University of Waterloo
SENATE EXECUTIVE COMMITTEE
Notice of Meeting

Date: Monday 5 April 2021
Time: 3:30 p.m.
Place: Videoconference

AGENDA	Action
1. Minutes of the 1 March 2021 Meeting	Decision
2. Business Arising from the Minutes	
3. Draft 19 April 2021 Senate Agenda	Decision
4. Other Business	

KJJ/ees
29 March 2021

Karen Jack
University Secretary
Secretary to the Committee

University of Waterloo
SENATE EXECUTIVE COMMITTEE
Minutes of the 1 March 2021 Meeting

Present: David Billedeau, Dan Brown, Kofi Campbell, Jeff Casello, Joan Coutu, George Freeman, Feridun Hamdullahpur (chair), Karen Jack (secretary), Christiane Lemieux, William Power, Sam Rubin, James Rush, Richard Staines, Johanna Wandel

Regrets: Abbie Simpson

1. **MINUTES OF THE 1 FEBRUARY 2021 MEETING**
   Members heard a motion to approve the open and confidential minutes of the 1 February 2021 meeting. Casello and Freeman. Carried unanimously.

2. **BUSINESS ARISING FROM THE MINUTES**
   There was no business arising.

3. **DRAFT 22 MARCH 2021 SENATE AGENDA**
   Following a brief review of the agenda by the chair, he invited input on the February meeting's presentation on the Blended Learning Initiative and asked members whether more such discussions should be held at future Senate meetings. Members were supportive of the suggestion. Following commentary from the secretary about some minor updates that will be made to the agenda prior to distribution, members heard a motion to approve it. Coutu and Power. Carried unanimously.

4. **OTHER BUSINESS**
   There was no other business.

2 March 2021

Karen Jack
University Secretary

University of Waterloo
SENATE
Notice of Meeting

Date: Monday 19 April 2021
Time: 3:30 p.m.
Place: Microsoft Teams Videoconference

	OPEN SESSION	Action
3:30	**Consent Agenda** **Motion:** To approve or receive for information by consent items 1-5 below.	
	1. Minutes of the 22 March 2021 Meeting*	Decision
	2. Reports from Committees and Councils a. Graduate & Research Council	 Information
	3. Report of the President a. Recognition and Commendation	 Information
	4. Report of the Vice-President, Academic & Provost a. University Professor Designation	 Information
	5. Reports from the Faculties	Information
	Regular Agenda	
3:35	6. Business Arising from the Minutes	
3:40	7. Waterloo Undergraduate Student Excellence in Teaching Awards*	Information
3:45	8. Presentations a. David Billedeau, Graduate Student Association President b. Abbie Simpson, Waterloo Undergraduate Association President	 Information Information
	9. Reports from Committees and Councils	
4:00	a. Executive Committee*	Decision
4:10	b. Graduate & Research Council	Decision
4:20	c. University Appointments Review Committee	Information
4:30	10. Report of the President	Information
4:40	11. Q&A Period with the President	Information
4:45	12. Report of the Vice-President, Academic & Provost	Information
4:50	13. Report of the Vice-President, Research & International	Information
4:55	14. Other Business	

	CONFIDENTIAL SESSION	**Action**
5:00	15. Minutes of the 22 March 2021 Meeting*	Decision
5:05	16. Business Arising from the Minutes	
5:10	17. Report of the President	Information
5:15	18. Other Business	

29 March 2021
*to be distributed

Karen Jack
University Secretary
Secretary to Senate

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
19 April 2021

Senate Graduate & Research Council met on 8 March 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

RENEWAL OF CENTRES AND INSTITUTES

On behalf of Senate, council approved the renewal, for a 5-year term, of Games Institute (GI) as presented.

UNIVERSITY RESEARCH ETHICS

On behalf of Senate, council heard approved the following:

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

CURRICULAR SUBMISSIONS

On behalf of Senate, council approved course revisions and minor program revisions for Conrad Grebel (Master of Theological Studies) and Faculty of Engineering (Management Sciences, Electrical and Computer Engineering).

GRADUATE AWARDS

On behalf of Senate, council approved the Graduate Scholarship in Clinical Psychology (trust) and the Professor James A.A. Field Graduate Scholarship in Electrical & Computer Engineering (trust).

/*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
19 April 2021

FOR INFORMATION

Recognition and Commendation

Waterloo Engineering students who wowed judges with their presentation at the recent online **Canadian Engineering Competition** (CEC) received an award in a new category created during the event to recognize their project work. Fourth-year mechanical engineering students **Jag Dhillon**, **Saad Haq**, **Tony Lee** and **Lucas Tang's** entry into this year's CEC innovative design category was so impressive that the competition's organizing committee and judges presented them with the inaugural research and entrepreneurship award. The students, known as Team Nashwaak at the competition, initially developed a light therapy smart device to help night owls, including Tang, go to sleep. The team then discovered the thin film optical technology incorporated into glasses not only relieves sleeping disorders but also associated emotional issues, both of which are problems many people have experienced during the COVID-19 pandemic and annually throughout Canadian winters. The glasses are expected to be available by the end of 2021. **Jean Boudreau**, president of **Engineers Canada**, said the Waterloo team displayed outstanding excellence and went above and beyond in terms of their research and entrepreneurship. "Their project has stirred a new conversation, which would make an addition to CEC moving forward to provide a new platform for projects of this nature to be displayed," she said when presenting the students with the new CEC award. Tang said the judges were "floored" by his team's presentation. A category with the same name as the award will be part of next year's competition. Team Nashwaak was known as Team Lumos in the Ontario Engineering Competition held earlier this year. Team Lumos, also the name of the students' Capstone Design (final year) engineering project, is based on a startup company called Lumos Health founded by Tang during a co-op work term as a product manager at Xiaomi Technology.

(adapted from the *Daily Bulletin*, 15 March 2021)

Waterloo student finalists faced the toughest path to victory yet at the **Concept $5K Finals** as they saw more than 120 different ideas submitted for consideration. A huge kudos to everyone who applied this semester and pitched at the Semi-Finals or the Finals. The finalists for winter 2021 covered a wide range of industries and important problems. This term's winners were:

- **AquaSensing**, which designs battery-free water leak detection systems that reduces environmental footprint, upfront costs, and recurring maintenance requirements.
- **Arbitrium**, a digital end-to-end decision-making platform that allows organizations to easily make unbiased group decisions involving multiple stakeholders.
- **Scribenote**, which eliminates hours of costly, taxing work for doctors, nurses and veterinarians by automating medical documentation.
- **UWTensil**, which has developed a novel material to be manufactured into cheap, biodegradable cutlery (and other food distribution applications), serving as a viable replacement for disposable cutlery when the Canadian ban on single-use plastics is implemented.

Online voting for the **People's Champ** continues to 1 April 2021.

(adapted from the *Daily Bulletin*, 29 March 2021)

UNIVERSITY OF WATERLOO
SENATE
Report of the Vice-President, Academic & Provost
19 April 2021

FOR INFORMATION

University Professor Designation
The 2021 University Professor designations: **Jennifer Clapp** (school of environment, resources and sustainability) and **Weihua Zhang** (electrical and computer engineering).

Waterloo has awarded this distinction to 29 other individuals: **Garry Rempel** (chemical engineering), **Mary Thompson** (statistics & actuarial science) and **Mark Zanna** (psychology) in 2004; **Terry McMahon** (chemistry), **Cam Stewart** (pure mathematics) and **Robert Jan van Pelt** (architecture) in 2005; **Phelim Boyle** (accountancy) and **Ian Munro** (computer science) in 2006; **Ken Davidson** (pure mathematics), **Keith Hipel** (systems design engineering) and **Jake Sivak** (optometry) in 2007; **Roy Cameron** (health studies & gerontology) and **Flora Ng** (chemical engineering) in 2008; **Ellsworth LeDrew** (geography & environmental management) and **Ming Li** (computer science) in 2009; **Stuart McGill** (kinesiology) and **Janusz Pawliszyn** (chemistry) in 2010, **Robert Le Roy** (chemistry) in 2011, **François Paré** (french studies) in 2012 and **Douglas Stinson** (computer science) in 2013; **William Cook** (combinatorics and optimization), and **William Coleman** (political science) in 2015; **Linda Nazar** (chemistry) in 2016, **Xuemin (Sherman) Shen** (electrical and computer engineering); **Joanne Wood** (psychology) in 2017; **Tamer Ozsü** (computer science) in 2018; **Claudio Canizares** (electrical & computer engineering), **Richard J. Cook** (statistics & actuarial science) and **Lyndon Jones** (optometry & vision science) in 2020.

UNIVERSITY PROFESSOR
The University of Waterloo owes much of its international reputation and stature to the quality of its eminent professors. UW recognizes exceptional scholarly achievement and international pre-eminence through the designation “University Professor”. Once appointed, a faculty member retains the designation until retirement.

Not counting retirees, it is anticipated there will be one University Professor for approximately every 60 full-time regular faculty members, with at most two appointments each year. Such appointments are reported to Senate and the Board of Governors in March and April respectively, and are recognized at Convocation.

Selection Process

1. Annually, nominations will be sought from Faculty deans, directors of schools and department chairs, as well as from the university community generally. A nominee shall have demonstrated exceptional scholarly achievement and international pre-eminence in a particular field or fields of knowledge. The individual who nominates a colleague is responsible for gathering the documentation and submitting it to the vice-president academic & provost before the December break. The University Tenure & Promotion Committee will act as the selection committee; its decisions are final.
2. A nomination must be supported by at least six signatures from at least two UW departments/schools and must be accompanied by a curriculum vitae and a short, non-technical description of the nominee’s contributions.
3. A nomination must also be accompanied by letters from the nominee’s Dean, and from at least two and no more than five scholars of international standing in the nominee’s field from outside the University. The scholars are to be chosen by the nominee’s Chair/Director in consultation with the Dean and the nominator. The letter of nomination should explain why these particular scholars were chosen.
4. Letters soliciting comments from scholars shall be sent by the Chair/Director. Scholars shall be asked to comment on the impact and specific nature of the nominee’s most influential contributions, addressing their responses directly to the Vice-President, Academic & Provost.
5. The dossiers of unsuccessful nominees remain in the pool for two additional years. The appropriate Dean should provide updated information each year.

James W.E. Rush
Vice-President Academic & Provost

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF THE FACULTY OF ARTS TO SENATE
April 19, 2021

FOR INFORMATION

A. APPOINTMENTS

Probationary Term Appointments – Change in Date

KLEIN, Sarah, Department of Communications Arts, *from* July 1, 2018 to June 30, 2021 *to* July 1, 2018 to June 30, 2022.

Post-Doctoral Appointment

GARCIA HERNADEZ, Jorge, Department of Economics & Water Institute, June 1, 2021 to August 31, 2023.

Adjunct Appointments – Graduate Supervision

WARLEY, Linda, Professor Emeritus, Department of English Language & Literature, September 1, 2020 to August 31, 2023.

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

NEWELL, **Peter**, Department of Political Science, March 1, 2021 to December 31, 2025.

B. ADMINISTRATIVE APPOINTMENTS

AL-ETHARI, Lamees, Department of English Language & Literature, Associate Director, Arts First, July 1, 2021 to December 31, 2021, then Acting Director, Arts First, from January 1, 2022-June 30, 2022, then Associate Director, July 1, 2022 to June 30, 2024.

CARTER, Angela, Department of Political Science, Director, Arts First, July 1, 2021 to December 31, 2021 *and* July 1, 2022 to June 30, 2024.

DOUCET, Mathieu, Department of Philosophy, Acting Chair, July 1, 2021-June 30, 2022.

KITCHEN, Veronica, Department of Political Science, Acting Associate Chair, Undergraduate Studies from March 16, 2021 to May 31, 2021.

PACI, Tim, Department of Communication Arts, Acting Associate Director, Arts First from January 1, 2022 to June 30, 2022.

Administrative Reappointment

CARTER, Angela, Department of Political Science, Associate Director, Arts First, January 1, 2021 to June 30, 2021.

ILCAN, Suzan, Department of Sociology & Legal Studies, Director, MA in Global Governance, January 1, 2021 to August 31, 2022.

ROY, Susan, Department of History, Associate Chair, Graduate Studies, April 1, 2021 to December 31, 2021.

WATTS, Christopher, Department of Anthropology, Associate Chair, Undergraduate Studies, July 1, 2021 to June 30, 2024.

MARINO, Patricia, Department of Philosophy, Chair, July 1, 2022 to June 30, 2023.
CHANGE in DATES

HABIB, Jasmin, Department of Political Science, Acting Associate Chair, Undergraduate Studies, *from* January 1, 2021 to June 30, 2021 *to* January 1, 2021 to March 15, 2021.

MARINO, Patricia, Department of Philosophy, Chair, *from* July 1, 2018 to June 30, 2022 *to* July 1, 2018 to June 30, 2021.

