendars. Each Council will report separately on their proposed procedures.

Further to this activity, and in order to ensure that such requests are processed expeditiously and without undue delay, it is requested that Senate grant authority to the co-chairs of Senate Graduate & Research Council to make such decisions for graduate students. Such requests are often made by a deceased student's family and friends and when they can be granted offer some measure of comfort to these individuals. The interval to wait for the next Senate meeting, or even Council meeting may create needless delay. If approved, the co-chairs of Senate Graduate & Research Council will make decisions on such requests in line with their procedure (see motion 2). Finally, any such degrees granted will be reported on to Senate via the list of graduands received in advance of the June and October convocation ceremonies.

Academic Calendar Changes

2. **Motion:** To approve new text for Posthumous Degrees and Certificates, effective spring term 2021, as presented at Attachment 1.

Rationale: New text for the Graduate Studies Academic Calendar has been generated in order to formalize the University's practices regarding the process and criteria for granting graduate posthumous degrees. The proposed wording is consistent with what is anticipated will be proposed for undergraduate posthumous degrees (i.e., percentage of coursework and possibility of degree of enrollment certificate). In the interest of ensuring such consistency, the current criteria will not be published in the academic calendar until confirmation from the Registrar's Office of the approved undergraduate criteria.

FOR APPROVAL

NEW INSTITUTE

Waterloo Institute for Sustainable Aeronautics

3. **Motion:** To approve the establishment of the Waterloo Institute for Sustainable Aeronautics, as presented at Attachment 2. This proposed Institute would be a Faculty-level Institute governed by the Faculty of Environment.

Rationale: Waterloo has world-class expertise in a variety of disciplines that are directly applicable to aviation and aerospace, including environmental science, engineering, kinesiology, optometry, computer science, and cognitive psychology. The aviation and aerospace sectors are facing distinct challenges associated with energy and environmental impacts, personnel shortages, equitable access to mobility, economic development, and the rapid evolution of technology. Through mobilizing the research capacity at the University of Waterloo and applying it towards innovative solutions to these sustainability challenges, we can establish Waterloo at the forefront of aviation and aerospace to support a future-ready, more sustainable, air transport sector in Canada and abroad.

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

Charmaine Dean
Vice President, Research & International

March 29, 2021

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:

Posthumous Degrees and Certificates.

Description and rationale for proposed changes:

New text for Posthumous Degrees and Certificates has been generated for the Graduate Studies Academic Calendar (GSAC) to formalize the University of Waterloo's practices regarding the process and criteria for granting posthumous degrees.

The proposed wording is consistent with what is anticipated will be proposed for UG posthumous degrees (i.e., percentage of coursework and possibility of degree of enrollment certificate). In the interest of ensuring such consistency, the current criteria will not be published in the GSAC until we receive confirmation from the RO of the approved UG criteria. However, the criteria will go into effect as of Spring 2021.

Proposed effective date: Term: Spring 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>

Proposed Graduate Studies Academic Calendar content:

Posthumous Degrees and Certificates

Posthumous credentials can be granted to a graduate student who, at the time of their death, was admitted to, or actively pursuing, a University of Waterloo graduate degree.

If a student is terminally ill, similar criteria can be used, and the approval of the degree expedited. The most senior and appropriate administrator available may deliver the degree, in person, if possible, to the student at the student's (or student's family's) request.

Typically, the student's research supervisor(s), the student's Program Director, or the Graduate Officer from the student's home department/school or program initiates the process for recommending a posthumous degree to the Faculty Associate Dean, Graduate Studies. If approved by the Associate Dean, the request is then sent to the Associate Vice-President, Graduate Studies and Postdoctoral Affairs (AVP GSPA). The AVP GSPA and the Vice President Research and International, as co-chairs of Senate Graduate and Research Council (SGRC), will decide if the posthumous degree will be conferred.

The following criteria should be evaluated when assessing a student's eligibility for a posthumous degree:

Proposed Graduate Studies Academic Calendar content:

Professional or Coursework Master's:

Grant a posthumous degree if:

- 50% or more of the total required courses are completed successfully.
- Note: If all course requirements for the program were achieved, any Type 2 Graduate Diplomas will be recognized on the student transcript and diploma, if these additional course requirements were also met. Relevant graduate specializations will be recognized on the student transcript (not diploma), if the requirements for the specialization were completed.

Grant a certificate of degree enrolment if academic requirements for a posthumous degree are not met.

Research-based Master's with thesis or Master's Research Paper (MRP):

Grant a posthumous degree if:

- 50% or more of the total required courses are completed successfully;
- proficiency in the area of study has been demonstrated (e.g., through required milestones); and
- there is substantive progress on thesis/MRP research. Evidence of sufficient research progress may include refereed output(s) in the research area related to the thesis/MRP, demonstrable progress on a draft of the thesis/MRP, a thesis/MRP submitted, but not defended/graded, or a thesis/MRP that only requires electronic submission to the University.
- Note: If all course requirements for the program were achieved, any Type 2 Graduate Diplomas will be recognized on the student transcript and diploma, if these additional course requirements were also met. If applicable, a graduate research field will be recognized on the student transcript (not diploma) if the requirements for the field were completed.

Grant a certificate of degree enrolment if academic requirements for a posthumous degree are not met.

PhD:

Grant a posthumous degree if:

- 50% or more of the total required courses are completed successfully;
- proficiency in the area of study has been demonstrated through successful completion of comprehensive examination or other required milestones; and
- there is substantive progress on thesis research. Evidence of sufficient research progress may include a research proposal, refereed output(s) in the research area related to the thesis, a draft of the thesis, a thesis submitted, but not defended/graded, or a thesis that only requires electronic submission to the University.
- Note: If all course requirements for the program were achieved, any Type 2 Graduate Diplomas will be recognized on the student transcript and diploma, if these additional course requirements were also met. If applicable, a graduate research field will be recognized on the student transcript (not diploma) if the requirements for the field were completed.

Grant a master's degree rather than a PhD where criteria related to thesis progress is not met, but work would satisfy other requirements for posthumous degree.

Grant a certificate of degree enrolment if academic requirements for a posthumous master or PhD degree are not met.



MEMORANDUM

TO: Senate Graduate and Research Council

CC: Kathy Winter, Secretariat

Suzanne Kearns, Associate Professor, Geography and Aviation
Maryam Latifpoor-Keparoutis, Director of Advancement, Faculty of Environment
Jean Andrey, Dean, Faculty of Environment
Bernard Duncker, Associate Vice-President, Interdisciplinary Research

FROM: Charmaine B. Dean, Vice-President, Research and International

DATE: Thursday April 22, 2021

SUBJECT: Waterloo Institute for Sustainable Aeronautics (WISA)

- For action -

On April 21, 2021, Suzanne Kearns presented to the Research Leaders Council, in the Office of Research, a proposal to establish the Waterloo Institute for Sustainable Aeronautics (WISA). This proposed Institute would be a Faculty-level Institute governed by the Faculty of Environment. Following the presentation, the Council has recommended my submission of the proposal for review by Senate Graduate and Research Council.

I am pleased to inform you that I am recommending that Senate Graduate and Research Council review the proposal, and discuss and vote on the creation of the Waterloo Institute for Sustainable Aeronautics (WISA) for a five-year term.

Proposal to Establish the:

Waterloo Institute for Sustainable Aeronautics (WISA)

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Waterloo Institute for Sustainable Aeronautics (WISA)

OVERVIEW

Rationale

Waterloo has world-class expertise in a variety of disciplines that are directly applicable to aviation and aerospace, including environmental science, engineering, kinesiology, optometry, computer science, and cognitive psychology. The aviation and aerospace sectors are facing distinct challenges associated with energy and environmental impacts, personnel shortages, equitable access to mobility, economic development, and the rapid evolution of technology. Through mobilizing the research capacity at the University of Waterloo and applying it towards innovative solutions to these sustainability challenges, we can establish Waterloo at the forefront of aviation and aerospace to support a future-ready, more sustainable, air transport sector in Canada and abroad.

Background

In Canada, aviation was historically a college-level discipline. Universities played limited roles. The University of Waterloo was among the first Canadian universities to establish degree programs that included flight education (conducted through our Geography & Aviation and Science & Aviation academic programs in partnership with the Waterloo Wellington Flight Centre pilot-training school). Established in 2007, Waterloo's aviation programs have seen increased student enrollment each year, admitting about 125 first year student pilots in 2020. Waterloo is now home to the largest university-level aviation program in Canada with around 300 student pilots actively enrolled within the 4-year programs. Student aviators earn their commercial multi-engine instrument (M-IFR) pilot licenses along with an advanced theoretical education in aviation that explores aspects of aeronautical research (such as human factors, safety theories, and sustainability). There is a robust aviation student community on campus supported by the University of Waterloo Aviation Society undergraduate student association.

Having hundreds of student pilots as part of our campus community creates a unique ecosystem for aeronautics-applied research. In Fall of 2019, a group of multidisciplinary researchers formed the Waterloo Aviation Research Cluster (WARC) to collaborate on innovative research that is directly linked to the needs and challenges of the international aviation industry. The intent of WARC is for interdisciplinary Waterloo researchers to work in cross-sector partnership with aviation and aerospace companies, government, and regulatory bodies to advance and support a sustainable aviation industry nationally and globally that serves communities while minimizing environmental impacts.

Importance and Benefit

The International Air Transport Association (IATA) estimates that in normal times, air transport supports 633,000 Canadian jobs and accounts for 3.2% of our GDP (aviation indirectly supports more than 65.5 million jobs internationally, considering those linked to travel and tourism).

At the beginning of 2020, the industry was projected to nearly double in passenger and cargo capacity by 2036. This created significant challenges associated with wide-scale international **shortages of personnel** (pilots, maintenance engineers, air traffic control, and flight attendants), **environmental sustainability**, and the rapid development of **technology** changing the aviation landscape. This was resulting in increasing flight cancellations, due to lack of available flight crew within airlines, as well as

threatening the delivery of essential services to remote Canadian and Indigenous communities which are only accessible by air for parts of the year.

