

University of Waterloo
SENATE EXECUTIVE COMMITTEE
Notice of Meeting

Date: Monday 7 June 2021
Time: 3:30 p.m.
Place: Teams Videoconference

AGENDA	Action
1. Minutes of the 3 May 2021 Meeting	Decision
2. Business Arising from the Minutes	
3. Draft 21 June 2021 Senate Agenda	Decision
4. Report of the Vice-President, Academic & Provost a. Roster of Graduands†	Decision
5. Other Business	

31 May 2021

Karen Jack
University Secretary

†The committee will be notified when the roster is available on the Senate Executive Committee SharePoint site.

University of Waterloo
SENATE EXECUTIVE COMMITTEE
Minutes of the 3 May 2021 Meeting

Present: David Billedeau, Dan Brown, Jeff Casello, Joan Coutu, Benjamin Easton, George Freeman, Feridun Hamdullahpur (chair), Karen Jack (secretary), Christiane Lemieux, Graham Murphy, Luke Potwarka, James Rush, Emma Schuster, Johanna Wandel

The chair welcomed new and returning members to the first meeting of the governance year.

1. MINUTES OF THE 5 APRIL 2021 MEETING

Members heard a motion to approve the minutes of the 5 April 2021 meeting.

Brown and Casello. Carried unanimously.

2. BUSINESS ARISING FROM THE MINUTES

There was no business arising.

3. REPORT OF THE VICE PRESIDENT, ACADEMIC & PROVOST

Roster of Graduands. The committee heard a motion to recommend that Senate delegate the approval of the roster of graduands for the June convocation ceremony to its Executive Committee for its 7 June 2021 meeting.

Rush and Brown. Carried unanimously.

4. ELECTIONS TO SENATE COMMITTEES

The committee heard that an electronic vote will occur soon to fill the vacancies on Senate committees and councils.

5. DRAFT 17 MAY 2021 SENATE AGENDA

Following a brief review of the agenda by the chair, including notice that there may not be a presentation, and some commentary on the likely contents of his report, members heard a motion to approve it.

Coutu and Lemieux. Carried unanimously.

6. OTHER BUSINESS

Members heard that a small policy revision is under consideration and may be ready for Senate's consideration this month. Members understood that it will be added to the agenda if it is ready in time.

4 May 2021

Karen Jack
University Secretary

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>Decision</p> <p>Information Decision/Information</p> <p>Information</p> <p>Information</p> <p>Decision</p>
3:35	<p><u>Regular Agenda</u></p> <ol style="list-style-type: none"> 6. Business Arising from the Minutes 	Information
3:40	<ol style="list-style-type: none"> 7. Presentation – Dan Brown, President of the Faculty Association of the University of Waterloo 	Information
3:50	<ol style="list-style-type: none"> 8. Reports from Committees and Councils <ol style="list-style-type: none"> a. Graduate & Research Council b. Undergraduate Council* 	Decision
4:00		Decision
4:10	<ol style="list-style-type: none"> 9. Report of the President 	Information
4:15	<ol style="list-style-type: none"> 10. Q&A Period with the President 	Information
4:20	<ol style="list-style-type: none"> 11. Report of the Vice-President, Academic & Provost 	Information
4:25	<ol style="list-style-type: none"> 12. Report of the Vice-President, Research & International 	Information
4:30	<ol style="list-style-type: none"> 13. Other Business 	
	CONFIDENTIAL SESSION	
4:35	<ol style="list-style-type: none"> 14. Minutes of the 17 May 2020 Meeting* 	Decision
4:40	<ol style="list-style-type: none"> 15. Business Arising from the Minutes 	
4:45	<ol style="list-style-type: none"> 16. Report from Nominating Committee for Honorary Degrees 	Decision

4:50	17. Report of the President	Information
4:55	18. Other Business	

*to be distributed
31 May 2021

KJJ/ees

Karen Jack
University Secretary
Secretary to Senate

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
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.

EHRENTRAUT, 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.

H Aidar, 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, appearing to read "Sheila Ager". The signature is written in a cursive style with a large initial 'S'.

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; MSc, Civil Engineering, University of Toronto, Toronto, ON, 2003; Certificate in Preventive Engineering and Social Development, University of Toronto, Toronto, ON, 2000; BSc (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; BSc, (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. MSc, (Honours), Computer and Electrical Engineering, University of Waterloo, Waterloo, ON, 2011; BSc, (Honours), Computer Engineering with option in Management Science, University of Waterloo, Waterloo, ON, 2009.

Visiting Appointments

JONOBI, 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.

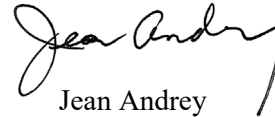
FLETCHER, Christopher, Associate Chair, Graduate Studies, Department of Geography and Environmental Management, July 1, 2021 to June 30, 2024.

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, 3032 – 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.

For Approval 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, Dave, Professor, School of Public Health and Health Systems, September 1, 2021 – February 28, 2022, one year 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, Liqun, 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, Iliia, 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 Autonomo de Mexico), 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 & Research Council met on 10 May 2021 and agreed to forward the following item to Senate for approval as part of the regular agenda.

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

FOR APPROVAL

NEW RESEARCH CENTRE

Waterloo Institute for Sustainable Aeronautics

- 1. Motion:** To approve the establishment of the Waterloo Institute for Sustainable Aeronautics, as presented at Attachment 1. 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.

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

Charmaine Dean
Vice President, Research & International



MEMORANDUM

TO: Senate Graduate and Research Council

CC: Kathy Winter, Secretariat

Suzanne Kearns, Associate Professor, Geography and Aviation
Maryam Latifpoor-Kepearoutis, 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	<u>\$129,000</u>	<u>\$129,000</u>	<u>\$109,000</u>	<u>\$89,000</u>	<u>\$89,000</u>	<u>\$545,000.00</u>	
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:	<u>\$37,500.00</u>	<u>\$40,000.00</u>	<u>\$55,000.00</u>	<u>\$75,000.00</u>	<u>\$92,500.00</u>	<u>\$300,000.00</u>	
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:

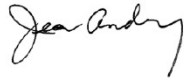
1. Decarbonizing Canadian air travel, especially through the electrification of pilot training and regional and small-aircraft travel;
2. Competency-based education, machine learning, and training technologies that have the potential to lead to more effective training at lower cost; and
3. Understanding 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 that reads "Jean Andrey". The signature is written in a cursive, flowing style.

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
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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,

A handwritten signature in black ink that reads "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



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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

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 Grant¹** (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 Instruments¹** (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.