Sheila Ager
Dean, Faculty of Arts

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF ENGINEERING TO SENATE
April 19, 2021

FOR INFORMATION

A. ***APPOINTMENTS***

Definite-Term Appointment

MALEKSAEEDI, Saeed, Research Assistant Professor, Department of Mechanical and Mechatronics Engineering, June 1, 2021 – March 31, 2024. PhD, Materials Science and Engineering, (Ceramics), Shiraz University, [Exchange student for one year in Nanyang Technological University, Singapore (2008-2009)], Shiraz, Iran 2009; MSc, Engineering Materials Characterization, Selection and Methods of Manufacturing, Shiraz University, Shiraz, Iran, 2005; BSc, Materials Science and Engineering (Industrial Metallurgy), Shiraz University, Shiraz, Iran, 2003.

Definite-Term Reappointment

BASHA, Mohamed, Research Associate Professor, Department of Electrical and Computer Engineering, April 1, 2021 – June 30, 2021. PhD, Electrical and Computer Engineering, University of Waterloo, Waterloo, ON, 2007; MSc, Electrical and Computer Engineering, University of Waterloo, Waterloo, ON, 2002; BSc, Hons. Electronics and Communications Engineering, Mansoura University, Mansoura, Egypt, 1996.

Continuing Appointments

AL-HAMMOUD, Rania, Continuing Lecturer, Department of Civil and Environmental Engineering, commencing June 1, 2021. PhD, Civil Engineering, University of Waterloo, Waterloo, ON, 2013; MSc, Civil Engineering, University of Waterloo, Waterloo, ON, 2006; Bachelor of Engineering, Civil Engineering, American University of Beirut, (AUB), Beirut, Lebanon, 1998). Rania has expertise in structural engineering design and forensics. She is also interested in the pedagogical developments in teaching and measurement of learning outcomes. She teaches courses for our new Architectural Engineering program as well as in Civil Engineering, and contributes to the continuing evolution of the department.

WRIGHT, Derek, Continuing Lecturer, Department of Electrical and Computer Engineering, commencing on April 15, 2021. PhD, Electrical and Computer Engineering and the Institute of Biomaterials and Biomedical Engineering, (collaborative), University of Toronto, Toronto, ON, 2009; MSc, Electrical and Computer Engineering, University of Waterloo, Waterloo, ON, 2004; Bachelor of Applied Science, Electrical Engineering, University of Waterloo, Waterloo, ON, 2003. Derek Wright earned his PhD from University of Toronto. Dr. Wright's research and teaching interests are in the design of biologically inspired integrated circuits, digital integrated circuits and systems.

Visiting Appointments

KHAN, Zahid, Researcher, Department of Civil and Environmental Engineering, September 1, 2021 – April 30, 2022.

SHAREEFDEEN, Zarook, M., Professor, Department of Chemical Engineering, August 15, 2021 – January 15, 2022.

WANG, Junhua, Researcher, Department of Civil and Environmental Engineering, July 1, 2021 – June 30, 2022.

Visiting Reappointments

REZENDEBARBOSA, TURBIANI, Franciele, Associate Professor, Department of Chemical Engineering, February 22, 2021 – January 1, 2022

Adjunct Appointments

Graduate Supervision and Research

MURAT, Al, Assistant Professor, Department of Mechanical and Mechatronics Engineering, March 1, 2021 – February 29, 2024.

Adjunct Appointments

Graduate Supervision, Graduate Teaching and Research

RUECKER, Norma, Assistant Professor, Department of Civil and Environmental Engineering, February 1, 2021 – January 31, 2023.

Adjunct Reappointments

Graduate Supervision and Research

SLUTSKY, Arthur, Professor, Department of Mechanical and Mechatronics Engineering, February 1, 2021 – January 31, 2024.

THE, Jesse, Professor, Department of Mechanical and Mechatronics Engineering, May 1, 2021 – April 30, 2024.

Adjunct Reappointments

Undergraduate Teaching

WASEF, Albert, Lecturer, Department of Electrical and Computer Engineering, May 1, 2021 – April 30, 2022.

Changes in Appointments

Adjunct Appointments

Graduate Supervision and Research

NG, Flora, (Distinguished Professor Emeritus), Professor, Department of Chemical Engineering, November 1, 2020 – November 30, 2023. Distinguished Professor Emeritus status has been added for Flora Ng.

Probationary Term Appointment

HU, Yue, Assistant Professor, Department of Mechanical and Mechatronics Engineering, dates of appointment have changed from March 1, 2021 – June 30, 2024 to September 2, 2021 – June 30, 2025.

Probationary Term Extension

AZAD, Pirooz, Sahar, Assistant Professor**,** Department of Electrical and Computer Engineering, January 1, 2018 – June 30, 2022. (One year extension from June 30, 2021 to June 30, 2022).

B. ***ADMINISTRATIVE APPOINTMENTS***

DIMITROV, Stanko, Director, Management of Technology Distance Master's Program, May 1, 2021- August 31, 2022.

FIEGUTH, Paul, Associate Dean, Resources and Planning, Faculty of Engineering, March 1, 2021 – February 29, 2024.

GANESH, Vijay, Co-Director of the Waterloo Artificial Intelligence Institute, March 1, 2021 – February 29, 2024.

ADMINISTRATIVE REAPPOINTMENTS

BISHOP, William, Director, Admissions, Engineering Undergraduate Office, Faculty of Engineering, September 1, 2021 – August 31, 2024.

CLAUSI, David, Associate Dean, Research and External Partnerships, Faculty of Engineering, May 1, 2021 – April 30, 2024.

SACHDEV, Manoj, Interim Chair, Department of Electrical and Computer Engineering, July 1, 2021 – December 31, 2021.

Mary Wells

Mary A. Wells, Dean
Faculty of Engineering

University of Waterloo
REPORT OF THE DEAN OF ENVIRONMENT TO SENATE
April 19, 2021

FOR INFORMATION

A. APPOINTMENTS

Adjunct Appointments
Graduate Supervision and Research

Graduate Supervision
BUNDY, Alida, Assistant Professor, School of Environment, Enterprise and Development, March 1, 2021 to February 28, 2023.

FITZPATRICK, Patricia, Professor, Faculty of Environment, February 1, 2021 to December 31, 2023.

GAUDON, Justin, Assistant Professor, Faculty of Environment, April 1, 2021 to March 31, 2024.

PINTER, Laszlo, Professor, School of Environment, Resources and Sustainability, March 1, 2021 to February 28, 2023.

Instruction
ABU, Thelma, Lecturer, Department of Geography and Environmental Management, May 1, 2021 to August 31, 2021.

BERRY, Peter, Lecturer, Department of Geography and Environmental Management, May 1, 2021 to August 31, 2021.

LEDREW, Ellsworth, Distinguished University Professor Emeritus, Department of Geography and Environmental Management, May 1, 2021 to August 31, 2021.

LETOURNEAU, Marcus, Assistant Professor, School of Planning, May 1, 2021 to August 31, 2021.

OSWALD, Zachariah, Lecturer, School of Environment, Enterprise and Development, May 1, 2021 to August 31, 2021.

Research
PELOFFY, Karine, Business Professional, School of Environment, Resources and Sustainability, February 1, 2021 to December 31, 2023.

Graduate Students Appointed as Part-Time Lecturers
Instruction
BOYCO, Morgan, Lecturer, School of Planning, May 1, 2021 to August 31, 2021.

MOLLAEI, Sadaf, Lecturer, School of Environment, Enterprise and Development, May 1, 2021 to August 31, 2021.

PALASCHUK, Nicholas, Lecturer, Department of Geography and Environmental Management, May 1, 2021 to August 31, 2021.

PATARA, Saveena, Lecturer, School of Environment, Enterprise and Development, May 1, 2021 to August 31, 2021.

SHADKAM, Anahita, Lecturer, School of Planning, May 1, 2021 to August 31, 2021.

VIRGIN, John, Lecturer, Department of Geography and Environmental Management, May 1, 2021 to August 31, 2021.

ZHOU, Ying, Lecturer, School of Environment, Enterprise, and Development, May 1, 2021 to August 31, 2021.

Cross Appointments

DIAS, Goretty, Associate Professor, School of Environment, Enterprise and Development to School of Environment, Resources and Sustainability, March 1, 2021 to February 28, 2023.

GEOBEY, Sean, Assistant Professor, School of Environment, Enterprise and Development to Department of Geography and Environmental Management, March 1, 2021 to December 31, 2024.

NAYAK, Prateep, Associate Professor, School of Environment, Enterprise and Development to School of Environment, Resources and Sustainability, January 1, 2021 to December 31, 2023.

SCHWEIZER, Vanessa, Associate Professor**,** Department of Knowledge Integration to Systems Design Engineering, November 1, 2020 to October 31, 2023.

B. ADMINISTRATIVE APPOINTMENTS

C. SABBATICAL LEAVES

Jean Andrey
Dean

University of Waterloo
REPORT OF THE DEAN OF FACULTY OF HEALTH TO SENATE
April 19, 2021

FOR INFORMATION

A. APPOINTMENTS

Adjunct Appointment

Graduate Supervision

DONELLE, Lorie, Associate Professor, School of Public Health and Health Systems, April 1, 2021 – March 31, 2023.

EAGLES, Paul, Distinguished Professor Emeritus, Department of Recreation and Leisure Studies, February 22, 2021 – June 30, 2022.

HOEBER, Larena, Professor, Department of Recreation and Leisure Studies, July 1, 2021 – June 30, 2022.

Graduate Supervision and Research

ELLIOTT, Jacobi, Assistant Professor, School of Public Health and Health Systems, April 1, 2021 – December 31, 2023.

Research

REED-MUSSON, Emily, Assistant Professor, School of Public Health and Health Systems, July 1, 2021 – June 30, 2022.

Special Lecturer Appointment

ABDEAHAD, Narges, Lecturer, Department of Recreation and Leisure Studies, May 1, 2021 – August 31, 2021.

BURNS, Robyn, Lecturer, Department of Recreation and Leisure Studies, May 1, 2021 – August 31, 2021.

DUECK, Jeremy, Lecturer, Department of Recreation and Leisure Studies, May 1, 2021 – August 31, 2021.

HYNDMAN, Brian, Lecturer, School of Public Health and Health Systems, May 1, 2021 – August 31, 2021.

MOYER, Luke, Lecturer, Department of Recreation and Leisure Studies, May 1, 2021 – August 31, 2021.

SHANBHAG, Gitanjali, Lecturer, Faculty of Health, May 10, 2021 – August 31, 2021.

Cross Re-appointment

BEAZELY, Michael, School of Pharmacy to School of Public Health and Health Systems, May 1, 2021 – June 30, 2026.

Postdoctoral Reappointment

BELL, Kristen, Department of Kinesiology, April 1, 2021 – June 30, 2021.

Lili Liu, Dean, **Faculty of Health**

University of Waterloo
REPORT OF THE DEAN OF MATHEMATICS TO SENATE
April 19, 2021

FOR INFORMATION

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

Probationary-Term Appointments

HAJIABADI, Mohammad (BSc, 2009, Sharif University of Technology; MSc, 2011; PhD, 2016, both from the University of Victoria), Assistant Professor, David R. Cheriton School of Computer Science, July 1, 2021 – June 30, 2024. Dr. Hajiabadi is currently an Assistant Professor in the Department of Computer Science and Engineering at Penn State University. Previously, he was a postdoctoral researcher in the University of California, Berkeley. Dr. Hajiabadi's research spans two areas of cryptography and security: foundations of public-key cryptography and encryption technologies with minimal trust on central authorities. He has made fundamental contributions to the study of cryptographic primitives under minimal trust assumptions most notably by contributing the first construction of trapdoor functions only from the well-known Computational Diffie-Hellman Assumption. Dr. Hajiabadi's presence will strengthen the Cryptography, Security and Privacy research group within the School.

KALASHNIKOV, Elana (BA, 2013,University of Alberta; MSc, 2014, University of Oxford; PhD, 2019, Imperial College London), Assistant Professor, Dept. of Pure Mathematics, July 1, 2021 – June 30, 2024. Dr. Kalashnikov is currently a Benjamin Pierce Fellow at Harvard University. Dr. Kalashnikov is a geometer by trade, joining a young and active group in geometry and topology in the Pure Math department. She is particularly interested in the timely and exciting topic of mirror symmetry for Calabi-Yau manifolds, with deep connections to combinatorics and physics. Dr. Kalashnikov's appointment in the department will create research links with units across the Faculty and the University, and move our research significantly forward.

WEN, Lan (BMath (Hons), Bus Admin (Hons), 2012, U of Waterloo; MMath, 2013, University of Waterloo; PhD, 2018, University of Cambridge), Assistant Professor, Dept. of Statistics and Actuarial Science, January 1, 2022 – June 30, 2025. Dr. Wen is currently a Post-Doctoral Fellow in the Department of Biostatistics at Harvard University. Her research is in the area of causal inference and missing data in complex longitudinal observational studies. She will be a great addition to the department with her research covering both casual inference and biostatistics.