The COVID-19 pandemic severely disrupted the aviation sector. During the COVID-19 pandemic, up to 80% of the world's passenger fleet was grounded. Hundreds of thousands of aviation professionals were placed on unpaid leave, with many choosing early retirement. In addition to impacting current professionals, the pandemic also disrupted the talent pipeline by diminishing training capacity within flight schools around the world. As an example, due to social distancing requirements and the backlog of training from lockdowns, Waterloo will be reducing its 2021 aviation intake by 50% to accommodate the flight training backlog resulting from the pandemic.

With news of effective vaccines, aviation organizations (including CAE and Boeing) have projected that international airlines will be cash positive and face a re-emergence of personnel shortages by the end of 2021. With exacerbated personnel shortages resulting from early retirements coupled with reduced training capacities, innovations in attracting, educating, and retaining professionals will be needed.

In addition, as airlines increase operations, the harmful emissions from the sector will again begin to rise (including near-airport emissions and air quality, at-altitude emissions, and noise). A focus on green technologies, efficient operational practices, and air traffic management will be required to meet the emission targets set by the International Civil Aviation Organization (ICAO), which established the goal of carbon neutral growth from emission levels in 2019. Waterloo's environmental science and technology expertise can provide leadership on this issue.

Lastly, like all sectors of society, the air transport sector is experiencing rapid technological advancement. Aeronautical agencies around the world are actively seeking talent in artificial intelligence, machine learning, cybersecurity, augmented- and virtual-reality training, and other emerging fields. This has resulted in some sectors of the industry falling behind current technological advancements. With Waterloo's existing expertise in these fields, we are well-positioned to support the sector to ensure technology is integrated safely, efficiently, and based on research-identified best practices.

The proposed 'Waterloo Institute for Sustainable Aeronautics' (WISA) will also play a key role in educating the next generation of aeronautical leaders, including flight crew trained in our current undergraduate programs, as well as multidisciplinary graduate students jointly supervised by WISA researchers in a variety of applicable disciplines. In order to foster this multidisciplinary approach in graduate studies, WISA will work with interested Faculties in creating a Collaborative Graduate Program in Aeronautics, modeled on the very successful [Collaborative Water Program](#).

Unique in Canada, WISA's focus on supporting sustainable development of aeronautical operations can bolster other institutes in Canada that are exclusively focused on aerospace. WISA's researchers, engineers, planners, environmental scientists, technology leaders and other professionals will be needed to advance the air transport sector, develop Canada's aeronautical knowledge economy, and lead innovations towards a sustainable future.

WISA would be well-positioned to mobilize the research capacity at the University and apply it towards critical aeronautical sustainability challenges. As society begins post-pandemic recovery efforts, we can support the analysis and resolution some of the critical challenges that were being faced pre-pandemic, innovate towards a better future, and support innovation in international aviation.

WISA would also provide direct benefits to industry partners, providing opportunities to:

- Leverage research funding, and reduce the cost and risk associated with pre-market research,
- Influence the direction of research so that it is aligned with the need and priorities of industry, public sector policy makers, and academia to promote evidence-based decision making,
- Access top talent, trained by leading researchers, to advance the aviation industry through innovative ideas and practices.

Alignment with the University of Waterloo's Strategic Plan

To connect imagination with impact, the University of Waterloo's strategic plan highlights three themes – developing talent for a complex future, advancing research for global impact, and strengthening sustainable and diverse communities.

The work of WISA will directly align with these themes:

1. *Developing talent for a complex future* – the role of aviation and aerospace in society's future is evolving, through the integration of drones, electric vertical takeoff and landing vehicles (e-VTOL), autonomous control and other factors. To work in this sector, future professionals will be required to apply knowledge in contexts that are challenging to imagine today. WISA will support the development of professionals to lead the future of air transportation by supporting a unique interdisciplinary collaborative graduate program in aeronautics, enhancing experiential learning for current students with aviation and aerospace partners, supporting lifelong learning for current professionals through certificate courses, and creating a supportive environment for learning.
2. *Advancing research for global impact* – to address the increasingly complex challenges facing aviation and aerospace, WISA will strive to mobilize interdisciplinary research across faculties at the University. The intent will be to align research strengths with global challenges, identified and collaboratively addressed through our partnerships with government, industry, and international organizations. As Waterloo is a global powerhouse for commercializing research, WISA will support aeronautics-related commercialization (through activities such as design challenges, pitch competitions, and facilitating interactions between entrepreneurs and established organizations).
3. *Strengthening sustainable and diverse communities* – WISA will support the sustainable development goals, both within and beyond campus borders. Through WISA, Waterloo can lead the air transport sector at the interface of society, inclusivity, and technology. Today, there is a distinct lack of diversity and inclusion within aeronautics (for example, only 5% of airline pilots are women [Black women represent less than 1%, Asian and Latinx approximately 2%]). WISA will support research into inclusive workforce practices, while building an on-campus community that values and promotes voices of racialized groups, Indigenous people, and those of diverse genders and sexual identities among others.

Mission

The mission of the Waterloo Institute for Sustainable Aeronautics (WISA) is to establish a hub of sustainable aviation and aerospace research, technology, and education. To foster transdisciplinary studies and cross-sector partnerships, focused on innovating the air transport sector and informing public policy, in support of a more sustainable future.

Director

Dr. Suzanne Kearns is a tenured Associate Professor at the University of Waterloo whose work is dedicated to supporting and growing the aviation undergraduate program and aviation-applied research. Kearns is an internationally recognized leader in aviation education, earned airplane and helicopter pilot licenses at the age of 17, advanced degrees in Aeronautical Science from Embry-Riddle Aeronautical University and has been working as an aviation professor for more than 16 years since. In partnership with other researchers at Waterloo, she created the Waterloo Aviation Research Cluster in the Fall of 2019.

Dr. Kearns has taught and mentored thousands of aviation students, written/co-authored six books (including 'Competency-Based Education in Aviation', which was the first detailed investigation into this training theory applied to aviation; and, 'Fundamentals of International Aviation', which is a textbook with multiple translations used around the world to introduce youth to the field of aviation). She facilitated a partnership between the University of Waterloo and the International Civil Aviation Organization (ICAO) in 2017 to distribute the e-learning course she developed called 'Aviation Fundamentals' (AviFun), which is completed by thousands of aviation professionals annually from around the world.

Dr. Kearns has received awards for research and educational works (such as the Northern Lights Award for Women in Aviation and Aerospace), frequently delivers invited keynote addresses at international conferences including the World Aviation Training Symposium, and holds leadership positions with several international aviation organizations including the International Civil Aviation Organization, a Fellow of the Royal Aeronautical Society, and Past-President of the University Aviation Association.

Dr. Kearns has a wealth of experience and active engagement at the forefront of the international aviation industry.

Expected Interactions with Other Positions

The Director of WISA will be expected to interact with other positions at Waterloo, including existing leadership and new positions to be established to support the institute directly. These include:

- AVP Research
- Dean of Environment
- Associate Deans Research (campus wide) - annual report on the progress of WISA
- Director of Advancement, Environment
- Manager, Corporate Research Partnership
- Associate Directors of WISA (*positions to be established*)
- Managing Director of WISA (*position to be established*)
- WISA Board (*to be established*)
- WISA Advisory Committee (*position to be established*)

Scope of Activities

The scope of activities within the institute will include facilitating cross-sector partnerships between government, industry, and academia to support aeronautical research with international impact.

The initial focus of research will build upon our existing strengths in aviation (focused on air operations). As the institute evolves over time, the scope is expected to expand into include aerospace research in

addition to future technologies (for example, electric vertical takeoff and landing [e-VTOL] and/or trans-atmospheric transport vehicles). The term 'Aeronautics' within WISA's title was deliberately chosen as it is broadly inclusive of both aviation and aerospace.

Initial research themes are linked to the three pillars of sustainability, including:

1. **Social** – Aviation connects our global society providing passenger access to distance services, experiences, and social networks. Aviation delivers timely and essential freight shipments. Cultural exchange and innovation are sparked by the face-to-face access aviation provides worldwide. Equity in access to the benefits of aviation must be central to policies. WISA uniquely focuses on developing a sustainable workforce for the air transport sector through a new research discipline focused on the next generation of aviation professionals (NGAP), exploring themes such as marketing and outreach, human factors, machine learning and competency-based education, training technologies, and the quality of life within aviation careers (including equity, diversity and inclusion). Research also explores aviation's essential role in economic development including supporting sustainable tourism, smart cities, and communities.
2. **Environmental** – Aviation, while efficient per passenger mile, represents a growing portion of the global GHG emissions due to the long travel distances covered. Dependence on liquid fuel, lack of alternatives and increasing global demand make aviation a significant GHG concern. Research in this theme will examine the impact the aviation industry has on the environment and possible improvements through sustainable aviation fuels, direct flight paths, modern airframes, and new engine technologies, particularly those powered by electricity. Understanding the impact of emissions at altitude as well as the significant near-airport ground emissions and the impact on vulnerable near-airport communities is important.
3. **Economic** – The global access provided by aviation supplies critical economic development in both urban and rural areas. The often publicly funded infrastructure must be planned nationwide to ensure equitable access and mobility but also long-term sustainable infrastructure that can be maintained and optimally used. Sustainable economic growth for the air transport industry will require research on many factors, such as remotely piloted aircraft technology, electric vertical takeoff-and-landing (e-VTOL) aircraft, automation, cybersecurity, and optimizing equipment utilization by modelling airports, crew and airspace capacity.

These themes connect multidisciplinary and interdisciplinary research from every Faculty at Waterloo. Funding sought through WISA, in the form of interdisciplinary grants and sponsored research, is expected to support a variety of graduate students from various disciplines and foster new collaborations between faculty members. As an example of the potential for multidisciplinary collaborative research, the Waterloo Aviation Research Cluster (WARC) began in Fall of 2019 with three faculty members. Within its first year, WARC has grown to welcome researchers from every Faculty on campus, have applied for approximately \$1 million in funding, and are scheduled to install a flight simulator on campus in 2021 which will be fully dedicated to research (and available to researchers at no or minimal cost for their investigations).