Probationary-Term Reappointments

BELIVEAU, Audrey, Assistant Professor, Dept. of Statistics and Actuarial Science, July 1, 2021 – June 30, 2024.

GOSSET, David, Associate Professor, Dept. of Combinatorics & Optimization, July 1, 2021 – June 30, 2024.

YANG, Fan, Assistant Professor, Dept. of Statistics and Actuarial Science, July 1, 2021 – June 30, 2024.

Definite Term - Appointments

KAMAL, Zille Huma (BS, 2002; PhD, 2008, both from the Western Michigan University), Lecturer, David R. Cheriton School of Computer Science, September 1, 2021 – August 30, 2023.

Dr. Kamal will teach six courses per year plus other duties, which may include support and development of online curriculum.

RAMBHATLA, Sirisha (B.Tech, 2010, College of Engineering Roorkee; MS, 2012; PhD, 2019, both from the University of Minnesota), Research Assistant Professor, David R. Cheriton School of Computer Science (51%) and the Dept. of Electrical & Computer Engineering (49%), July 1, 2021 – June 30, 2024.

Definite Term - Reappointments

BRUNI, Carmen, Lecturer, David R. Cheriton School of Computer Science, September 1 2021 – August 31, 2024.

CRAMER, Zachary, Lecturer, Office of the Dean, September 1, 2021 – August 30, 2023.

DAWOUD, Dina, Lecturer, Dept. of Statistics and Actuarial Science, September 1, 2021 – August 31, 2024.

ISTEAD, Lesley, Lecturer, David R. Cheriton School of Computer Science, September 1, 2021 – August 31, 2024.

KOZLOWSKI, Emily, Lecturer, Dept. of Statistics and Actuarial Science, September 1, 2021 – August 31, 2024.

LANCTOT, Kevin, Lecturer, David R. Cheriton School of Computer Science, September 1, 2021 – August 30, 2023.

MORLAND, Cameron, Lecturer, David R. Cheriton School of Computer Science, September 1, 2021 – August 30, 2023.

PETRICK, Mark, Lecturer, David R. Cheriton School of Computer Science, September 1, 2021 – August 31, 2022.

SLYNKO, Alla, Research Assistant Professor, Dept. of Statistics and Actuarial Science, October 1, 2021 – May 31, 2022.

Visiting Appointments

TORNATORE, Massimo (Politecnico di Milano), Associate Professor, David R. Cheriton School of Computer Science, April 1, 2021 – March 31, 2023.

XIE, Kaiduan, Research Associate, David R. Cheriton School of Computer Science, March 1, 2021 – February 28, 2022.

Adjunct Appointments

Research

GOEL, Anil (SAP HANA & Analytics) Professor, David R. Cheriton School of Computer Science, February 1, 2021 – June 30, 2024.

KARABINA, Koray (National Research Council), Associate Professor, Dept. of Combinatorics and Optimization, May 1, 2020 – April 30, 2024.

RESCH, Janelle (Pi&Power), Assistant Professor, Dept. of Applied Mathematics, January 1, 2021 – December 31, 2023.

Adjunct Reappointments
Instructor
IBRAHIM, Ahmed, Lecturer, David R. Cheriton School of Computer Science, May 1, 2021 – August 31, 2021.

Research
CASIEZ, Gery (University of Lille), Professor, David R. Cheriton School of Computer Science, February 1, 2021 – June 30, 2024.

Postdoctoral Fellows appointed as Part-time Lecturers
JIMENEZ, Leo, Dept. of Pure Mathematics, July 1, 2021 – June 30, 2023.

TALMAGE, Alan, Dept. of Pure Mathematics, July 1, 2021 – June 30, 2023.

B. ADMINISTRATIVE APPOINTMENTS

GUENIN, Bertrand, Associate Dean, Graduate Studies, Office of the Dean, July 1, 2021 – June 30, 2024.

JAO, David, Associate Chair, Undergraduate Studies, Dept. of Combinatorics and Optimization, May 1, 2021 – June 30, 2023.

ADMINISTRATIVE REAPPOINTMENTS
SKRZYDLO, Diana, Director, Master of Actuarial Science Program, Dept. of Statistics and Actuarial Science, July 1, 2021 – June 30, 2024.

SKRZYDLO, Diana, Faculty Teaching Fellow, Office of the Dean, July 1, 2021 – June 30, 2024.

VANDERBURGH, Ian, Director, Centre for Education in Mathematics and Computing, Office of the Dean, July 1, 2021 – June 30, 2024.

VASIGA, Troy, Associate Dean, Undergraduate Admission and Outreach, Office of the Dean, July 1, 2021 – June 30, 2024.

YEATS, Karen, Associate Chair, Graduate Studies, Dept. of Combinatorics and Optimization, September 1, 2021 – August 31, 2022.

B.1. Change in appointment

NELSON, Peter, Associate Chair of Undergraduate Studies, Dept. of Combinatorics and Optimization (ref. Dean's Report to Senate, September 2020)
From: July 1, 2020 – June 30, 2021
To: July 1, 2020 – April 30, 2021

SKRZYDLO, Diana, Director, Master of Actuarial Science Program, Dept. of Statistics and Actuarial Science (*ref.* Dean's Report to Senate, September 2018)
From: January 1, 2019 – December 31, 2021
To January 1, 2019 – June 30, 2021

C. SABBATICALS (to be approved by the Board of Governors)

BELIVEAU, Audrey, Assistant Professor, Dept. of Statistics and Actuarial Science, July 1, 2021 – December 31, 2021, with 100% salary. This is a special early sabbatical.

HAXELL, Penny, Professor, Dept. of Combinatorics and Optimization, September 1, 2021 – August 31, 2022, with 85% salary.

KOLKIEWICZ, Adam, Professor, Dept. of Statistics and Actuarial Science, July 1, 2021 – December 31, 2021, with 100% salary. This is an early sabbatical.

OLDFORD, Wayne, Professor, Dept. of Statistics and Actuarial Science, September 1, 2021 – August 31, 2022, with 100% salary.

Change In Appointment

FUKASAWA, Ricardo (Professor), Dept. of Combinatorics and Optimization, September 1, 2021 – August 31, 2022, with 100% salary (*ref*. Dean's Report to Senate, September 2020). This sabbatical is cancelled.

D. SPECIAL LEAVE

KOLKIEWICZ, Adam, Professor, Dept. of Statistics and Actuarial Science, January 1, 2022 – February 28, 2022, with 100% salary. This is an administrative leave.

Mark Giesbrecht
Dean

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF SCIENCE TO SENATE
April 19, 2021

For information:

A. ***APPOINTMENTS***

Probationary Term Reappointment

MUSCHIK, Christine, Assistant Professor, Department of Physics and Astronomy, July 1, 2022 to June 30, 2025. [B.Sc., Ludwig-Maximilians-Universitat (2004); M.Sc., Max Planck Institute (2006); Ph.D., Max Planck Institute (2011).]

Definite-Term Reappointment – Full-Time

RICHARDSON, Jean, Lecturer, Department of Earth and Environmental Sciences, May 1, 2021 to June 30, 2024. [B.Sc., University of Waterloo (1979); M.Sc., University of Toronto (1983); Ph.D., Carleton University (1987); Masters Certificate in Marketing Communication, Schulich School of Business (2004).]

Adjunct Appointments

Graduate Supervision

DEMERS, Isabelle, Professor, Department of Earth and Environmental Sciences, March 1, 2021 to February 28, 2024.

GILLEAUDEAU, Geoffrey, Assistant Professor, Department of Earth and Environmental Sciences, March 1, 2021 to February 28, 2024.

Graduate Instruction and Graduate Supervision

CHAGLA, Zain, Associate Professor, School of Pharmacy, January 1, 2021 to December 31, 2023.

Graduate Supervision and Research

BANERJEE, Arinjay, Assistant Professor, Department of Biology, March 1, 2021 to June 30, 2024.

PHAN, Thai, Assistant Professor, Department of Earth and Environmental Sciences, March 1, 2021 to February 28, 2024.

Adjunct Reappointments

Graduate Supervision

CONANT, Jr., Brewster, Professor, Department of Earth and Environmental Sciences, March 1, 2021 to February 28, 2024.

COUTURE, Raoul-Marie, Professor, Department of Earth and Environmental Sciences, June 1, 2021 to May 31, 2024.

JONES, Jon, Professor, Department of Earth and Environmental Sciences, March 1, 2021 to February 28, 2024.

LAPEN, David, Professor, Department of Earth and Environmental Sciences, June 1, 2021 to May 31, 2024.

SUDICKY, Edward, (Professor Emeritus), Professor, Department of Earth and Environmental Sciences, May 1, 2021 to April 30, 2024.

Graduate Supervision and Research

BITTON, Etty, Associate Professor, School of Optometry and Vision Science, March 1, 2021 to February 29, 2024.

JIANG, Runqing, Associate Professor, Department of Biology, May 1, 2021 to June 30, 2024.

TAYLOR, William (Bill), (Professor Emeritus), Professor, Department of Biology, July 1, 2021 to June 30, 2024.

Cross Appointment

MITRA, Sushanta, Professor, Department of Mechanical and Mechatronics Engineering cross appointed to Department of Chemistry, March 1, 2021 to August 31, 2024.

Cross Reappointment

AUCOIN, Marc, Associate Professor, Department of Chemical Engineering, cross appointed to Department of Biology, June 1, 2020 to May 31, 2023.

FORREST, Jamie, Professor, Department of Physics and Astronomy, cross appointed to School of Optometry and Vision Science, March 1, 2021 to February 29, 2024.

GORBET, Maud, Associate Professor, Department of Systems Design Engineering, cross appointed to School of Optometry and Vision Science, February 1, 2021 to January 31, 2024.

VAN CAPPELLEN, Philippe, Professor, Department of Earth and Environmental Sciences, cross appointed to Department of Biology, April 1, 2021 to March 31, 2024.

WILSON, Christopher, Professor, Department of Electrical and Computer Engineering, cross appointed to Department of Physics and Astronomy, January 1, 2021 to December 31, 2024.

Changes in Appointments

IGBOELI, Okechukwu (Okey), Lecturer, position transferred from Dean of Science to Department of Biology and transition from Definite Term Lecturer to Continuing Lecturer, effective May 1, 2021.

LI, Changcheng, Continuing Lecturer, position transferred from Dean of Science to Department of Earth and Environmental Sciences, effective May 1, 2021.

RICHARDSON, Jean, Lecturer, position transferred from Dean of Science to Department of Earth and Environmental Sciences, effective May 1, 2021.

TSEN, Adam Wei, Assistant Professor, Department of Chemistry, second probationary appointment extended two years (Covid-19 and parental leave). New end date June 30, 2024.

Special Appointment

Graduate Student appointed as Lecturer
PACKULL-McCORMICK, Sara, Lecturer, Department of Chemistry, May 1, 2021 to August 31, 2021.

B. ***ADMINISTRATIVE APPOINTMENTS***

IGBOELI, Okechukwu (Okey), Director, Science and Business Program, Faculty of Science, July 1, 2021 to June 30, 2024.

THOMPSON, John E., Acting Associate Dean Research, Faculty of Science, September 1, 2021 to August 31, 2022.

ADMINISTRATIVE REAPPOINTMENTS

GLERUM, Moira, Associate Chair, Graduate Studies, Department of Biology, March 1, 2021 to March 31, 2021.

FOR APPROVAL BY THE BOARD OF GOVERNORS

C. SABBATICAL LEAVES

SCHOLZ, Guenter, Associate Professor, Department of Physics and Astronomy, May 1, 2022 to April 30, 2023, 94.7% salary arrangement.

TANG, Shirley, Professor, Department of Chemistry, September 1, 2021 to May 31, 2022, 100% salary arrangement.

R.P. Lemieux
Dean

RPL/lw

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
19 April 2021

Senate Graduate & Research Council met on 8 March 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 PROGRAM

Faculty of Engineering

1. **Motion:** To approve a new GDip in Data Analytics (Direct Entry) in Management Sciences, effective 1 September 2021, as presented at Attachment 1.

   Rationale: Since 2017, the Department of Management Sciences has offered the popular Type 2 Graduate Diploma in Data Analytics to students registered in the course-based MMSc program. Now, to expand on the success of the Type 2 Diploma, the Department of Management Sciences would like to launch a Type 3 Graduate Diploma in Data Analytics. This program would essentially be the same as the existing Type 2 Diploma but will be available on a direct-entry basis to non-degree students who wish to complete only this diploma, rather than a full graduate degree.

PROGRAM CHANGES

Faculty of Environment

1. **Motion:** To approve additions to the Master of Arts (MA) and Master of Environmental Studies (MES) in planning, effective 1 May 2021, as presented at Attachment 2.

   This consists of adding:
   (1) a Master's Research Paper study option;
   (2) information about course average requirements to the thesis study option; and
   (3) a description to the "Project Proposal Development Workshop" milestone within the thesis study option.

/kw

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

Charmaine Dean
Vice President, Research & International

UNIVERSITY OF WATERLOO
FACULTY OF ENGINEERING

M E M O

TO: Amanda McKenzie, Director, Quality Assurance (Academic Programs) and Academic Integrity

FROM: S. Sivoththaman, Associate Dean, Graduate Studies
Faculty of Engineering

RE: Senate Graduate and Research Council Agenda

DATE: February 22, 2021

Please see the following motion which we would like submitted to the next SGRC. These changes were approved in the EFC meeting on February 23, 2021.

Items for Approval:

1. The department of **Management Sciences** would like to make the following change:
    a. New GDip in Data Analytics (Direct Entry)

    Rationale for Request:

    a. Since 2017, the Department of Management Sciences has offered the popular Type 2 Graduate Diploma in Data Analytics to students registered in the course-based MMSc program. Now, to expand on the success of the Type 2 Diploma, the Department of Management Sciences would like to launch a Type 3 Graduate Diploma in Data Analytics. This program would essentially be the same as the existing Type 2 Diploma but will be available on a direct-entry basis to non-degree students who wish to complete only this diploma, rather than a full graduate degree.

Your attention to these matters is kindly appreciated.

Siva Sivoththaman

SS/em

Graduate Studies
New Program Template

Prior to form submission, review the new graduate program instructions. For questions about the form submission, contact Trevor Clews, Graduate Studies and Postdoctoral Affairs.

Faculty: Engineering

Program: Graduate Diploma (GDip) in Data Analytics (direct entry)

Program contact name(s): Rob Duimering, Hossein Abouee Mehrizi

Form completed by: Rob Duimering, Hossein Abouee Mehrizi

Proposed effective date: Term: Fall Year: 2021

Graduate Studies Academic Calendar (GSAC) section (include the link to the section (web page) where the new program will be located):

https://uwaterloo.ca/graduate-studies-academic-calendar/engineering/department-management-sciences

Proposed Graduate Studies Academic Calendar content:

GRADUATE DIPLOMA (GDIP) IN DATA ANALYTICS (DIRECT ENTRY)

Program information

- **Admit term(s)**
  - Fall
  - Winter
  - Spring
- **Delivery mode**
  - On-campus
  - Online
- **Length of program**
  - 2 terms/8 months
- **Program type**
  - Diploma
- **Registration option(s)**
  - Full-time
  - Part-time
- **Study option(s)**
  - Coursework

Admission requirements

- **Minimum requirements**

Proposed Graduate Studies Academic Calendar content:

- The Department of Management Sciences requires either (i) a 75% overall standing in the last two years, or equivalent, in a relevant four year Honours Bachelor's degree or equivalent; or (ii) a 75% overall standing or equivalent, in a relevant four-year Honours Bachelor's degree or equivalent, as the minimum requirement for admission to the Graduate Diploma (GDip) in Data Analytics (direct entry) program for applicants educated at a Canadian institution. A 75% overall standing or equivalent, in a relevant four-year Honours Bachelor's degree or equivalent is the minimum requirement for admission to the GDip in Data Analytics (direct entry) program for applicants educated outside of Canada.
- All applicants must submit a "Statement of Purpose" - a one-page statement addressing their academic background and future goals.

- **Application materials**
  - Supplementary information form
  - Transcript(s)
  - Résumé/Curriculum vitae

- **References**
  - Number of references: 2
  - Type of references: academic (preferred) or professional

- **English language proficiency (ELP) (if applicable)**

Degree requirements

Coursework option:

- **Graduate Academic Integrity Module (Graduate AIM)**

- **Courses**
  - Students must successfully complete the following 4 courses:
    - MSCI 623 Big Data Analytics
    - MSCI 718 Statistical Methods for Data Analytics
    - MSCI 719 Operations Analytics
    - 1 pre-approved elective course from the following list:
      - MSCI 603 Principles of Operations Research
      - MSCI 605 Organizational Behaviour
      - MSCI 607 Applied Economics for Management
      - MSCI 609 Quantitative Data Analysis for Management Sciences
      - MSCI 641 Text Analytics
      - An alternate elective course pre-approved by the Associate Chair for Graduate Studies
  - Students must maintain an overall average of at least 73% at the end of each term, with no more than 2 failed courses overall.

- **Link(s) to courses**
  - Management Sciences (MSCI) courses
  - Graduate course search

Departmental approval date (mm/dd/yy): 12/07/20
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 12/17/20
Faculty approval date (mm/dd/yy):
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

UNIVERSITY OF WATERLOO

GRADUATE EXPEDITED PROPOSAL

OF

GRADUATE DIPLOMA (TYPE 3)

IN

DATA ANALYTICS

Submitted to the
Ontario Universities Council on Quality Assurance

VOLUME I - PROPOSED BRIEF

JUNE, 2020

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1. Introduction

The rapid developments in information and computer technologies have enabled the generation, storage and processing of large amounts data that was out of reach a few years back. Data is believed to be key to the next wave of management innovation, productivity, and growth. The use of data analytics is no longer limited to large companies with substantial revenue streams. It's now widespread, with 59% of enterprises using analytics in some capacity by the end of 2018[1]. Also, 71% of enterprises globally predict their investments in data and analytics will accelerate in the next two years and beyond[1]. According to a survey conducted by Deloitte, about 50% of respondents believe that analytics contribute to better decision making, 16% say that analytics enable key strategic initiatives in a better and more comprehensive way, and 10% say that they help them improve relationships with both customers and business partners.[2]

However, there is a shortage of professionals who can glean meaningful insights from data to make effective decisions and help companies to take advantage of such profitable tool. According to a survey recently published in MIT Sloan Management Review, 40% of the companies surveyed were struggling to find and retain the data analytics talent.[3]. Canada's Big Data Consortium (2015) reports that the gap for professionals with solid data and analytical literacy to make better decisions is estimated at 150,000, such as those required for roles like Business Manager and Business Analyst.[4] However, after all these years, the demand for such talents has not been met yet. Big data and analytics is the number one place of need, according to a 2019 KPMG CIO Survey. Nearly half (46%) of CIOs who participated in the survey said they suffered from a lack of skilled analytics specialists[5].

The Type 3 Graduate Diploma in Data Analytics (GDDA) is designed to provide students with rich learning outcomes that include deep quantitative skills and technical expertise. These competencies will position students to achieve a variety of professional opportunities, including supporting organizations in the effective utilization of data. Moreover, students possessing the Learning Outcomes of this proposed Diploma will, in part, address the talent shortfall for Canadian companies.

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[1] Columbus,L. (2018, August). Global State of Enterprise Analytics, 2018, *Forbes,* Retrieved from https://www.forbes.com/sites/louiscolumbus/2018/08/08/global-state-of-enterprise-analytics-2018/#4f7dfa106361

[2] https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Deloitte-Analytics/dttl-analytics-analytics-advantage-report-061913.pdf

[3] https://sloanreview.mit.edu/issue/2015-fall/,https://www.cio.com/article/3025869/6-analytics-trends-that-will-shape-business-in-2016.html

[4] https://www.ryerson.ca/content/dam/provost/PDFs/Big_Data_Talent_Gap.pdf

[5] https://assets.kpmg/content/dam/kpmg/ca/pdf/2019/07/harvey-nash-kpmg-cio-survey-2019.pdf

Specifically, the GDDA: i) offers graduate-level, course-work based, professional education in the emerging area of data analytics, and ii) provides a preliminary foundation for students who plan to do applied research in data analytics and or pursue further graduate studies leading to a Masters or a PhD.

The Type 2 GDDA was established in January of 2017. It is currently only available to Master of Management Sciences (MMSc) students in the Department of Management Sciences at the University of Waterloo (UW). The successful experience of Type 2 GDDA which trained talents who have become valuable assets for top-notch companies such as Amazon lead the University of Waterloo, a pioneer university in terms of innovation and technology, to offer a stand-alone Type 3 GDDA, with direct admission from all students and professionals outside of the Department of Management Sciences. A similar program in Data Analytics has been established in many prestigious universities of Canada such as University of Toronto[6], McMaster University[7], McGill University[8], and University of Calgary[9]. The Type 3 GDDA will build off the strength of the existing Type 2 that has had substantial uptake from existing UW students and makes courses and resources available to those that are not currently enrolled at UW, but with interest in enhancing their skills and knowledge in the area of data analytics. This will enable many talented professionals to have access to the diploma, and consequently, help them to take advantage of analytics in their own concentration and lead their relevant companies to exert the power of analytics in a more efficient way. For this, the Department of Management Sciences is seeking approval for a Type 3 Graduate Diploma (GDip) in Data Analytics.

Brief Listing of the Program

The Type 3 GDDA is a course-based diploma which is available to students outside of Management Sciences and seeks to target working professionals and post-graduates. The curriculum emphasizes collaboration, experiential learning and team building to solve data-driven challenges. Students will learn interdisciplinary data collection and examination techniques, data visualization, statistical and computational analytics, presentation skills, and how to apply the fundamental core concepts, and tools of data thinking to their work in any industry or sector. Both part-time and full-time options are available for the applicants. The Department of Management Sciences ensures that the scheduling of courses would accommodate all students (e.g., professionals and non-professionals).

[6] https://www.rotman.utoronto.ca/Degrees/MastersPrograms/MMA

[7] https://www.mcmastercce.ca/data-analytics

[8] https://www.mcgill.ca/continuingstudies/program/professional-development-certificate-data-analytics-business

[9] https://grad.ucalgary.ca/future-students/explore-programs/data-science-and-analytics-diploma

Method Used for Preparation of the Brief

The Department of Management Sciences consulted and coordinated with the Faculty of Engineering and other campus stakeholders to assess the demand for, and design of the proposed program. The consultations and development were expedited due to the presence of the existing Type 2 GDDA, offered in the Department since 2017.

2. Objectives of the Program (QAF 2.1.1)

Data and its role in today's world have always been a priority for University of Waterloo. The Southwestern Ontario Research Data Centre (SWORDC)[10] and Big Data Research Lab[11], are examples of the importance of data management and its application to the University of Waterloo. According to the Management Sciences Vision 2015 Plan, "introducing MMSc specializations" was identified as a significant factor to achieve a world-class reputation for excellence in research, teaching, and student experience for graduate studies [12]. The Type 2 GDDA was one step to achieve this objective and it will be complemented by the Type 3 GDDA which aims to train post-graduates and working professionals with deep data analytics skills that modern organizations need. Given the structure of the diploma, the Type 3 GDDA will have the same broad academic and institutional objectives as the existing Type 2 GDDA. Furthermore, it is tailored to the wider audience to whom the Type 3 GDDA is available. These objectives are as follows:

- to attract professionals and managers at all levels of organizations and across different industries, as well as students who are eager to learn and build skills in data analytics,
- to provide students and working professionals with a graduate-level, course-based education in the field of data analytics,
- to enhance the preparatory skills for students who are interested in pursuing applied research in data analytics. The program provides an overview of the main techniques and tools used in data analytics. Interested students may seek deeper training through a research master's program or a PhD program. Skills they learn through this diploma help them have a higher chance for admission and prosperity compared to other students.

[10] https://uwaterloo.ca/southwestern-ontario-research-data-centre/

[11] https://uwaterloo.ca/big-data-research-lab/

[12] https://uwaterloo.ca/engineering/sites/ca.engineering/files/uploads/files/Vision_2015_Plan_May_2012.pdf

We have also mapped the learning outcomes of Type 3 GDDA to the Graduate Degree-level Expectations (GDLE)[13] which is available in Appendix A.

3. Admission Requirements (QAF 2.1.2)

The admission requirements of the Type 3 GDDA are as follows:

- **Minimum Requirements**
  - The Department of Management Sciences requires either (i) a 75% overall standing in the last two years, or equivalent, in a relevant four-year Honours Bachelor's degree or equivalent; or (ii) a 75% overall standing or equivalent, in a relevant four-year Honours Bachelor's degree or equivalent, as the minimum requirement for admission to the Type 3 GDDA for applicants educated at a Canadian institution. A 75% overall standing or equivalent, in a relevant four-year Honours Bachelor's degree or equivalent is the minimum requirement for admission to the Type 3 GDDA for applicants educated outside of Canada.
  - All applicants must submit a "Statement of Purpose" - a one-page statement addressing their academic background and future goals.
- **Application materials**
  - Supplementary information form
  - Transcript(s)
  - Résumé/Curriculum vitae
- **References**
  - Number of references: 2
  - Type of references: Academic (preferred) or professional
- **English language proficiency (ELP) (if applicable)**
  - The requirements for ELP for Type 3 GDDA is the same as those for MMSc program (Department of Management Sciences) .[14]

[13] https://uwaterloo.ca/academic-program-reviews/degree-level-expectations/graduate-degree-level-expectations

[14] https://uwaterloo.ca/graduate-studies-academic-calendar/general-information-and-regulations/english-language-proficiency

4. Structure (QAF 2.1.3)

The Type 3 GDDA could be completed within two terms and students can start in any term (Fall, Winter, or Spring). Both online and on-campus options are available for offered courses based on students' preferences. Furthermore, evening class sessions will be held since it is probably a more suitable option for professional learners. The courses required are:

- MSCI 719 (Operations Analytics)
- MSCI 623 (Big Data Analytics)
- MSCI 718 (Statistical Methods for Data Analytics)
- A pre-approved elective course which could be from regular in Management Sciences courses, e.g., MSCI 641 (Text Analytics), MSCI 709 (Logistics and Supply Chain Management), etc. It could also be a new course which is pre-approved by the Associate Chair for Graduate Studies upon a student's request.