It is also expected that the institute will expand educational offerings for the aviation industry through the partnership between the International Civil Aviation Organization (ICAO) and the University of

Waterloo and internal UW Lifelong Learning. Through the existing ICAO partnership, the “Aviation Fundamentals” (AviFun) non-credit e-learning course was launched in 2018 and is currently completed by thousands of international aviation professionals each year. Revenue from the AviFun course has established an undergraduate aviation student scholarship, with the first award to be given in Spring of 2021.

CONSTITUTION

Objectives

To achieve the vision of the institute, the objectives of WISA are:

- Raising the profile of the University of Waterloo as a leading institute in aeronautical research through academic publications, industrial partnerships, and research funding,
- Facilitating aeronautics-applied research projects involving faculty members across faculties,
- Raising the profile of sustainable aviation and aerospace research by hosting guest speakers, profiling research projects, and industrial collaborations at an annual WISA conference,
- Training and mentoring multidisciplinary graduate students in aeronautics-applied research (as well as developing experiential learning placements with industry partners).

To track the success of the institute, information will be maintained on:

- Number of Regular Members of WISA,
- Number of graduate and undergraduate students involved in WISA,
- Number of events organized by WISA and number of attendees by type,
- Applications and receipt of grants and contracts aligned with the objectives of WISA,
- Number of web hits and downloads from the WISA website,
- Partnerships with industry facilitated through WISA (measured through number of projects, amount of funding, and deliverables/publications produced through partnerships).

Organizational Structure & Roles and Responsibilities

WISA will be established with the following management structure, supported by university, government, industry, and donor funds:

Role	Responsibility	Lead Candidate
Director	<ul style="list-style-type: none"> • Accountable to the Dean of the Faculty of Environment • Responsible for the overall management of the Institute, the preparation of its annual budget, and supervision of Institute employees to achieve the objectives of WISA • Manages the WISA advisory committee to provide advice and guidance regarding the Institute’s operation and maintain strong connections to industry • Engages industry in research and partnership collaboration 	Dr. Suzanne Kearns (five-year term)
Associate Director(s)	<ul style="list-style-type: none"> • Two appointments from different faculties (rotating annually) 	TBC

	<ul style="list-style-type: none"> Responsible for engagement of faculty colleagues to achieve the objectives of WISA Support the Director in WISA objectives 	
Managing Director (1.0 FTE)	<ul style="list-style-type: none"> Management of the WISA administrative and budgetary resources Maintain roster and facilitate communications with members and partners Engage and coordinate industry partners, plan meetings and host partners, and organize events 	TBC
Simulator Technician (1.0 FTE)	<ul style="list-style-type: none"> Day to day training, operation, scheduling, maintenance, and tours of the Aviation Flight Simulator 	TBC
WISA Board	<ul style="list-style-type: none"> Chaired by the Dean, or his/her delegate Serving for non-renewable terms of three years Includes the Director, Associate Director(s), Managing Director, and up to one representative per Faculty across the University of Waterloo Reviews the annual budget and provides recommendations to the Dean 	
Membership	<ul style="list-style-type: none"> <u>Regular Members</u> - Open to all faculty researchers across the University of Waterloo <u>Associate Members</u> – Open to all researchers, post docs, graduate students, and other members from the University Waterloo. Open to researchers from other Universities. 	
Advisory Committee	<ul style="list-style-type: none"> Comprised of 8 distinguished industry members, 2 leading international researchers, and 4 representatives from WISA 	

Constitution*

The constitution of the Institute is governed by Policy 44 of the University of Waterloo Secretariat – Research Centres and Institutes. **Full details on the Constitution of WISA are included at the end of this document in Appendix 1.*

MANAGEMENT

University Officer(s)

The Director of WISA will report to the Dean of Environment, where financial responsibility will be vested.

LIST OF PROPOSED MEMBERS

Director Designate

Dr. Suzanne Kearns

Members

Researchers and staff who are active within the Waterloo Aviation Research Cluster (WARC), and would form the founding membership of WISA, are profiled here: [People profiles | Aviation | University of Waterloo \(uwaterloo.ca\)](#)

Abbreviated CV for Dr. Suzanne Kearns is presented in Appendix 3.

RESEARCH COMPONENT

Collaborations

The Waterloo Aviation Research Cluster (WARC) is comprised of faculty members from across campus.

WARC has established relationships and research partnerships with several domestic and international aviation organizations. These include government (*Waterloo Region, Transport Canada, and the International Civil Aviation Organization*), industry (*airlines, aviation education companies, aircraft manufacturers, and flight service data providers*), and associations (*aviation charities, university aviation associations, and trade groups*).

These partnerships present tremendous collaborative opportunities for cutting-edge applied research, but also distinct challenges. Organizing and prioritizing research requests and matching these opportunities to specific Waterloo researchers has been a time-consuming process, thus far undertaken by Dr. Kearns directly. WISA would build upon this foundation to establish a governance process to facilitate this work and more effectively accept requests and facilitate matching between researchers, industry partners, and trade groups.

This would dramatically increase the potential for collaborations between University of Waterloo researchers and aeronautical partners, which is expected to increase research funding (including government and sponsored funding), increase graduate student recruitment across various disciplines, integrate industry partners into the research process, and further grow the undergraduate aviation program.

Examples of Research Projects

WARC researchers were asked to share brief overviews of their current research questions, which are summarized below. Funding proposals for these projects are at various stages of submission (including proposals to various agencies as well as industry-sponsored research).

It is expected that as the Institute is established and begins operations, the scope of research will evolve and expand based on trends and challenges in industry and academia.

Decarbonizing Canadian Air Travel

1. **What is the feasibility of electrically driven aircraft for student pilot training?** Research is needed to answer both technical and operational questions to create the transition path to electric flight training. This project would look at both technical and human systems to adjust training so that the plane is recharged between flights.
2. **What is the feasibility of electrically driven aircraft for regional travel?** An urgent priority is to assess the national transportation system for the portfolio of trips that should be converted to e-flight. Where should we deploy e-planes to get the most environmental and social benefit? The small volume of travelers to remote communities that are within range

of regional centres might be a priority for health and social reasons. Small volume operations could electrify with the next generation of larger e-planes.

3. **Electrification of sustainable tourism and recreational flight.** Recreational flight and sustainable tourism often use small aircraft for flights of limited duration, 1-3 hours. This market is a high-profile carbon emitter as the desire for sustainable tourism is marred by the high emissions of current aircraft. The reputational benefits of destinations with low emission flying are desired by both tourists and operators. The expected reduction in aircraft operating costs will reward adopters and promote technology diffusion, but the technology needs to be trusted. Research and demonstration projects are required to identify the most effective adoption strategies.

Competency-Based Education, Machine Learning, and Training Technologies

1. **Develop techniques that can better quantify and monitor pilot performance, skill, and competence progression levels, including the advantages and limitations of competency-based education.** Focus on competencies rather than hours. Study behaviour indexes, predictors of performance, knowledge tracing, continuous training, and skill retention.
2. **Develop training programs that fit human characteristics in perception, cognition, and motor skill development.** Study theory about knowledge and skill learning, repetition, spacing/micro learning. Explore how to leverage advances in the science of learning to optimize ab initio pilot training's effectiveness and efficiency. Test the application of theories.
3. **Develop methods that can better motivate and engage trainees.** Study gamification, competitive quizzing, video documentary/panel discussion/focus group discussion, repetition timing, motivational aspects of technologies (VR/AR, simulation).
4. **Assess simulator fidelity to the development of competencies.** Using desktop computers, immersive technologies (AR/VR), and a fixed-based simulator, explore the development of competencies for ab initio pilots and relative advantages of each device.
5. **Explore the use of games to develop crew resource management skills.** Develop games that are specifically targeted towards building interpersonal and collaboration skills on the flight deck - using psychophysiological analysis and physiological sensors to track learner sentiments while gauging engagement, cognition, and emotions.

Psychomotor Skill Development, Gaze Behaviour, and Vision Quality in Pilot Performance

1. **Assess how the brain processes and integrates sensory inputs to guide control movements** with a specific focus on gaze behaviour (eye movements of a learner around a cockpit environment). Research questions include:
 - a. How does gaze behaviour change through training, as skills develop and become more automatic?
 - b. Which measures of gaze behaviour discriminate between novice learners and experts?
 - c. Are there gaze behaviour metrics that could be used as proficiency-based benchmarks of performance?
 - d. Is gaze behaviour a reliable indicator of task difficulty/cognitive load?

- e. Could gaze behaviour metrics be applied to adaptive competency-based learning to allow trainees to progress at their own pace while being optimally challenged?
 - f. Could gaze behaviour be used to predict impending errors? (i.e., failing to look/notice a critical event at the right time).
2. **Role of vision quality and gaze behavior in learning of cockpit layout for ab initio pilots.** This work would explore the basic vision required. If participants learn more quickly if initially presented with a simplified panel with new displays added gradually as competence develops, what is the relation with expertise (is there a shift in visual requirements between novices and competent pilots).
 3. **For ab initio pilots learning the skill of take-off and landing an aircraft,** what is the role of vision quality and gaze behaviour? What basic level of vision is required, what is the attentional response to emergency indicators, how to visual requirements shift with additional experience?
 4. **What is the role of vision quality in visual illusions faced by pilots in-flight and during landing.** Does poor vision exacerbate or decrease the impacts of illusions faced by pilots? What are possible mitigations?

FACILITIES

Faculty members active in the WARC (*Dr. Suzanne Kearns, Dr. Shi Cao, and Dr. Elizabeth Irving*) submitted Canadian Foundation for Innovation (CFI) John R. Evans Leaders Fund (JELF) and Ontario Research Fund (ORF) funding proposals to purchase an ALSIM AL250 flight simulator for the University of Waterloo, to be fully dedicated to research. The CFI application was jointly supported by the Faculty of Environment and the Faculty of Science. The JELF funding was approved in Spring of 2020, with the ORF funding expected to be approved in May of 2021, and an expected installation date in late-May of 2021.