The department is committing to offer the core courses (MSCI 719, MSCI 623, and MSCI 718) every year. Course descriptions are provided in Appendix B. According to current course schedules, a possible plan is

- First term: MSCI 719, elective course
- Second term: MSCI 623, MSCI 718

5. Program Content (QAF 2.1.4)

Data analytics enable organizations to enhance traditional *descriptive analytics* of explaining what has happened with *predictive analytics* to foresee what will happen under various future scenarios, and with *prescriptive analytics* to design best policies and actions under different circumstances. Predictive and prescriptive analytics enable organizations to transform insight into foresight and most importantly make transformative decisions to significantly improve business performance.

Management Sciences is a multidisciplinary Department with expertise in Information Systems, Applied Operations Research, and Management of Technology. Information Systems faculty have expertise in data warehousing and management, data visualization, as well as information retrieval. Operations Research faculty have expertise in statistical modeling and simulation, forecasting, and optimization. Management of Technology faculty have expertise in behavioral aspects of social media and human-generated data. The Department leverages the strengths of its pillar graduate research fields to offer comprehensive data analytics courses:

- **Operations research and analytics**: MSCI 603 (Principles of Operations Research) and MSCI 719 (Operations Analytics)
- **Information systems**: MSCI 623 (Big Data Analytics) and an elective course such as MSCI 641 Text Analytics

- **Statistics**: MSCI 609 (Quantitative Data Analysis for Management Sciences) and MSCI 718 (Statistical Methods for Data Analytics)
- **Management of Technology**: MSCI 605 (Organizational Theory & Behaviour) and MSCI 607 (Applied Economics for Management)

Three of these courses (MSCI 623, MSCI 718, and MSCI 719) are core to the GDDA, others (MSCI 603, MSCI 605, MSCI 607, MSCI 609, and MSCI 641) are available as electives.

6. Mode of Delivery (QAF 2.1.5)

All courses for the GDDA, both online and on-campus, use a wide variety of teaching and learning methodologies (e.g., cases, lectures, student presentations, in-class group discussion) designed to provide students with deep quantitative skills and technical expertise to analyze big data and to improve the performance of organizations using evidence based decision-making.

7. Assessment of Teaching and Learning (QAF 2.1.6)

Assessment of Teaching

At the end of each course, students evaluate both the course material and the instructor through Course Critiques. The course evaluation forms are distributed to the students for completion at a time when the instructor is not present, to provide students with anonymity. Completed evaluation forms are handed in and then processed by the Registrar's Office. Instructors receive the original completed questionnaires containing student comments and a summary of the scores for each question, and they routinely consider this feedback when preparing for their next course offering. Teaching and other course-related issues are addressed by the Department Chair with the faculty member. In addition, if there are issues during the term, students are invited to bring them to the attention of the Associate Chair for Graduate Studies, who will assist the students in resolving them with the faculty member.

Assessment of Learning

Throughout our graduate programs, a variety of assessment methods are used to assess each student's achievement of program learning outcomes and degree level expectations. Detailed graduate degree-level expectations are provided in Appendix A.

- *Class Participation*: A student's advance preparation and level of in-class engagement comprise the student's grade for this component of a course. Class

participation requires the student to demonstrate initiative and competence and to orally communicate effectively and efficiently.

- *Class Presentations*: Presentations are designed to develop a student's ability to present and discuss a topic in front of a group. They allow students to critically analyze ideas and then to think about the best ways to orally communicate them.
- *Written Assignments*: Written assignments provide a student with the opportunity to identify issues, gather and analyze information, develop ideas, solve problems and make decisions. They must then concisely and clearly communicate their analysis and recommendations in writing
- *Examinations*: Examinations require students to apply what they have learned in a course to identify and analyze issues, solve problems, and make decisions, then to clearly and concisely present their analysis in writing, often under time constraints.

At the end of the diploma, students will know the main technical and practical aspects of data analytics, build capacity to apply data analytics to a variety of problems, be able to make data-driven decisions in complex and uncertain situations, to recognize the limits of data analytics tools, and to develop the ability to clearly communicate findings. This is mainly indicated/measured by the hands-on-experience in real case studies solved in the analytics courses such as MSCI 719 Operations Analytics, the helpful projects carried out in courses such as MSCI 623 Big Data Analytics, and the exams written for the courses taken. Through these case studies and projects, students face real-world problems and need to address them using the tools and approaches they learned in their courses. They need to effectively use available datasets and develop data-driven solutions. Students who would be able to provide sound recommendations for the real-world problems have achieved the learning objectives.

In order to ensure that the program is working with the level of success we expected, we developed a cohesive plan to assess the achievement of the learning outcomes. The graduate studies committee will assess the trend of students' grades on an annual basis for the core courses of the GDDA. Considering the course evaluations and assessments, there will be an annual meeting with the instructors to discuss the opportunities to improve the quality of teaching and create a more effective learning environment. The committee is also responsible to monitor the ongoing situation in courses by collecting feedback from students. In their feedback, students would be able to express their concerns and comments about the topics covered in the courses. These anonymous comments will be shared and discussed with the instructors to make sure that the current students gain more relevant learning experience.

The department will maintain contacts with the previous graduates of the GDDA. There will be alumni surveys to get feedbacks on different aspects of the graduates' experience for the GDDA. Alumni of the GDDA will also be invited as a guest speaker to share their experience with the students and instructors.

8. Resources for All Programs (QAF 2.1.7)

Being a stand-alone version of an existing diploma, the Type 3 GDDA will require minimal additional resources. We expect an additional intake of about 20 students per year (13 Canadians and permanent residents and 7 international), which could be easily accommodated within our on-campus and online courses. We expect 50% of the 20 students to take online courses in each term. Specifically, the additional intake will have access to

- Space: the department of Management Sciences has a graduate study room and lounge dedicated to course-work students with study space, computers, and meeting space.
- Student support: students will be parts of the Management Sciences Student Association (MSSA). The MSSA organizes and actively promotes student involvement and interaction, both socially and academically[15].

The students will also have access to the library. The library includes subscriptions to the ACM digital library and the IEEE electronic library, which cover the main publication venues in data analytics. Due to the variety of the courses that are offered in the Department and the huge demand for teaching assistants, these students can be hired as teaching assistants similar to all other course-based and thesis-based graduate students in Management Sciences. Students can also be involved in the analytics related industry projects in the department and there would be opportunities to work as a research assistant with faculty who are working on data-driven projects. Through the Department guest speakers, they will also have opportunity to learn the challenges in different industries that potentially could be tackled using analytics tools.

9. Resources for Graduate Programs (QAF 2.1.8)

Our faculty have demonstrated expertise in offering the courses constituting the diploma. The Department has prominent professors in the area of data science and data analytics. Some holding Canada Research Chairs and have an active research agenda in the domain. See next section.

Based on our experience with the Type 2 version, we already have a well-established academic environment that would accommodate the extra 20 students/year. Note that our MMSc program (both online and on-campus programs) runs at about 90 students per year. Based on course enrollments, we expect between 20 and 30 students to graduate with the Type 2 diploma in the Fall 2020 convocation.

10. Quality and Other Indicators (QAF 2.1.10)

Below is a list of faculty members and their qualifications, who have taught/will teach the diploma core courses:

[15] https://uwaterloo.ca/management-sciences/graduate-studies/management-sciences-student-association

Name	Degrees	Title	Teaching responsibilities
Hossein Abouee Mehrizi	Ph.D.	Associate professor, Canada Research Chair in Healthcare Analytics	MSCI 719 (Operations Analytics)
Samir Elhedhli	Ph.D.	Professor	
Lukasz Golab	Ph.D.	Associate professor, Canada Research Chair in Information Systems	MSCI 623 (Big Data Analytics)
Olga Vechtomova	Ph.D.	Associate professor	
Oliver Schneider	Ph.D.	Assistant professor	MSCI 718 (Statistical Methods for Data Analytics)
Brian Cozzarin	Ph.D.	Professor	

Students within the program will enjoy a rich blend of courses covering the main tools and application domains of data analytics. They will work on real cases, interact with researchers active in the area, and will have opportunities to discuss the challenges faced in different industries with industry speakers who are invited to the courses.

11. Financial Addendum – For Internal Waterloo Use Only

Financial Viability Details

Human Resources

No new faculty will be hired.

Teaching Resources

No new teaching resources.

Physical Resources

No new physical resources are needed. We can easily accommodate the additional 20 students within our existing physical space.

Other Resource Requirements

None that we anticipate.

Tuition & Fees

The tuition will be set equal to our online MMSc online program. The Spring 2020 tuition rate for the online MMSc is currently at CAD 3,947.00 (for Canadians and permanent residents) per course. i.e. CAD 15,788 for the 4 courses.[16]

Other Revenue

[16] https://uwaterloo.ca/finance/fee-schedule-graduate-students-spring-2020

None that we anticipate.

12. Appendix A: Mapping of Learning Outcomes to Graduate-level Expectations, Courses and Assessment Methods

	1. Depth and breadth of knowledge	2. Research and scholarship	3. Level of application of knowledge	4. Professional capacity/ autonomy	5. Level of communication skills	6. Awareness of limits of knowledge
To develop greater breadth and depth of knowledge related to both the technical and practical aspects of data analytics	✓	✓	✓		✓	
To have a clear understanding of knowledge and awareness of current business and societal problems and issues in the areas of data analytics.	✓					✓
To develop the capacity to apply existing body of knowledge and insights through critical and hands-on analysis of specific problems and issues in data analytics	✓		✓	✓		
To conduct critical analysis of novel issues or new applications related to data analytics by demonstrating the ability to synthesize and apply existing literature and information.	✓	✓	✓	✓		
To make data-driven decisions in complex and uncertain situations with appreciation of the broader implications of applying knowledge to particular contexts.	✓		✓		✓	
To recognize the limits of personal competence and appreciate the potential contributions of other interpretations, methodologies, and disciplines				✓		✓
To develop the ability to clearly communicate specific ideas, analyses and conclusions, both orally and in writing, to a range of audiences including relevant decision makers in data analytics.					✓	✓
To exercise personal responsibility and accountability, displaying ethical behavior with integrity and responsibility.				✓		

	1. Depth and breadth of knowledge	2. Research and scholarship	3. Level of application of knowledge	4. Professional capacity/ autonomy	5. Level of communication skills	6. Awareness of limits of knowledge
MSCI 623-Big Data Analytics	✓	✓	✓		✓	✓
MSCI 718-Statistical Methods for Data Analytics	✓	✓	✓		✓	✓
MSCI 719-Operations Analytics	✓	✓	✓		✓	✓
MSCI 641-Text Analytics (Ex. of an elective)	✓	✓	✓		✓	✓
Multi-part assignments	✓	✓	✓	✓		
Quizzes/Tests	✓	✓	✓	✓		✓
Written assignments/ arguments/policy briefs	✓	✓	✓	✓	✓	✓
Data interpretation, synthesis, visualization	✓	✓	✓	✓	✓	✓
Technical reports/plans	✓	✓	✓	✓	✓	✓

Slide decks/presentations				✓	✓	✓

13. Appendix B: Detailed course outlines

MSCI 718: Statistical Methods for Data Analytics

Objectives: Our increasingly connected world, combined with low-cost sensors and distributed intelligence, will have a transformative impact on industry, producing more data than humans will be able to process. This course provides an introduction to statistical analytics methods which refers to a vast set of tools for understanding and analyzing data. Broadly speaking, statistical analytics involves building a statistical model for predicting, or estimating, an output based on one or more inputs. Problems of this nature occur in fields as diverse as economics, energy, mobility among others.

Topics:

1. Introduction to times series (applications, objectives of time series analysis, stationarity, autocorrelation functions, models with trends and seasonality, estimation and elimination of trend and seasonal components)
2. Forecasting techniques (exponential smoothing, Holt-Winters algorithm)
3. Regression (linear models, non-linear models, forecasting from regression)
4. Models of stationary processes (moving average models, ARMA processes)
5. Models of non-stationary processes (non-seasonal ARIMA models, seasonal ARIMA models).
6. Advanced learning methods (machine learning for prediction, neural networks and deep learning, parametric and structural identification, model selection, feature selection)

Textbook:

1. "Introduction to Time Series Analysis and Forecasting" by Montgomery, Jennings, and Kulahci (2nd edition)
2. "Introduction to Time Series and Forecasting" by Brockwell and Davis (3rd edition)

References:

1. "Introductory Time Series with R" by Cowpertwait and Metcalfe.
2. "Time Series Analysis and Its Applications with R Examples" by Shumway and Stoffer.

Software: We will mainly use R for statistical analysis (python is also another alternative). R can be freely downloaded from http://www.r-project.org/. For help with R, check http://www.cyclismo.org/tutorial/R/#introductory-materials. More material will be provided on learn.

Evaluation:

Assignments – 20%.
Exams – 40% (TBA).

Project – 35% Done in groups of 3.
Attendance and participation – 5%.

MSCI 719: Operations Analytics

Course Scope and Mission: Analytics is not a new invention, but rather a coming together of several technologies and fields of science including data warehousing and management, data mining, statistical modeling, forecasting, optimization, and most importantly management decision making under uncertainty.
In this course we first discuss predictive analytics that provides techniques to model the relationships between inputs and outcomes, and construct predictions about future outcomes. Then, we cover the prescriptive analytics that provides tools to optimize actions against a complex set of objectives to find best practices and design best policies under all circumstances. We also look at practical problems, solution techniques, and algorithms. Specifically, we look at examples in supply chains, service industries, healthcare systems, revenue management, inventory management, and sports. Finally, we apply our knowledge to investigate several case studies concerning real world problems and learn from a couple of guest speakers who discusses interesting challenges and opportunities that data analytics has presented.

Required Reading:
1. "Business Analytics: Data Analysis & Decision Making", S. C. Albright & W. L. Winston, 5th Edition
2. "Business Analytics", J. R. Evans, 2nd Edition

Course Package, including papers and case studies related to the topics of the course:
Jennie Maze Limited: Enhancing Call Center Performance Using Predictive Analytics
Managing with Analytics at Procter & Gamble
Screening for Chronic Kidney Disease
Know What Your Customers Want before They Do
Service Engineering: Data-Based Course Development and Teaching

Evaluation:
Assignments and case studies – 30%
Final exam – 30%
Data challenge and project – 40%

Topics:
1. Descriptive Analytics (1 week):
   a. Data modeling, measurement and validation
2. Predictive Analytics (1 week):
   a. Regression analysis, clustering, and forecasting
3. Prescriptive Analytics (9 weeks):
   a. Robust and data-driven optimization (2 weeks)
   b. Trace-driven simulation and risk analysis (1 week)
   c. Data-driven and evidence-based decision making (2 weeks)
   d. Complex stochastic systems and non-parametric queueing models (2 weeks)
   e. Bayesian optimization (2 weeks)

4. Applications of operations analytics in healthcare, retailing, supply chain, sport, and service industries (1 week)

MSCI 623: Big Data Analytics

Objectives:

1) to understand how data mining algorithms work
2) to gain hands-on experience in using data mining to solve real-world problems
3) to understand the state of the art in big data systems

Description: This course will cover the following topics:

- What is data mining; what is not data mining; data mining applications
- Data profiling and pre-processing: scatter plots, box plots, data cleaning
- Classification and prediction algorithms: Bayesian inference, decision trees, linear and logistic regression, nearest-neighbor search, support vector machines (SVM)
- Association rule mining algorithms: Apriori
- Clustering algorithms: k-means
- Other topics in data mining: outliers, recommender systems, social media, graph mining
- Review of relational database systems: relational algebra, SQL, query processing and optimization, transaction processing
- Big data systems: cloud computing, distributed systems, Hadoop/MapReduce, noSQL, newSQL

Textbook: Tan, P., Steinbach, M. and Kumar, V., Introduction to data mining. 2006, Pearson.

Evaluation:

Midterm – 30%
Final exam – 40%
Project – 30%
Note: you must pass the fraction of the grade corresponding to the midterm and final exam in order to pass the course

Tentative weekly schedule:

Week 1: Introduction to data mining
Week 2: Data profiling and pre-processing
Week 3-4: Classification algorithms
Week 5: Association rule mining
Week 6: Clustering
Week 7-8: Applications and other topics in data mining
Week 9: Review of relational database systems
Week 10-12: Big data systems

UNIVERSITY OF WATERLOO

Graduate Studies Program Revision Template

Prior to form submission, review the content revision instructions and information regarding major/minor modifications. For questions about the form submission, contact Trevor Clews, Graduate Studies and Postdoctoral Affairs (GSPA).

Faculty: Environment

Program: Master of Arts (MA) in Planning

Program contact name(s): Joe Qian

Form completed by: Joe Qian

Description of proposed changes:
Note: changes to courses and milestones also require the completion/submission of the SGRC Graduate Studies Course/Milestone Form.

1) *Adding a Master's Research Paper study option to the MA in Planning program.*
2) *Adding information about course average requirements to the thesis study option.*
3) *Adding a description to the "Project Proposal Development Workshop" milestone within the thesis study option.*

Is this a major modification to the program? Yes

Rationale for change(s):

1) *The changes offer students two options – a thesis or a master's research paper as a milestone for their MA degree. The newly introduced master's research paper option aims to prepare students to be planning practitioners after the completion of the degree. Most planning programs in Canada have the options of thesis and master's research paper. Students' research expertise can be demonstrated through a master's research paper. Students in the option of master's research paper would benefit from courses that provide opportunities for more training in planning.*
2) *To provide clarity and information for students, faculty, and staff on the course average requirements.*
3) *To provide clarity and information for students, faculty, and staff on the milestone requirements.*

Proposed effective date: Term: Spring Year: 2021

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

https://uwaterloo.ca/graduate-studies-academic-calendar/environment/school-planning/master-arts-ma-planning

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Graduate research fields	**Graduate research fields**

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:

• Human and Built Environment
• Physical/Natural Environment
 	
Program information
 	
• Admit term(s)
  ○ Fall
• Delivery mode
  ○ On-campus
• Length of program
  ○ Full-time: 2 years - 6 terms
  ○ Part-time: 5 years - 15 terms
• Program type
  ○ Master's
  ○ Research
• Registration option(s)
  ○ Full-time
  ○ Part-time
• Study option(s)
  ○ Thesis
 	
Admission requirements
 	
• Minimum requirements
  ○ A four-year honours bachelor degree (or equivalent), with a minimum overall average of 78%, from a recognized university; the undergraduate degree may be in planning or other fields relevant to planning including: architecture, biology, civil engineering, economics, forestry, geography, geology, landscape architecture, law, political science, sociology, or other resource disciplines or social sciences.
  ○ The name of one or more School of Planning faculty member(s) who would be a suitable advisor.
• Application materials
  ○ Résumé/Curriculum vitae
  ○ Supplementary information form
  ○ Transcript(s)
  ▪ Two official academic transcripts from each post-secondary institution.
  ○ Writing sample
  ▪ At least one substantial example of work completed during the last two years of academic study. Students with professional experience may submit a professional report of
	• Human and Built Environment
	• Physical/Natural Environment
	
	Program information
	
	• Admit term(s)
	  ○ Fall
	• Delivery mode
	  ○ On-campus
	• Length of program
	  ○ Full-time: 2 years - 6 terms
	  ○ Part-time: 5 years - 15 terms
	• Program type
	  ○ Master's
	  ○ Research
	• Registration option(s)
	  ○ Full-time
	  ○ Part-time
	• Study option(s)
	  ○ Thesis
	  ○ Master’s Research Paper
	
	Admission requirements
	
	• Minimum requirements
	  ○ A four-year honours bachelor degree (or equivalent), with a minimum overall average of 78%, from a recognized university; the undergraduate degree may be in planning or other fields relevant to planning including: architecture, biology, civil engineering, economics, forestry, geography, geology, landscape architecture, law, political science, sociology, or other resource disciplines or social sciences.
	  ○ The name of one or more School of Planning faculty member(s) who would be a suitable advisor.
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	  ○ Supplementary information form
	  ○ Transcript(s)
	  ▪ Two official academic transcripts from each post-secondary institution.
	  ○ Writing sample
	  ▪ At least one substantial example of work completed during the last two years of academic study. Students with professional experience may

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:

which they were sole or senior author.
• References
  ○ Number of references: 3
  ○ Type of references: at least 2 academic
• English language proficiency (ELP) (if applicable)
 	
Degree requirements
Thesis option:
 	
• Graduate Academic Integrity Module (Graduate AIM)
• Courses
  ○ 5 700-level required one-term courses for a total of 2.50 units:
  ▪ PLAN 700 Planning Paradigms and Theory
  ▪ PLAN 701 Land Use Planning Fundamentals*
  ▪ PLAN 703 Planning Professional Practice
  ▪ PLAN 704 Methods of Planning Analysis
  ▪ PLAN 710 Research Design
  ○ 2 700-level required studio courses for a total of 2.00 units:
  ▪ PLAN 720 Introductory Planning Project Studio
  ▪ PLAN 721 Advanced Planning Project Studio
  ○ 3 600-level elective one-term courses for a total of 1.50 units.
  ○ Some elective graduate courses may be taken in other departments but the supervisor's advice and approval should be sought before registering. One half course may be a reading course.
  ▪ *Students with a prior degree in planning may request to substitute an extra elective in place of PLAN 701, subject to approval by the Associate Director, Graduate Studies. Requests should be emailed to the Graduate Program Administrator.
• Link(s) to courses
  ○ Planning (PLAN) courses
  ○ Graduate course search
• Graduate Studies Internship
  ○ Required during the first spring term.
	submit a professional report of which they were sole or senior author.
	• References
	  ○ Number of references: 3
	  ○ Type of references: at least 2 academic
	• English language proficiency (ELP) (if applicable)
	
	Degree requirements
	Thesis option:
	
	• Graduate Academic Integrity Module (Graduate AIM)
	• Courses
	  ○ 5 700-level required one-term courses for a total of 2.50 units:
	  ▪ PLAN 700 Planning Paradigms and Theory
	  ▪ PLAN 701 Land Use Planning Fundamentals*
	  ▪ PLAN 703 Planning Professional Practice
	  ▪ PLAN 704 Methods of Planning Analysis
	  ▪ PLAN 710 Research Design
	  ○ 2 700-level required studio courses for a total of 2.00 units:
	  ▪ PLAN 720 Introductory Planning Project Studio
	  ▪ PLAN 721 Advanced Planning Project Studio
	  ○ 3 600-level elective one-term courses for a total of 1.50 units.
	  ○ Some elective graduate courses may be taken in other departments but the supervisor's advice and approval should be sought before registering. One half course may be a reading course.
	  ▪ *Students with a prior degree in planning may request to substitute an extra elective in place of PLAN 701, subject to approval by the Associate Director, Graduate Studies. Requests should be emailed to the Graduate Program Administrator.
	  ○ <u>Students must obtain an average of at least 70% in the courses presented in fulfilment of the degree requirements. A failing grade in any course will occasion</u>

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
○ The internship is intended to provide students who have not had prior planning work experience with the opportunity to work as paid or unpaid interns in professional settings. Internships will normally occur in the summer between the first and second years of the program, and are usually three to four months in duration. Internships may be with community-based organizations, corporations, government agencies, consulting firms, public interest groups, district health units, and planning departments of all levels of government, among other potential employers. ○ Although the School of Planning cannot guarantee a placement to every student who requires an internship, assisting students in securing valuable work experience during their program is a priority. ○ Students who have already completed a minimum of 10 weeks of work (min. 20 hours/week) in planning or a planning-related field will be considered to have met the internship requirement and will receive credit for the milestone (subject to approval by the Associate Director, Graduate Studies). Requests should be emailed to the Graduate Program Administrator. • Project Proposal Development Workshop • Master's Research Plan ○ An oral presentation must be completed in April of first year. • Master's Thesis ○ Students must write a thesis ~~(2.00 unit weight)~~ which contains evidence of research, analysis and synthesis. The thesis is supervised by a faculty advisor, examined by a committee of three or more members and is made available for anyone in the university or general public to use. The thesis must be defended successfully before an Examining Committee composed of a minimum of the student's Supervisor, one Committee member and one Reader. • Other requirements ○ Transfer between programs: permission to transfer from the Master of Planning (MPlan) program to the	an automatic review of a student's status by the School and may, in some cases, result in the requirement to withdraw from the program. • Link(s) to courses ○ Planning (PLAN) courses ○ Graduate course search • Graduate Studies Internship ○ Required during the first spring term. ○ The internship is intended to provide students who have not had prior planning work experience with the opportunity to work as paid or unpaid interns in professional settings. Internships will normally occur in the summer between the first and second years of the program, and are usually three to four months in duration. Internships may be with community-based organizations, corporations, government agencies, consulting firms, public interest groups, district health units, and planning departments of all levels of government, among other potential employers. ○ Although the School of Planning cannot guarantee a placement to every student who requires an internship, assisting students in securing valuable work experience during their program is a priority. ○ Students who have already completed a minimum of 10 weeks of work (min. 20 hours/week) in planning or a planning-related field will be considered to have met the internship requirement and will receive credit for the milestone (subject to approval by the Associate Director, Graduate Studies). Requests should be emailed to the Graduate Program Administrator. • Project Proposal Development Workshop ○ The Project Proposal Development Workshop helps students to refine their master's thesis research topic and develop their master's thesis research plan. • Master's Research Plan ○ An oral presentation must be completed in April of first year. • Master's Thesis ○ Students must write a thesis which contains evidence of research, analysis and synthesis. The thesis is supervised

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:

Master of Arts (MA) in Planning or Master of Environmental Studies (MES) in Planning programs, or from the MA or MES programs to the MPlan program, may be granted after the end of the first term of year one by the Associate Director, Graduate Studies (Graduate Officer) providing the student fulfills the requirements of the program they want to transfer to. A key requirement for MPlan students transferring to the MA or MES program is the written agreement of an appropriate faculty member to advise the students and of another appropriate faculty member to act as a committee member. The transfer does not imply any financial commitment by the School of Planning to support the student after the change in program of studies. However, this does not preclude a faculty member providing research support from grants or contract funds.	by a faculty advisor, examined by a committee of three or more members and is made available for anyone in the university or general public to use. The thesis must be defended successfully before an Examining Committee composed of a minimum of the student's Supervisor, one Committee member and one Reader.
	• Other requirements
	  ○ Transfer between programs: permission to transfer from the Master of Planning (MPlan) program to the Master of Arts (MA) in Planning or Master of Environmental Studies (MES) in Planning programs, or from the MA or MES programs to the MPlan program, may be granted after the end of the first term of year one by the Associate Director, Graduate Studies (Graduate Officer) providing the student fulfills the requirements of the program they want to transfer to. Students in the thesis option may switch to the master's research paper option by the end of their first academic year upon approval by the Associate Director, Graduate Studies. A key requirement for MPlan students transferring to the MA or MES program is the written agreement of an appropriate faculty member to advise the students and of another appropriate faculty member to act as a committee member. The transfer does not imply any financial commitment by the School of Planning to support the student after the change in program of studies. However, this does not preclude a faculty member providing research support from grants or contract funds.
	