Room 242 in Environment 1 has been assigned to house the flight simulator, and the room is undergoing renovations to accommodate the flight simulator.

The ALSIM AL250 flight simulator can be reconfigured to represent several types of aircraft used within pilot training, including single-engine, complex single-engine, and multi-engine aircraft. The ALSIM AL250 has the following technical specifications:

- reconfigurable cockpit – a full cockpit that can represent different types of training aircraft;
- visual system – high definition field-of-view (250 degrees H x 49 degree V, minimum constant frame rate of 60 images/second);
- tactile effects – electrical force feedback on three axes;
- weather effects – visibility, day/night, clouds, precipitation, icing, wind, and turbulence;
- auditory effects – aerodynamic sounds including changes in speed and altitude, engine, touchdown and runway rumble, precipitation, crash, and malfunctions; and
- instructor/researcher station – touch-screen display, map display, positioning, weather condition, and failures control.

Responsibility for management of the simulator will remain with Dr. Suzanne Kearns as PI of the application. However, as the simulator is expected to support a wide range of research objectives

aligned with the proposed institute, it is intended that the simulator be available to Waterloo researchers at no (or minimal cost). Therefore, the institute will support operational and maintenance costs through supporting the salary of the Simulator Technician. The Technician will support researchers with technical requirements, perform maintenance and upkeep, schedule usage of the device aligned with the priorities of WISA, and make the device available for tours and demonstrations to draw new collaborators to the field of aeronautics (when not in use by researchers).

The simulator is essential to the research; as many of the proposed research activities would not be possible using an actual aircraft, due to the hazards associated with flight operations and testing to potential failure scenarios.

Although the flight simulator represents a crucial piece of infrastructure, additional space and equipment are likely to be required in the future as research activities grow. It is expected that these resources will be funded through a combination of research grants and industry-sponsored research. As an example, several colleagues from the WARC recently collaborated on an NSERC RTI proposal to purchase a portable eye-tracking device which would be used in conjunction with the flight simulator (*led by Dr. Richard Staines in partnership with Dr. Ewa Niechwiej-Szwedo and other colleagues*).

A possibility for a future facility is a shared multi-use building at the Waterloo airport. A concept for this type of building has been in discussion with several partners including the Waterloo Wellington Flight Centre (WWFC), the Region of Waterloo, and the local airport. The concept is that the building would house the WWFC flight school, University of Waterloo aeronautical research infrastructure, and other entities to facilitate an innovation and commercialization incubator (similar to Communitech but applied to the Aviation/Aerospace sectors). This prospect is still at the early concept stage; however, it does present opportunities for the future.

BUDGET

A five-year budget is presented, below. This budget represents seed funding requirements for WISA to launch and be sustained for five years. Please note that salaries in the first year are reduced by half as hiring is anticipated to occur mid-year. If requested/anticipated funds do not materialize, the contingency plan is to reduce the Simulator Technician position from FTE 1.0 to FTE 0.3 (accepting that this would reduce WISA capacity).

WISA will seek and support applications to existing funding programs, in cooperation with faculty members and research teams. It is also expected that WISA will generate significant interest from industry and a robust sponsorship package has been prepared to reflect various options for industry to engage with and financially support WISA research and activities (*see Appendix 2*). With research funding, sponsorship, and industry engagement, it would be possible to significantly expand WISA capabilities through additional research funding support, graduate and undergraduate financial assistance, events to bring together researchers and industry, and other activities.

5-Year Budget (Anticipated Expenses)

Expenses per Fiscal Year	2021/22	2022/23	2023/24	2024/25	2025/26	5-Year Total	Source
*Please note salary expenses have been reduced by 50% for Year 1, as hiring is expected mid-year							
Director						In-kind contribution	One course reduction per year supported by in-kind contribution from Faculty of Environment
Associate Directors	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$30,000.00	\$2,000 stipend for each Associate Director based on internal contributions
Managing Director (1.0 FTE)	\$45,000*	\$90,000	\$90,000	\$90,000	\$90,000	\$405,000.00	Based on internal contributions
Simulator Technician (1.0 FTE)	\$40,000*	\$80,000	\$80,000	\$80,000	\$80,000	\$360,000.00	Partially funded through Infrastructure Operating Funds (IOF) from CFI (\$9K/year)
Travel, Events, Speakers	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000.00	Based on internal contributions
Total Expenditures:	<u>\$101,000.00</u>	<u>\$186,000.00</u>	<u>\$186,000.00</u>	<u>\$186,000.00</u>	<u>\$186,000.00</u>	<u>\$845,000.00</u>	

Sources of Funding & Support

Fiscal Yr.	2021/22	2022/23	2023/24	2024/25	2025/26	5-Years	Additional Details
Confirmed Sources of Funding & Support							
Infrastructure Operating Fund from CFI	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$45,000.00	Funds to be directed towards Simulator Technician salary
Faculty of Environment	\$50,000 + In-kind contribution	\$50,000 + In-kind contribution	\$50,000 + In-kind contribution	\$50,000 + In-kind contribution	\$50,000 + In-kind contribution	\$250,000.00 + in-kind contribution	One course reduction for director (in-kind contributions) + cash towards WISA operations (\$50K). Will also provide space for simulator and grad students.
Faculty of Engineering	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$75,000.00	
Faculty of Science	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$75,000.00	
Faculty of Health	In-kind contribution	In-kind contribution	In-kind contribution	In-kind contribution	In-kind contribution	In-kind contribution	In-kind contribution of a course reduction for the Associate Director of WISA, when that AD is from the Faculty of Health
Provost Support	\$40,000	\$40,000	\$20,000			\$100,000.00	
Confirmed Funding	\$129,000	\$129,000	\$109,000	\$89,000	\$89,000	\$545,000.00	
Pending Sources of Funding							
Industry Sponsorship / Philanthropy	\$30,000	\$30,000	\$40,000	\$55,000	\$65,000	\$220,000.00	Verbal commitment of two industry sponsorships would generate \$30K/year for five years in WISA sponsorship toward institute operational costs. Additional sponsorships anticipated year 3+.
Fees for Use of Simulator	\$2,500	\$5,000	\$5,000	\$10,000	\$15,000	\$37,500.00	Modest user fees for the flight simulator for WISA members + market-value use for external collaborators.
Research Grants	\$5,000	\$5,000	\$10,000	\$10,000	\$12,500	\$42,500.00	Grants fund portions of the Simulator Technician salary, for aviation expertise within research projects.
Total Pending:	\$37,500.00	\$40,000.00	\$55,000.00	\$75,000.00	\$92,500.00	\$300,000.00	
Overall Total (Confirmed + Pending)	<u>\$166,500</u>	<u>\$169,000</u>	<u>\$164,000</u>	<u>\$164,000</u>	<u>\$181,500</u>	<u>\$845,000.00</u>	

Appendix 1 - Constitution

Constitution

The constitution of the Institute is governed by Policy 44 of the University of Waterloo Secretariat – Research Centres and Institutes.

WISA Board:

The WISA Board is the Governing Body of the Institute. The Board will meet at least once per year and additionally as appropriate. The Board will conduct its work with transparency, with meetings open to Members of the Institute. Minutes will be taken at Board meetings and be made available to WISA Members.

WISA Board Composition:

- Dean of Environment (or his/her delegate) who serves as Chair of the Board,
- Selected members of the Executive Committee of WISA, at the discretion of the Dean,
- Six Regular Members of WISA (preferably one representative from each Faculty at the University of Waterloo).

Responsibilities and Authority of the WISA Board:

The WISA Board has authority to execute and monitor the activities of the institute, subject to all University policies, procedures, and guidelines. These activities may include:

- Enacting rules and regulations for membership of the Board and the conduct of its affairs,
- Recommending WISA Executive Committee appointments (Director, Associate Director(s), Managing Director, and other WISA positions) to the Chair of the Board,
- Recommending appointment and removal other WISA staff to the Chair of the Board,
- Appoint and remove Members, and establish categories of membership and associated fees as applicable,
- Planning and implementing WISA's advancement and development activities,
- Establishing processes to manage and monitor WISA's finances,
- Establishing and enforcing rules and regulations governing WISA's activities, provided such rules and regulations are consistent with the University policies, procedures and guidelines; and
- Establishing such committees as it deems necessary to discharge its responsibilities, including the membership of the Advisory Committee.

Annual General Meeting

The WISA Board will meet at least once a year in conjunction with the Annual General Meeting (AGM), or more frequently as needed.

The AGM will be open to all members of WISA, with an agenda distributed prior to the meeting.

Executive Committee of WISA

WISA will be under the leadership of an Executive Committee which includes a Director, Associate Director(s), and a Managing Director.

The Director and Associate Director(s) must hold University of Waterloo faculty appointments. The Managing Director will be a staff appointment tasked with administrative and budgetary responsibilities.

Appointment of Directors

The Director will be appointed by the Vice-President, Academic & Provost, on the advice of the Dean of Environment.

The Associate Director(s) are appointed by the Dean of Environment or his/her delegate on recommendation of the Board of WISA.

The Managing Director is appointed by the Director of WISA.

In making its decision on the appointment of the WISA Director and co-Directors, the Board will solicit input from WISA membership, inviting any member to submit nominations for consideration.

In the event of a unanimous recommendation, the Board of WISA will convey the choice to the Dean of Environment or her/his delegate, who will then present the choice to the membership for ratification by secret ballot. If more than one nomination per position is received, an election will be held amongst the members of the Institute to select the Director and Associate Director(s). Voting will be by secret ballot.

The WISA Director will serve for a period of five years, renewable for a second term of three years by the Chair of the WISA Board with the support of the Board. The term of office for WISA Associate Director is one year, renewable for a second term of one year. Directors would not typically be expected to serve for more than two terms, unless recommended by the WISA Board.

In the event of a Director's absence for any prolonged period arrangements should be made, by the Dean of Environment (or his/her delegate) on the recommendation of the WISA Board, to appoint an Acting Director for a period of no more than one year.