	Master's Research Paper option:
	
	• Graduate Academic Integrity Module (Graduate AIM)
	• Courses
	  ○ 5 700-level required one-term courses for a total of 2.50 units:
	  ▪ PLAN 700 Planning Paradigms and Theory
	  ▪ PLAN 701 Land Use Planning Fundamentals*

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	▪ PLAN 703 Planning Professional Practice ▪ PLAN 704 Methods of Planning Analysis ▪ PLAN 710 Research Design ○ 2 700-level required studio courses for a total of 2.00 units: ▪ PLAN 720 Introductory Planning Project Studio ▪ PLAN 721 Advanced Planning Project Studio ○ 5 600-level elective one-term courses for a total of 2.50 units. ○ Some elective graduate courses may be taken in other departments but the supervisor's advice and approval should be sought before registering. One half course may be a reading course. ▪ *Students with a prior degree in planning may request to substitute an extra elective in place of PLAN 701, subject to approval by the Associate Director, Graduate Studies. Requests should be emailed to the Graduate Program Administrator. ○ Students must obtain an average of at least 70% in the courses presented in fulfilment of the degree requirements. A failing grade in any course will occasion an automatic review of a student's status by the School and may, in some cases, result in the requirement to withdraw from the program. • Link(s) to courses ○ Planning (PLAN) courses ○ Graduate course search • Graduate Studies Internship ○ Required during the first spring term. ○ The internship is intended to provide students who have not had prior planning work experience with the opportunity to work as paid or unpaid interns in professional settings. Internships will normally occur in the summer between the first and second years of the program, and are usually three to four months in duration. Internships may be with community-based organizations, corporations, government agencies, consulting firms, public interest groups, district health

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	units, and planning departments of all levels of government, among other potential employers. ○ Although the School of Planning cannot guarantee a placement to every student who requires an internship, assisting students in securing valuable work experience during their program is a priority. ○ Students who have already completed a minimum of 10 weeks of work (min. 20 hours/week) in planning or a planning-related field will be considered to have met the internship requirement and will receive credit for the milestone (subject to approval by the Associate Director, Graduate Studies). Requests should be emailed to the Graduate Program Administrator. • Project Proposal Development Workshop ○ The Project Proposal Development Workshop helps students to refine their master's research paper topic and develop their master's research paper plan. • Master's Research Plan ○ A research plan must be approved by a faculty supervisor in April of first year. • Master's Research Paper ○ Students must write a major research paper which contains evidence of research, analysis and synthesis. The research paper should be completed within two terms. It is supervised by a faculty advisor, examined by the advisor and a reader, and is made available for anyone in the University or general public to use. Oral defense is not required. • Other requirements ○ Transfer between programs: permission to transfer from the Master of Planning (MPlan) program to the Master of Arts (MA) in Planning or Master of Environmental Studies (MES) in Planning programs, or from the MA or MES programs to the MPlan program, may be granted after the end of the first term of year one by the Associate Director, Graduate Studies (Graduate Officer) providing the student fulfills the requirements of the program they want to transfer to. Students in the master's research paper option may

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
	switch to the thesis option by the end of their first academic year upon the approval by the Associate Director, Graduate Studies. A key requirement for MPlan students transferring to the MA or MES program is the written agreement of an appropriate faculty member to advise the students and of another appropriate faculty member to act as a committee member. The transfer does not imply any financial commitment by the School of Planning to support the student after the change in program of studies. However, this does not preclude a faculty member providing research support from grants or contract funds.

How will students currently registered in the program be impacted by these changes?

Currently registered students in the thesis option will be permitted to switch to the Master's Research Paper option once the option is effective in Spring, 2021.

Department/School approval date (mm/dd/yy): 12/11/20
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 02/19/21
Faculty approval date (mm/dd/yy): 02/25/2021
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

Graduate Studies
Program Revision Template

Prior to form submission, review the content revision instructions and information regarding major/minor modifications. For questions about the form submission, contact Trevor Clews, Graduate Studies and Postdoctoral Affairs (GSPA).

Faculty: Environment

Program: Master of Environmental Studies (MES) in Planning

Program contact name(s): Joe Qian

Form completed by: Joe Qian

Description of proposed changes:
Note: changes to courses and milestones also require the completion/submission of the SGRC Graduate Studies Course/Milestone Form.

1) *Adding a Master's Research Paper study option to the MES in Planning program.*
2) *Adding information about course average requirements to the thesis study option.*
3) *Adding a description to the "Project Proposal Development Workshop" milestone within the thesis study option.*

Is this a major modification to the program? Yes

Rationale for change(s):

1) *The changes offer students two options – a thesis or a master's research paper as a milestone for their MES degree. The newly introduced master's research paper option aims to prepare students to be planning practitioners after the completion of the degree. Most planning programs in Canada have the options of thesis and master's research paper. Students' research expertise can be demonstrated through a master's research paper. Students in the option of master's research paper would benefit from courses that provide opportunities for more training in planning.*
2) *To provide clarity and information for students, faculty, and staff on the course average requirements.*
3) *To provide clarity and information for students, faculty, and staff on the milestone requirements.*

Proposed effective date: Term: Spring Year: 2021

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

https://uwaterloo.ca/graduate-studies-academic-calendar/environment/school-planning/master-environmental-studies-mes-planning

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Graduate research fields	**Graduate research fields**

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:

• Human and Built Environment
• Physical/Natural Environment
 	
Program information
 	
• Admit term(s)
  ○ Fall
• Delivery mode
  ○ On-campus
• Length of program
  ○ Full-time: 2 years - 6 terms
  ○ Part-time: 5 years - 15 terms
• Program type
  ○ Master's
  ○ Research
• Registration option(s)
  ○ Full-time
  ○ Part-time
• Study option(s)
  ○ Thesis
 	
Admission requirements
 	
• Minimum requirements
  ○ A four-year honours bachelor degree (or equivalent), with a minimum overall average of 78%, from a recognized university; the undergraduate degree may be in planning or other fields relevant to planning including: architecture, biology, civil engineering, economics, forestry, geography, geology, landscape architecture, law, political science, sociology, or other resource disciplines or social sciences.
  ○ The name of one or more School of Planning faculty member(s) who would be a suitable advisor.
• Application materials
  ○ Résumé/Curriculum vitae
  ○ Supplementary information form
  ○ Transcript(s)
  ▪ Two official academic transcripts from each post-secondary institution.
  ○ Writing sample
  ▪ At least one substantial example of work completed during the last two years of academic study. Students with professional experience may submit a professional report of
	• Human and Built Environment
	• Physical/Natural Environment
	
	Program information
	
	• Admit term(s)
	  ○ Fall
	• Delivery mode
	  ○ On-campus
	• Length of program
	  ○ Full-time: 2 years - 6 terms
	  ○ Part-time: 5 years - 15 terms
	• Program type
	  ○ Master's
	  ○ Research
	• Registration option(s)
	  ○ Full-time
	  ○ Part-time
	• Study option(s)
	  ○ Thesis
	  ○ Master’s Research Paper
	
	Admission requirements
	
	• Minimum requirements
	  ○ A four-year honours bachelor degree (or equivalent), with a minimum overall average of 78%, from a recognized university; the undergraduate degree may be in planning or other fields relevant to planning including: architecture, biology, civil engineering, economics, forestry, geography, geology, landscape architecture, law, political science, sociology, or other resource disciplines or social sciences.
	  ○ The name of one or more School of Planning faculty member(s) who would be a suitable advisor.
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	  ○ Résumé/Curriculum vitae
	  ○ Supplementary information form
	  ○ Transcript(s)
	  ▪ Two official academic transcripts from each post-secondary institution.
	  ○ Writing sample
	  ▪ At least one substantial example of work completed during the last two years of academic study. Students with professional experience may

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:

which they were sole or senior author.
• References
  ○ Number of references: 3
  ○ Type of references: at least 2 academic
• English language proficiency (ELP) (if applicable)
 	
Degree requirements
Thesis option:
 	
• Graduate Academic Integrity Module (Graduate AIM)
• Courses
  ○ 5 700-level required one-term courses for a total of 2.50 units:
  ▪ PLAN 700 Planning Paradigms and Theory
  ▪ PLAN 701 Land Use Planning Fundamentals*
  ▪ PLAN 703 Planning Professional Practice
  ▪ PLAN 704 Methods of Planning Analysis
  ▪ PLAN 710 Research Design
  ○ 2 700-level required studio courses for a total of 2.00 units:
  ▪ PLAN 720 Introductory Planning Project Studio
  ▪ PLAN 721 Advanced Planning Project Studio
  ○ 3 600-level elective one-term courses for a total of 1.50 units.
  ○ Some elective graduate courses may be taken in other departments but the supervisor's advice and approval should be sought before registering. One half course may be a reading course.
  ▪ *Students with a prior degree in planning may request to substitute an extra elective in place of PLAN 701, subject to approval by the Associate Director, Graduate Studies. Requests should be emailed to the Graduate Program Administrator.
• Link(s) to courses
  ○ Planning (PLAN) courses
  ○ Graduate course search
• Graduate Studies Internship
  ○ Required during the first spring term.
	submit a professional report of which they were sole or senior author.
	• References
	  ○ Number of references: 3
	  ○ Type of references: at least 2 academic
	• English language proficiency (ELP) (if applicable)
	
	Degree requirements
	Thesis option:
	
	• Graduate Academic Integrity Module (Graduate AIM)
	• Courses
	  ○ 5 700-level required one-term courses for a total of 2.50 units:
	  ▪ PLAN 700 Planning Paradigms and Theory
	  ▪ PLAN 701 Land Use Planning Fundamentals*
	  ▪ PLAN 703 Planning Professional Practice
	  ▪ PLAN 704 Methods of Planning Analysis
	  ▪ PLAN 710 Research Design
	  ○ 2 700-level required studio courses for a total of 2.00 units:
	  ▪ PLAN 720 Introductory Planning Project Studio
	  ▪ PLAN 721 Advanced Planning Project Studio
	  ○ 3 600-level elective one-term courses for a total of 1.50 units.
	  ○ Some elective graduate courses may be taken in other departments but the supervisor's advice and approval should be sought before registering. One half course may be a reading course.
	  ▪ *Students with a prior degree in planning may request to substitute an extra elective in place of PLAN 701, subject to approval by the Associate Director, Graduate Studies. Requests should be emailed to the Graduate Program Administrator.
	  ○ <u>Students must obtain an average of at least 70% in the courses presented in fulfilment of the degree requirements. A failing grade in any course will</u> occasion