If a Director's position becomes unexpectedly vacant, the Dean of Environment or his/her delegate will appoint (after appropriate consultation) an interim Director. If needed, an Associate Director could temporarily occupy both the Director and Associate Director positions and initiate the process of filling the vacancy.

Removal of the Director(s)

Directors may be removed from office by the Dean of Environment acting on the advice of the WISA Board.

If a simple majority of members of the Institute present written requests to the Dean of Environment or his/her delegate calling for the removal of one or more Director(s), the Dean of Environment or his/her delegate must investigate the complaint and notify the WISA Board her/his action. If he/she concludes that the welfare of the Institute requires the removal of the Director and one or both Associate Director(s), he/she must consult with the WISA Board and consider recommending such action.

Before recommending removal of one or more Director(s), the Dean of Environment or his/her delegate shall inform the Directors of his/her decision and reasons for it. The Directors have the right to state their case to the WISA Board and the members of the Institute.

A Director may only be removed from office for cause, which is to be understood in relation to the duties of the Director as described herein. Cause for removal includes negligence, incompetence, unprofessional conduct, and inability to maintain the confidence of the Members.

Duties of the Executive Committee

The Director is responsible for:

- Overseeing WISA's operations and managing its budget,
- Supervising staff member(s),
- Establishing working groups/committees to provide guidance in support of Institute activities,
- Preparing an Annual Report for the WISA Board,
- Liaising with the WISA Advisory Committee,
- Discharging all responsibilities set out in the constitution, and as directed by the WISA Board,
- Fostering industry partnerships and collaborations with Members and other University of Waterloo research institutes/centres.

The procedures followed by the Director in all matters shall be governed by prevailing Faculty of Environment practices, as applicable, and by University policies, procedures, and guidelines. The Director and Managing Director have signing authority on finance. Two signatures will be required for financial commitments.

The Associate Director(s) will support the Director in identifying critical research issues in the areas identified by the WISA Board and Advisory Committee. This includes coordinating the research strategy, liaising with faculty members to facilitate research teams, developing and evaluating research projects that are critically important for the strategic direction of WISA. Responsible for supporting general programming, such as in Member committees, the AGM, and the Advisory Committee meetings. Will be compensated with a stipend.

The Managing Director will be responsible for administrative and financial management of the institute. Duties include identifying the institute's niche donor community, reporting and communications (including marketing), donor relationships (approaching, negotiating, and managing partnerships with donor organizations to increase funding). Will strengthen donor support and enable joint programming. Provides leadership in the Institute's area of work in the international community to promote and achieve the objectives of the institute. Establishes contact with national and international agencies and governments to develop new partnerships and strengthen existing relationships. Working with the relevant Director of Advancement to coordinate activities.

The Director will delegate tasks to Institute members as required to operate the Institute.

The Director's performance is reviewed annually by the Dean of Environment or his/her delegate. With the knowledge of the Directors, the Dean of Environment or his/her delegate will seek confidential input from the WISA Board, Advisory Committee, Members of WISA, and its staff by any means deemed appropriate. The Director will annually review the performance of the Associate Director(s) and Managing Director.

Advisory Committee

An Advisory Committee will be established for WISA to provide advice to the Dean, WISA Board, Executive Committee, and Members. Advisory Committee members will be selected in a manner acceptable to the Board membership and serve for a period of up to three years, normally renewable once. The Advisory Committee will meet at least once a year.

The committee will include a rotating membership of distinguished industry partners, government policy-makers and university leadership. The committee will review major proposals for research activity and advise the Board on directions to pursue which are aligned with academic and industrial trends and priorities. The Advisory Committee may provide advice on general and financial management of WISA.

Advisory Committee members are expected to leverage their personal and professional network to expand WISA's national and international reach and partnership capacity.

The Advisory Committee will be co-chaired by the Director of WISA and an elected member from the committee, selected in a manner acceptable to the WISA Board, serving for a period of up to three years (normally renewable once).

The composition of the Advisory Committee will include:

- Director of WISA,
- 8 distinguished members from industry and governing/regulatory bodies,
- Associate Director(s) of WISA,
- Managing Director of WISA,
- 2 leading international researchers,
- 4 representatives from WISA membership.

Criteria for and categories of Institute membership

- Regular Members – University of Waterloo full-time faculty conducting research or scholarship in the topic areas covered by WISA,
- Associate Members – Post-doctoral fellows, graduate students, and others from the University of Waterloo. Faculty members from universities other than the University of Waterloo,

All types of memberships are valid for a period of five years, after which they will be re-evaluated for renewal.

Member Appointment

Decisions regarding eligibility, renewal, and removal of individual members are made by the WISA Executive Committee. Since a goal of WISA is to be inclusive of multidisciplinary research, all University of Waterloo researchers will be welcome to become Regular Members. Likewise, once the Directors confirm an applicant's appointment at another university, that applicant will be approved as an Associate Member.

A list of new Members will be included in the Annual Report presented at the AGM.

Voting procedures

When formal votes are required, such as in appointing a Director or amending the Institute's constitution, only Regular Members can vote. Quorum requires 50% plus one of voting members are faculty members of the University of Waterloo.

Appendix 2 – WISA Industry Sponsorship Levels

Note: When an industry partner chooses to sponsor WISA operations, they would contribute 10% of their total contribution as WISA Sponsorship towards operational expenses of the institute, with 90% towards research/student support (depending upon the level of contribution) at which point overhead distributions would apply as normal.

Sponsorship "Level", Value, and Commitment	Position on WISA Advisory Board	Research Access	WISA Annual Conference	Bi-Annual Partners Meeting	Interactions with faculty, students, speaking events, industry days, and campus visits	Brand Recognition	Organization acknowledged in all publications resulting from sponsorship	Scholarship or Pooled Fund
Exosphere \$250K+/year 5-year commitment	Rotating position as external industry officer on advisory board	2+ grad students with PI, Regular meetings, Progress updates & reports	Lead Advisory Board sponsor of conference	Invitation for 8 representatives to attend	Ongoing	Press Release highlighting sponsorship. Up to 2 op-eds/articles co-written between organization and WISA Sponsorship recognition in Annual WISA Report and website	Yes	
Thermosphere \$100,000-249,999/year 5-year commitment	Rotating position as external industry officer on advisory board	Up to 2 grad students with PI, Regular meetings, Progress updates & reports		Invitation for 4 representatives to attend	Ongoing	Press Release highlighting sponsorship. 1 op-ed/article co-written between organization and WISA Sponsorship recognition in Annual WISA Report and website	Yes	
Mesosphere \$50,000-99,999/year 5-year commitment		1 grad student with PI, Regular meetings, Progress updates & reports		Invitation for 2 representatives to attend		Sponsorship recognition in Annual WISA Report and website	Yes	
Stratosphere \$10,000-49,999/year		Work with PI, Regular meetings, Progress updates & reports		Invitation for 2 representatives to attend		Sponsorship recognition in Annual WISA Report and website	Yes	

No ongoing annual commitment								
Troposphere Graduate Fellowship Sponsor \$10,000-49,999/year No ongoing annual commitment		Support development of graduate HQP, no research participation		Invitation for 2 representatives to attend		Sponsorship recognition in Annual WISA Report and website		Profile of contribution in support of students in Annual WISA Report
Troposphere Undergraduate Fellowship Sponsor \$20,000+ No ongoing annual commitment		Support development of undergraduate HQP, no research participation		Invitation for 2 representatives to attend		Sponsorship recognition in Annual WISA Report and website		Profile of contribution in support of students in Annual WISA Report

Appendix 3 – Abbreviated CV of Director Designate (5 Years)

Contents of Appendix 3 can be found [here](#)

Appendix 4 – Statements of Sanction and Commitment

Letter of Support from the Faculty of Environment's Dean Jean Andrey (2 pages)



April 13, 2021

Re: Letter of Support for the formation of the Waterloo Institute for Sustainable Aeronautics

As Dean of the Faculty of Environment, I am writing to enthusiastically support the formation of a Senate-approved research institute to provide campus, national and international leadership on the economic, social, and environmental sustainability of aviation and aerospace.

University of Waterloo has a unique combination of assets on which to build a vibrant research institute:

- World-class expertise in a variety of disciplines relevant to the sector including environmental science, engineering, kinesiology, optometry, computer science, and cognitive psychology;
- A core group of researchers who have demonstrated that they can work together;
- Strong partnerships with industry, the Region of Waterloo, and the Waterloo-Wellington Flight Centre;
- An inaugural Director with strong connections to ICAO and other international bodies
- A soon-to-be installed ALSIM AL250 flight simulator dedicated to research; and
- Undergraduate degree programs in Geography & Aviation and Science & Aviation with a combined enrolment of ~ 300 students.

The proposed Waterloo Institute for Sustainable Aviation (WISA) has identified three primary areas of research focus for the initial five-year period, all of which ask questions that are of critical importance to the sector:

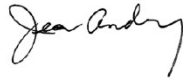
1. Decarbonizing Canadian air travel, especially through the electrification of pilot training and regional and small-aircraft travel;
2. Competency-based education, machine learning, and training technologies that have the potential to lead to more effective training at lower cost; and
3. Understanding pilot performance with a focus on psychomotor skill development, gaze behaviour, and vision quality.

In addition, WISA will provide inspiration and support for the expansion of undergraduate-degree and certificate-based aviation training, as well as the development of graduate education in the area, e.g, through a collaborative program similar to what exists for water.

As elaborated in the proposal, the work of WISA aligns with the University of Waterloo's Strategic Plan, especially "developing talent for a complex future", "advancing research for global impact", and "strengthening sustainable and diverse communities".

The Faculty of Environment is pleased to support WISA with a commitment of \$66,000 annually for five years (\$16,000 in the form of a teaching release for the proposed Director, Dr. Suzanne Kearns, and \$50,000 cash). In addition, the Infrastructure Operating Funds (IOF) received by the Faculty of Environment, associated with the Canadian Foundation for Innovation (CFI) John R. Evans Leaders Fund (JELF) proposal titled "Supporting Sustainable Aviation through Pilot Training and Visual Standard Innovations using a Flight Simulation Device", are intended to be directed towards the salary of the Simulator Technician (\$45,000). Finally, the Faculty of Environment is pleased to house the ALSIM AL250 flight simulator and is committed to provide graduate-student research space as the research cluster grows.

Sincerely,

A handwritten signature in black ink, appearing to read "Jean Andrey". The signature is fluid and cursive, with the first name "Jean" and last name "Andrey" clearly distinguishable.

Jean Andrey
Professor, Department of Geography and Environmental Management
Dean, Faculty of Environment
jandrey@uwaterloo.ca
519-504-7985

Letter of Support from the Faculty of Engineering's Dean Mary Wells



FACULTY OF ENGINEERING | Office of the Dean
519-888-4885
dean.engineering@uwaterloo.ca | uwaterloo.ca/engineering

April 13, 2021

Re: Letter of support for Waterloo Institute for Sustainable Aeronautics, (WISA)

Dear Senate Members:

I am writing to express my strong support in favour of establishing the first-ever Waterloo Institute for Sustainable Aeronautics, (WISA) at the University of Waterloo.

WISA, and its unique interdisciplinary and collaborative approach offers many exciting possibilities for the university's future and the Faculty of Engineering is eager to endorse this proposed institute. This new institute also aligns closely with the University of Waterloo's strategic plan; developing talent for a complex future and advancing research for global impact and sustainability.

The mission of WISA is to establish a hub of sustainable aviation and aerospace research, technology, and education. Also, to foster transdisciplinary studies and cross-sector partnerships, focused on innovating the air transport sector and informing public policy, in support of a more sustainable future.

The proposed 'Waterloo Institute for Sustainable Aeronautics' (WISA) will also play a key role in educating the next generation of aeronautical leaders, including flight crew trained in our current undergraduate programs, as well as multidisciplinary graduate students jointly supervised by WISA researchers in a variety of applicable disciplines.

In order to foster this multidisciplinary approach in graduate studies, WISA will work with interested Faculties in creating a Collaborative Graduate Program in Aeronautics, modeled on the very successful [Collaborative Water Program](#).

The Faculty of Engineering has agreed to support the Waterloo Institute for Sustainable Aeronautics (WISA) with a financial commitment of \$15,000 each year over a period of 5 years to assist with the inauguration efforts of this endeavour.

On behalf of the Faculty of Engineering, I fully support this noteworthy WISA initiative and look forward to seeing its future growth under the direction of Dr. Suzanne Kearns, Associate Professor at University of Waterloo.

Best regards,

Mary Wells

Mary A. Wells, Dean
Faculty of Engineering



E7-7302, 200 UNIVERSITY AVENUE WEST, WATERLOO, ON, CANADA N2L 3G1

Letter of Support from the Faculty of Science's Dean Robert P. Lemieux



FACULTY OF SCIENCE | Office of the Dean
519-888-4567, ext. 30353 | fax 519-746-2543
rplemieux@uwaterloo.ca | uwaterloo.ca/science

April 15, 2021

Dr. Charmaine Dean
Vice-President Research & International
University of Waterloo

Re: Proposal to establish the Waterloo Institute for Sustainable Aeronautics (WISA)

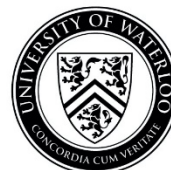
Dear Charmaine:

I write to express my strong support for the proposal to establish the Waterloo Institute for Sustainable Aeronautics, which will form a strategic, university-wide alliance of researchers from multiple disciplines to focus on the many challenges faced by the aviation and aerospace sectors, including those associated with energy and environmental impacts, personnel shortages, equitable access to mobility, economic development, and the rapid evolution of technology. The Faculty of Science is home to the Science & Aviation program, which is delivered in partnership with the Geography & Aviation program in the Faculty of Environment, and the establishment of WISA will broaden the scope of our activities in this area to include research in vision science and neuroscience, and will likely attract other researchers in cognate areas of science. To ensure that WISA is appropriately resourced to begin its activities, the Faculty of Science is pleased to provide the institute with funding in the amount of \$15,000 per year for 5 years.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Lemieux".

Robert P. Lemieux, PhD
Dean of Science and Professor of Chemistry



200 UNIVERSITY AVENUE WEST, WATERLOO, ON, CANADA N2L 3G1

Letter of Support from the Faculty of Health's Dean Lili Liu



FACULTY OF HEALTH
519-888-4567, ext. 31346 | health@uwaterloo.ca
uwaterloo.ca/health

April 16, 2021

Dr Charmaine Dean
Vice-President Research & International
University of Waterloo

Dear Dr. Dean:

I strongly support the proposal for a Waterloo Institute of Sustainable Aeronautics (WISA) submitted by Director, Dr. Suzanne Kearns. At least one faculty member in the Faculty of Health has been collaborating with Dr. Kearns in the Waterloo Aviation Research Cluster (WARC) over the past year, and contributing expertise in the area of visuomotor neuroscience.

The mission of the proposed WISA "to foster transdisciplinary studies and cross-sector partnerships", and the three research themes in Social, Environmental and Economic pillars of sustainability align with several research programs taking place in the Faculty of Health.

We are committed to support a co-director from the Faculty of Health by providing release from administrative duties or from one course during a one year appointment. The administrative or teaching release would require the approval of the faculty member's department chair. We would also be willing to consider contributions in the future when we know we have capacity in our budget. These contributions may be in the form of supporting co-op students or research assistants through faculty research grants or other sources.

Sincerely,

A handwritten signature in blue ink that reads "Lili Liu".

Lili Liu, Professor and Dean
Faculty of Health

cc: Rich Staines, Associate Dean, Research
Russ Tupling, Chair, Department of Kinesiology
Suzanne Kearns, Faculty of Environment



200 UNIVERSITY AVENUE WEST, WATERLOO, ON, CANADA N2L 3G1

University of Waterloo
SENATE UNDERGRADUATE COUNCIL
Report to Senate
21 June 2021

Senate Undergraduate Council met on 11 May 2021 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

ACADEMIC PLAN CHANGES

Faculty of Mathematics
Applied Mathematics

1. **Motion:** That Senate approve the proposed changes to the Applied Mathematics Minor, as outlined below, effective 1 September 2022.

Rationale and Background:

The following proposed changes make the minor available to students outside of the Faculty of Mathematics (except as noted), make the course selection more flexible, and reduce the number of required courses by one. This will make the plan more consistent with other minors. For students in the Faculty of Mathematics, the existing and proposed requirements are equivalent in units, as all students in the Faculty already take a course from the first three "One of" categories as part of their core requirement. For students outside the Faculty, the additional 1.5 units from these three "One of" categories ensures the students can be successful in the other courses.

Current calendar text: <https://ugradcalendar.uwaterloo.ca/page/MATH-Applied-Mathematics-Minor1>

New calendar text:

Applied Mathematics Minor

One of

MATH 103 Introductory Algebra for Arts and Social Science

MATH 106 Applied Linear Algebra 1

MATH 114 Linear Algebra for Science

MATH 115 Linear Algebra for Engineering

MATH 136 Linear Algebra 1 for Honours Mathematics

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

One of

MATH 104 Introductory Calculus for Arts and Social Science

MATH 116 Calculus 1 for Engineering

MATH 117 Calculus 1 for Engineering

MATH 127 Calculus 1 for the Sciences

MATH 137 Calculus 1 for Honours Mathematics

MATH 147 Calculus 1 for Honours Mathematics (Advanced Level)

One of

MATH 118 Calculus 2 for Engineering
MATH 119 Calculus 2 for Engineering
MATH 128 Calculus 2 for the Sciences
MATH 138 Calculus 2 for Honours Mathematics
MATH 148 Calculus 2 for Honours Mathematics (Advanced Level)

One of

MATH 212/ECE 206 Advanced Calculus 2 for Electrical Engineers
MATH 217 Calculus 3 for Chemical Engineering
MATH 227 Calculus 3 for Honours Physics
MATH 237 Calculus 3 for Honours Mathematics
MATH 247 Calculus 3 for Honours Mathematics (Advanced Level)

One of

AMATH 250 Introduction to Differential Equations
AMATH 251 Introduction to Differential Equations (Advanced Level)
MATH 211/ECE 205 Advanced Calculus 1 for Electrical and Computer Engineers
MATH 213 Advanced Mathematics for Software Engineers
MATH 218 Differential Equations for Engineers
MATH 228 Differential Equations for Physics and Chemistry

2.5 additional units of AMATH courses at least 1.5 of which are at the 300- or 400-Level

Notes

1. The Applied Mathematics Minor is not available to students outside the Faculty of Mathematics pursuing Mathematical Physics or a Joint Honours academic plan with Mathematics or a Mathematics Minor.
2. Other Linear Algebra, Calculus and Differential Equations courses than those listed above may be used to satisfy the "One of" requirements above, with approval of the Applied Mathematics advisor.

Faculty of Mathematics Computational Fine Art Specialization

2. **Motion:** That Senate approve the proposed changes to the Computational Fine Art Specialization, as outlined below, effective 1 September 2022.

Rationale and Background:

The following changes are proposed to the requirements to make the specialization more streamlined and flexible for computer science students, increasing choices and reducing scheduling problems. The number of units remains the same. Fine Arts was consulted on the proposed changes.

Current	Proposed (bold = new text)
https://ugradcalendar.uwaterloo.ca/page/MATH-Computer-Sci-Computational-Fine-Art-Spec	
All of: <ul style="list-style-type: none">• CS 349 User Interfaces• CS 383/FINE 383 Computational Digital Art Studio• CS 488 Introduction to Computer Graphics• FINE 100 Studio Fundamentals	All of the three CS courses: CS 349 User Interfaces CS 383/FINE 383 Computational Digital Art Studio CS 488 Introduction to Computer Graphics

<ul style="list-style-type: none">• FINE 101/VCULT 101 Art History and Visual Culture• FINE 257 Video, New Media & the Digital Turn	<p>One first-year studio course from: FINE 100 Studio Fundamentals FINE 130 Introduction to Digital Imaging</p> <p>One second-year studio course from: FINE 228 Design and imaging FINE 247 Expanded Media: Interaction</p> <p>One art theory course from: FINE 257 Video, New Media & the Digital Turn VCULT 200 Visual Studies Across the Discipline</p>
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/rmw

David DeVidi
Associate Vice-President, Academic

Update on Assessment of Teaching Processes

In June 2020, Senate passed motions directed at improving the assessment of teaching at the University of Waterloo. Better assessment of teaching is obviously an important goal for improving the quality of education at Waterloo over time, but is also something that promises to improve fairness for both instructors and students. Paraphrasing a bit, last June Senate offered endorsement of

1. Moving forward with a the newly developed and recently pilot-tested Student Course Perception instrument for all University courses
2. Continued work by a team working on Complementary Teaching Assessment Practices with a focus on *Teaching Dossiers* and *Peer Review of Teaching*, with a mandate to produce recommendations for *feasible* processes that will provide *meaningful and useful information*
3. The University moving towards processes that result in systematically holistic assessments of teaching that make effective use of multiple sources of information

One year later, we thought it would be useful to update Senate on the progress made on these fronts. We include below written updates about the further work on the Student Course Perception surveys and an ongoing, Senate-endorsed initiative to develop useful methods for assessment of the quality of graduate supervision. There will be brief oral presentations from the Chair of the Complementary Teaching Assessment Processes Team, Ian Vanderburgh, and from the Director of Teaching Assessment Processes, Sonya Buffone, about a key step in the creation of systematically holistic assessments of teaching.

David DeVidi
Associate Vice-President, Academic

Student Course Perception (SCP) Survey Update for Senate

June 2021

Sonya Buffone, Director, Teaching Assessment Processes

In June 2020, Senate endorsed recommendations from Phase 2 of the Course Evaluation Project, including the launch of a new Student Course Perception instrument for all courses taught at Waterloo. The Phase 2 Project has been superseded by the Student Course Perception Project, and work continues. The purpose of this document is to provide an overview of the ongoing work of the Student Course Perceptions (SCP) team. Some noteworthy developments:

- The Student Course Perception Advisory Committee was established February, 2021. The Committee reports to the AVPA.
- A new staff position (Director, Teaching Assessment Processes (TAP)) was established to lead the development of a holistic system for teaching assessment at the University of Waterloo. TAP director (Sonya Buffone) co-ordinates the work of the SCP Advisory Committee, the Complementary Teaching Assessment Project Team, and the Graduate Supervision Task Force.
- Implementation of the new SCP instrument was delayed in response to ongoing challenges relating to the pandemic.

The new core (institutional) survey questions are ready for implementation when Waterloo is back to near full capacity for face-to-face course delivery (est. April 2022). Ongoing work relating to this objective includes the following projects:

- Faculty consultations re: development of tier 2 questions
- Once the SCP has officially launched, there will be ongoing assessment of the data to examine issues related to bias (and other variables that may be associated with differences in SCP scores). Of specific and priority interest will be exploration of the relationship between racialized identity and SCP scores (we were unable to assess this relationship at the time of the pilot test given that institutional data was unavailable).
- Development of users guides: for (1) academic administrators and (2) instructors
- Comparative analysis: results for new SCP tool vs. results for existing surveys
- Qualitative analysis of qualitative SCP comments
- Education campaign for students

Ongoing Assessment of SCP Data

The new institutional SCP instrument provides the opportunity to explore patterns and trends in the data over time. The Teaching Assessment Office will be responsible for ongoing monitoring of SCP data including an examination of issues related to bias. Of particular interest will be associations between SCP scores and instructor characteristics (racialized identity, gender, precarious employment status, other variables as identified by campus stakeholders in our consultations), and between scores and other variables such as class size and year level. Our analyses will follow best practices at other U15 institutions, and as defined in the literature pertaining to teaching and learning.

Aim: Ongoing. Will coincide with launch and continue longitudinally.

Faculty consultations: Tier 2 of a cascading SCP model

The SCP instrument will follow a cascading model, which includes core institutional questions in addition to Faculty- and department-specific questions.

- Beginning fall 2020, Sonya has worked closely with Gordon Stubley (former Associate Dean, Teaching in Engineering, DTA and 3M Teaching Award winner) to support Faculties in their development of Faculty level questions. This consultation process has involved two working phases within each Faculty.
- To date, two Faculties (Environment and Engineering) are nearing completion of this task.

Though we have made good progress over the course of these consultations, ongoing pandemic-related challenges have delayed progress somewhat. This process is important and necessary as we move towards implementation of the new SCP instrument, but we also want to ensure that stakeholders have the space and time to ensure that the process is meaningful. Some Faculties have requested that we postpone this work until the Fall when we hope to be in a better position to engage in this process face-to-face.

Aim: Complete consultations by the end of Winter 2022. Ideally, this will coincide with the official launch of the new SCP survey.

Development of user guides

The launch of the new WSCP instrument will be accompanied by user guides, *one for academic administrators (Chairs, Tenure and Promotion Committees, etc.) and one for instructors.*

User guide for academic administrators:

- in progress since January 2020
- seeks to provide guidance for interpreting scores collected through the SCP survey, including support for understanding the contextual factors that may impact those scores
- initial draft distributed to acting Chairs spring 2020 and shared with campus stakeholder groups summer 2020
- Consultation input fueled significant revisions over fall 2020 and winter 2021
- Additional consultations with stakeholder groups indicate that draft 2 is on the right track

*Consultations focused on (1) mechanics of interpreting SCP scores, and (2) **equity concerns**.

Stakeholder groups included: FAUW equity committee, Black Faculty Collective, FAUW Lecturers Committee, and the SCP Advisory Committee.

User guide for instructors:

- Will be developed with input from CTE
- seeks to provide support for interpreting SCP scores, provide guidance with respect to encouraging student engagement with the SCP process, etc.

The guides will continue to be updated and informed by ongoing testing and monitoring of the SCP process, discussions with stakeholder groups at Waterloo, input from department Chairs and others acting in an administrative role, experiences and reports shared by other Canadian institutions, and continued review and analysis of the literature.

Aim: Complete ‘final’ draft of both user guides by winter 2022

Comparative Analysis

When the new SCP survey was pilot tested in fall 2018, some Faculties requested a comparison between its results and results associated with the existing (Faculty-specific) course evaluation surveys. The analysis was guided by the following questions:

- How much volatility should instructors expect in the transition between instruments; and
- Does the move to the new instrument improve or exacerbate gender differences in scores?

Faculties that elected to participate signed an agreement to share course evaluation data from the fall 2018 term. The results of this comparative analysis revealed the following:

- Though some movement in scores across instruments is to be expected, instructors will do roughly as well with the new instrument, compared to their colleagues, as they do with the old instrument(s).
- The transition from the existing course evaluation metric to the SCP metric does not seem to alter the way average scores for female instructors compare to their male colleagues.
- In two of the four Faculties (Health & Engineering), the proportion of female-instructor course pairs above the median was higher with the new (SCP) instrument, while in Math and Science the median was slightly lower, but it is important to emphasize that in all cases, the differences are not

statistically significant. The full comparative analysis report will be available soon on the [Reports section](#) of the SCP Project Website.

Aim: Share complete report with interested parties

[Qualitative analysis of qualitative comments from SCPs](#)

The Student Course Perception advisory committee is seeking approval to conduct a qualitative research study to assess responses to the open-ended questions on the new Student Course Perceptions survey, once the new instrument is officially launched (April 2022). This includes analysis of the following open-ended items from the core of the SCP survey:

- a. The most important thing I learned in this course was ...
- b. What helped me to learn in this course was ...
- c. What changes, if any, would I suggest for this course?

Currently, University practice is that only course instructors can access open-ended responses to course evaluations. CEPT2 research and consultation indicated that allowing administrators access to open-ended responses is considered best practice.

An extensive literature review and consultations with department Chairs, HREI, and Deans prompted the Course Evaluation Project Team (CEPT2) to propose, in its final report, that the University reassess its current practice. The members of CEPT1, CEPT2 and the Director, Teaching Assessment Processes believe that **the open-ended responses to student course perception surveys provide the necessary context to help interpret the quantitative (numerical) values derived from the SCP items**. Without this contextual information it can be challenging to make sense of the numerical averages that Chairs and tenure/promotion committees access. These responses can provide a clearer picture of the ideas and perceptions students have about their course experience, while also highlighting strengths and weaknesses in a course as experienced by the student. Given these considerations, Deans' Council endorsed this proposal in January 2020.

Reviewing qualitative comments from the SCPs once they are officially launched will allow us to explore the extent and nature of inappropriate comments made by students at UW and will help to inform the design of processes and allow us to develop appropriate screening measures, should the University elect to allow Chairs or other tenure & promotion committee members to see qualitative comments. Additionally, this research will help us develop educational materials to help students provide useful and actionable feedback to instructors.

Aim: Complete qualitative analysis of April 2022 SCP results (student comments).

[Education Campaign for Students](#)

Once the administrator and instructor guidebooks are completed, the SCP advisory group will shift their attention to developing guidance materials for students to help with the transition to the new instrument. Results from the 2018 focus groups with students will be used to guide the development of these materials. Additionally, the SCP advisory group will consult with students and student groups during the development of this material.

Aim: Complete student educational material by April 2022.

Assessment of Graduate Supervision

June 2021

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

Introduction

Graduate student supervision is defined in Policy 77 as an element of teaching. Thus, as part of the University's ongoing commitment to recognize, achieve and assess excellence in teaching, there is a need to consider explicitly graduate student supervision. In fact, the University Senate itself had previously provided direction to this end. At its meeting on [15 June, 2015](#), Senate approved a motion:

"That Senate recommend to the Provost that a task force be established to investigate the mechanisms by which the quality of graduate supervision at both the masters and doctoral levels are assessed at the university."

The Task Force on Graduate Student Supervision arose in 2019 from this recommendation to the Provost.

Construct of Task Force

Task Force is chaired by the Associate Vice President Graduate Studies and Postdoctoral Affairs; [its membership](#) includes faculty, staff and graduate students that collectively represent all six Faculties, three Academic Support Units, the Faculty Association, and the Graduate Student Association.

Guiding Questions

In 2018, the Graduate Operations Committee, in collaboration with GSPA and informed by the Senate recommendation, was responsible for developing the eight specific questions that the Task Force would investigate. These questions guide the Task Force's consultations and assessments, and keep the work of the Task Force focused on a key set of purposes and goals. The guiding questions are:

1. What are the supervisory practices among the many faculty colleagues who are or have been recognized at Waterloo for excellence in graduate student supervision?
2. What data exist that provide evidence of the quality of graduate student supervision at the University of Waterloo? How are these data gathered? How are the results disseminated? Are there formal processes by which actions are taken in response to these data?
3. What are the best practices in terms of establishing, evaluating, and updating common expectations between supervisors and students? Is there evidence that those best practices are taking place at Waterloo?
4. What are the best practices in terms of receiving feedback from students on the performance and competencies of their graduate student supervisor(s)?
5. What are the best practices in terms of evaluating graduate student supervision? Is there evidence that these practices are taking place at Waterloo?
6. What are the best practices in terms of training for graduate student supervisors? What have been identified as contemporary challenges in graduate student supervision (e.g. mental health,

accessibility, intellectual property, professional outcomes, etc.)? Do the University of Waterloo policies and procedures match these best practices?

7. Are there acknowledged indicators that have been used to identify supervisors whose competencies and performances warrant attention? Do sufficient policies and or practices exist to manage these situations at Waterloo?
8. What are the resources available to students, supervisors and administrators when conflicts arise? Are these resources sufficient?

Stakeholder Engagement

The Task Force on Graduate Student Supervision explored these eight questions by engaging in research, primarily reviews of both scholarly and peer universities' publications, as well as assessments of the University's current practices. The Task Force also conducted in-person consultations and received information from larger stakeholder groups through surveys. Direct conversations were had with all Faculty Deans, Associate Deans, and most Faculty leadership groups; similarly information was gathered through interviews with Faculty graduate administrators and select graduate coordinators. Surveys were used to receive inputs from Associate Chairs or Graduate Officers (34 respondents), graduate coordinators (28), faculty members (191), graduate students (1063) and alumni of our graduate programs (416).

Members of the Task Force also consulted with five Academic Support Units (ASUs) that interact regularly with graduate students to receive their feedback on the perceptions of graduate students related to their supervisory relationships.

Initial Observations

While the Task Force continues its work, the following observations have been made and will inform recommendations from the group.

The Task Force has found that good supervision can be defined, in part, by a set of supervisor *attributes* and *practices*. Those supervisors who have been recognized for excellence at the University of Waterloo share the attributes identified as best practices in the literature. They exhibit empathy and caring; they establish common expectations and communicate effectively. They serve as academic leads while providing mentorship to their students.

The Task Force has also learned that there is a strong commitment to good supervision at the University of Waterloo, and a strong majority of students have a positive supervisory experience. These positive outcomes often result from a common commitment to student well-being that includes supervisors, faculty members in administrative roles, and staff members who support graduate students. The Graduate Student Association (GSA) and Counselling Services were also identified as valuable resources for graduate students.

The Task Force's work has identified common elements have led to breakdowns in the supervisor-student relationship. Most often, conflicts arise when there is a failure to establish or meet common expectations between students and supervisors. The conflicts can be exacerbated when there is an unwillingness or an inability to acknowledge the source of the tension, and to have issues addressed directly. Students and alumni from whom the Task Force received comments made the additional observation that the power imbalance between students and their supervisors can dissuade or preclude students from self-advocacy for fear of reprisal. Some University administrators indicated an inability to support the resolution of conflicts in some cases as a result of a lack of awareness of process and, in other situations, a feeling of a lack of empowerment to address these situations in their roles.

On the issue of assessing graduate student supervision, the Task Force has learned that there exists a diversity of approaches across the University that is informed by and consistent with disciplinary norms. Despite that, some common observations have emerged. Most reporting of graduate student supervision by faculty members is quantitative, concentrating on the number of students supervised. It is less common for faculty members to report on the quality of graduate student supervision. Unlike other elements of teaching assessment – particularly student perception surveys for courses – an assessment of the quality of graduate student supervision seldom contains feedback directly from students. This is a well-recognized challenge in the literature. Effective methods for receiving feedback from supervisees are rare because of the difficulty of maintaining anonymity for students (and the resulting fear of reprisal) and the inability to contextualize feedback with few respondents.

Finally, on the issue of training for graduate student supervisors, the Task Force's consultations and surveys suggest that there is an appetite among faculty colleagues for opportunities to improve their supervision. Some potential pathways include making available targeted training modules that address common challenges experienced within or across disciplines.

Next Steps

The Task Force's work was interrupted by COVID-19. But, since March of 2021, the group has restarted its work. Most recently, the Task Force has been authoring a draft report that summarizes its work to date and makes recommendations on ways to improve both the practice of supervision at Waterloo and its assessment.

The expectation is this report will be presented to the University's senior leadership and other affected stakeholders in fall of 2021.

Vice-President, Research & International Report to Senate June 2021

Waterloo International

In April 2021, Waterloo International facilitated the signing of five agreements as follows:

1. Deakin University, Australia Student Mobility Agreement
 - This agreement is a renewal of a student exchange agreement that was originally signed in 1985. It applies university-wide at Waterloo and is focused on the Faculties of Arts and Education, Business and Law, Health, Science, Engineering and Built Environment at Deakin.
2. University of Southern Denmark, Denmark Student Mobility Agreement
 - This agreement is a student renewal of an exchange agreement that was originally signed in 2004. It applies university-wide at both Waterloo and the University of Southern Denmark.
3. Trinity College Dublin, Ireland, Student Mobility Agreement
 - This agreement is a renewal of an exchange agreement that was originally signed in 2014. It applies university-wide at Waterloo and applies at Trinity College Dublin's Faculties of Arts and Humanities and Science, Technology, Engineering, and Mathematics.
4. Istanbul Technical University, Turkey, Student Mobility Agreement
 - This agreement is a renewal of a student exchange agreement that was first signed in 2013. It applies to the Faculty of Engineering at Waterloo and university-wide at ITU.
5. University of Newcastle, United Kingdom, Student Mobility Agreement
 - This is a renewal of the student exchange agreement that was originally signed in 2003. It involves the Faculties of Arts, Environment and Science at Waterloo and Faculty of Humanities and Social Sciences, Faculty of Science, Agriculture and Engineering, School of Psychology, and Faculty of Medical Sciences at Newcastle.

Awards and Distinctions

Waterloo received notice of eight new Award winners during this period:

- **Governor General's Award for Innovation: International Tobacco Control Policy Evaluation (ITC) Project: Geoffrey Fong** (Psychology), **Dave Hammond** (School of Public Health and Health Systems), **Mary Thompson** (Statistics and Actuarial Science)

- **2020 Canadian Pharmacist of the Year:** Kelly Grindrod (School of Pharmacy):
- **2020 Foreign Fellow of the National Academy of Sciences, India:** Sushanta Mitra (Mechanical and Mechatronics Engineering):

Tri-Council Funding

This year, 50 of the 63 (or 79% success rate) **NSERC Discovery Grant**¹ (DG) applicants were successful, resulting in **\$1,677,000** in new funds for fiscal year 2021/2022. Notably, this was a very unusual year, since 99 applicants, normally up for renewal, accepted the one-year funded extension from NSERC. Of the 63 applicants, 31 were early career researcher, of whom **24 (or 77%)** were successful.

In addition:

- Waterloo received **one Discovery Accelerator Supplement (DAS)**¹ (\$40K/year for 3 years for an additional **\$120K**)
 - The DAS program provides substantial and timely resources to researchers who have an established, superior research program that is highly rated in terms of originality and innovation, and who show strong potential to become international leaders within their field.
- **Both** Discovery Grant - **Northern Research Supplement (NRS)**¹ applicants were successful.
 - The NRS program is aimed at NSERC-funded researchers who intend to conduct Discovery research in Canada's North and recognizes the added costs unique to conducting research in the Canadian North.
- **12 UW-NSERC Research Incentive Fund (RIF)** holders were successful.
 - The UW NSERC RIF internal program for NSERC Discovery Grants helps to address the most common issues that result in a discovery grant being unfunded: insufficient HQP and publications.

This year, **12** of 44 (or **27%**) of **NSERC Research Tools and Instruments**¹ (RTI) applications were successful, resulting in a total award amount of **\$1,519,730**.

- RTI grants foster and enhance the discovery, innovation and training capability of university researchers in the natural sciences and engineering by supporting the purchase of research equipment.

Six of the 21 (**29% success rate**) applicants to **SSHRC's New Frontiers in Research** Fund (NFRF) – **Exploration 2020** program were successful,¹ resulting in **\$1,500,000** of new funds. NFRF, comprised of three streams: exploration, transformation and international, aims to support “*international, interdisciplinary, fast-breaking and high-risk research.*”

¹ Results are under embargo.

Gateway for Enterprises to Discover Innovation (GEDI)² Partnership Agreement

On May 12, 2021, BlackBerry Limited and the University of Waterloo announced a five-year, \$5 million partnership agreement. The primary focus will be to develop and conduct research projects, beginning with the University's Faculties of Mathematics, Engineering, and Science, in conjunction with the Waterloo Artificial Intelligence Institute and the Waterloo Cybersecurity and Privacy Institute.

Animal Care:

- Dr. Paul Craig, UW Animal Care Committee chairperson and Associate Professor in the Department of Biology, has been nominated to the Canadian Council on Animal Care (CCAC), effective as of Sept 1st, 2021 for a period of 3 years.

² GEDI is the University of Waterloo's corporate engagement office and helps to streamline a company's pan-University interactions.