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
○ The internship is intended to provide students who have not had prior planning work experience with the opportunity to work as paid or unpaid interns in professional settings. Internships will normally occur in the summer between the first and second years of the program, and are usually three to four months in duration. Internships may be with community-based organizations, corporations, government agencies, consulting firms, public interest groups, district health units, and planning departments of all levels of government, among other potential employers. ○ Although the School of Planning cannot guarantee a placement to every student who requires an internship, assisting students in securing valuable work experience during their program is a priority. ○ Students who have already completed a minimum of 10 weeks of work (min. 20 hours/week) in planning or a planning-related field will be considered to have met the internship requirement and will receive credit for the milestone (subject to approval by the Associate Director, Graduate Studies). Requests should be emailed to the Graduate Program Administrator. • Project Proposal Development Workshop • Master's Research Plan ○ An oral presentation must be completed in April of first year. • Master's Thesis ○ Students must write a thesis ~~(2.00 unit weight)~~ which contains evidence of research, analysis and synthesis. The thesis is supervised by a faculty advisor, examined by a committee of three or more members and is made available for anyone in the university or general public to use. The thesis must be defended successfully before an Examining Committee composed of a minimum of the student's Supervisor, one Committee member and one Reader. • Other requirements ○ Transfer between programs: permission to transfer from the Master of Planning (MPlan) program to the	an automatic review of a student's status by the School and may, in some cases, result in the requirement to withdraw from the program. • Link(s) to courses ○ Planning (PLAN) courses ○ Graduate course search • Graduate Studies Internship ○ Required during the first spring term. ○ The internship is intended to provide students who have not had prior planning work experience with the opportunity to work as paid or unpaid interns in professional settings. Internships will normally occur in the summer between the first and second years of the program, and are usually three to four months in duration. Internships may be with community-based organizations, corporations, government agencies, consulting firms, public interest groups, district health units, and planning departments of all levels of government, among other potential employers. ○ Although the School of Planning cannot guarantee a placement to every student who requires an internship, assisting students in securing valuable work experience during their program is a priority. ○ Students who have already completed a minimum of 10 weeks of work (min. 20 hours/week) in planning or a planning-related field will be considered to have met the internship requirement and will receive credit for the milestone (subject to approval by the Associate Director, Graduate Studies). Requests should be emailed to the Graduate Program Administrator. • Project Proposal Development Workshop ○ The Project Proposal Development Workshop helps students to refine their master's thesis research topic and develop their master's thesis research plan. • Master's Research Plan ○ An oral presentation must be completed in April of first year. • Master's Thesis ○ Students must write a thesis which contains evidence of research, analysis and synthesis. The thesis is supervised

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Master of Arts (MA) in Planning or Master of Environmental Studies (MES) in Planning programs, or from the MA or MES programs to the MPlan program, may be granted after the end of the first term of year one by the Associate Director, Graduate Studies (Graduate Officer) providing the student fulfills the requirements of the program they want to transfer to. A key requirement for MPlan students transferring to the MA or MES program is the written agreement of an appropriate faculty member to advise the students and of another appropriate faculty member to act as a committee member. The transfer does not imply any financial commitment by the School of Planning to support the student after the change in program of studies. However, this does not preclude a faculty member providing research support from grants or contract funds.	by a faculty advisor, examined by a committee of three or more members and is made available for anyone in the university or general public to use. The thesis must be defended successfully before an Examining Committee composed of a minimum of the student's Supervisor, one Committee member and one Reader. • Other requirements o Transfer between programs: permission to transfer from the Master of Planning (MPlan) program to the Master of Arts (MA) in Planning or Master of Environmental Studies (MES) in Planning programs, or from the MA or MES programs to the MPlan program, may be granted after the end of the first term of year one by the Associate Director, Graduate Studies (Graduate Officer) providing the student fulfills the requirements of the program they want to transfer to. Students in the thesis option may switch to the master's research paper option by the end of their first academic year upon approval by the Associate Director, Graduate Studies. A key requirement for MPlan students transferring to the MA or MES program is the written agreement of an appropriate faculty member to advise the students and of another appropriate faculty member to act as a committee member. The transfer does not imply any financial commitment by the School of Planning to support the student after the change in program of studies. However, this does not preclude a faculty member providing research support from grants or contract funds. **Master's Research Paper option:** • Graduate Academic Integrity Module (Graduate AIM) • Courses o 5 700-level required one-term courses for a total of 2.50 units: ▪ PLAN 700 Planning Paradigms and Theory ▪ PLAN 701 Land Use Planning Fundamentals*

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	▪ PLAN 703 Planning Professional Practice ▪ PLAN 704 Methods of Planning Analysis ▪ PLAN 710 Research Design ○ 2 700-level required studio courses for a total of 2.00 units: ▪ PLAN 720 Introductory Planning Project Studio ▪ PLAN 721 Advanced Planning Project Studio ○ 5 600-level elective one-term courses for a total of 2.50 units. ○ Some elective graduate courses may be taken in other departments but the supervisor's advice and approval should be sought before registering. One half course may be a reading course. ▪ *Students with a prior degree in planning may request to substitute an extra elective in place of PLAN 701, subject to approval by the Associate Director, Graduate Studies. Requests should be emailed to the Graduate Program Administrator. ○ Students must obtain an average of at least 70% in the courses presented in fulfilment of the degree requirements. A failing grade in any course will occasion an automatic review of a student's status by the School and may, in some cases, result in the requirement to withdraw from the program. • Link(s) to courses ○ Planning (PLAN) courses ○ Graduate course search • Graduate Studies Internship ○ Required during the first spring term. ○ The internship is intended to provide students who have not had prior planning work experience with the opportunity to work as paid or unpaid interns in professional settings. Internships will normally occur in the summer between the first and second years of the program, and are usually three to four months in duration. Internships may be with community-based organizations, corporations, government agencies, consulting firms, public interest groups, district health

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	units, and planning departments of all levels of government, among other potential employers. ○ Although the School of Planning cannot guarantee a placement to every student who requires an internship, assisting students in securing valuable work experience during their program is a priority. ○ Students who have already completed a minimum of 10 weeks of work (min. 20 hours/week) in planning or a planning-related field will be considered to have met the internship requirement and will receive credit for the milestone (subject to approval by the Associate Director, Graduate Studies). Requests should be emailed to the Graduate Program Administrator. • Project Proposal Development Workshop ○ The Project Proposal Development Workshop helps students to refine their master's research paper topic and develop their master's research paper plan. • Master's Research Plan ○ A research plan must be approved by a faculty supervisor in April of first year. • Master's Research Paper ○ Students must write a major research paper which contains evidence of research, analysis and synthesis. The research paper should be completed within two terms. It is supervised by a faculty advisor, examined by the advisor and a reader, and is made available for anyone in the University or general public to use. Oral defense is not required. • Other requirements ○ Transfer between programs: permission to transfer from the Master of Planning (MPlan) program to the Master of Arts (MA) in Planning or Master of Environmental Studies (MES) in Planning programs, or from the MA or MES programs to the MPlan program, may be granted after the end of the first term of year one by the Associate Director, Graduate Studies (Graduate Officer) providing the student fulfills the requirements of the program they want to transfer to. Students in the master's research paper option may

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
	switch to the thesis option by the end of their first academic year upon the approval by the Associate Director, Graduate Studies. A key requirement for MPlan students transferring to the MA or MES program is the written agreement of an appropriate faculty member to advise the students and of another appropriate faculty member to act as a committee member. The transfer does not imply any financial commitment by the School of Planning to support the student after the change in program of studies. However, this does not preclude a faculty member providing research support from grants or contract funds.

How will students currently registered in the program be impacted by these changes?

Currently registered students in the thesis option will be permitted to switch to the Master's Research Paper option once the option is effective in Spring, 2021.

Department/School approval date (mm/dd/yy): 12/11/20
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 02/19/21
Faculty approval date (mm/dd/yy): 02/25/2021
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

UNIVERSITY OF WATERLOO
UNIVERSITY APPOINTMENT REVIEW COMMITTEE (UARC)
REPORT TO SENATE
19 April 2021

FOR INFORMATION

This report is provided under Policy 76 – Faculty Appointments. From September 2019 to August 2020 (numbers in brackets are from 2018-19), UARC reviewed a total of 50 (87) proposals for regular faculty appointments.

Of the files reviewed, 19 (31) females, 31 (56) males, 0 of unknown gender (0), 5 (9) were tenured, 35 (54) were for probationary, and 10 (24) were for definite-term appointments.

More detail is provided in the table contained within this report. The percentage of females at the rank of assistant research professor, lecturer, assistant professor, associate professor and professor were: 0% (0%), 40% (41.4%), 39.4% (36.5%), 0% (0%) and 66.6% (33.3%) respectively. For comparison purposes, the total number of proposals reviewed in recent years was 58 (2009-10), 79 (2010-11), 87 (2011-12), 68 (2012-13), 70 (2013-14), 85 (2014-15), 69 (2015-16), 90 (2016-17), 102 (2017-18), 87 (2018-19) and 50 (2019-20).

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

Administration
Administrative information concerning UARC can be found at:
https://uwaterloo.ca/secretariat/committees-and-councils/university-appointments-review-committee.
Documents include: Summary of Recruiting Efforts for UW Faculty positions form, which chairs/directors are required to complete; Overview of Chair's Memo to the Dean; Conflict of Interest in Hiring Committees; UARC Presentation 2018; link to VPAP Forms and Templates.

UARC Membership
AHS: Clark Dickerson (until May 2023), Heather Mair (until May 2021)
ARTS: Anna Esselment (until May 2021)
ENG: Catherine Rosenberg (until May 2021), Marios Ioannidis (until May 2022)
ENV: Johanna Wandel, Prateep Nayak (until May 2021)
MATH: Peter van Beek (until May 2021), Penny Haxell (until May 2022)
SCI: Tadeusz Gorecki (until May 2022), Brian Dixon (until May 2022)
Gerry Schneider (ENG) (Chair until May 2022)

Summary of Proposals for Regular Faculty Appointments for Two Years or More

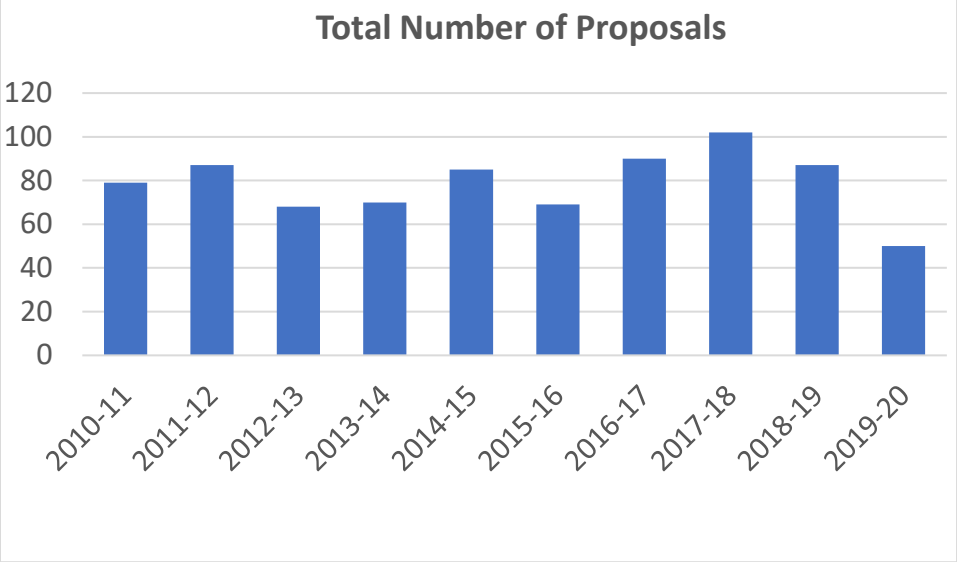
Reviewed by UARC

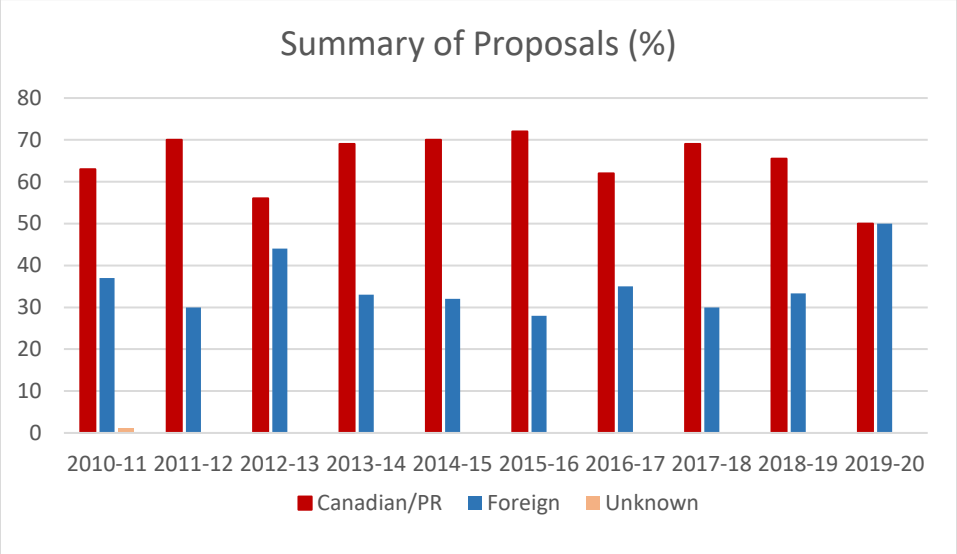
September 2019 – August 2020

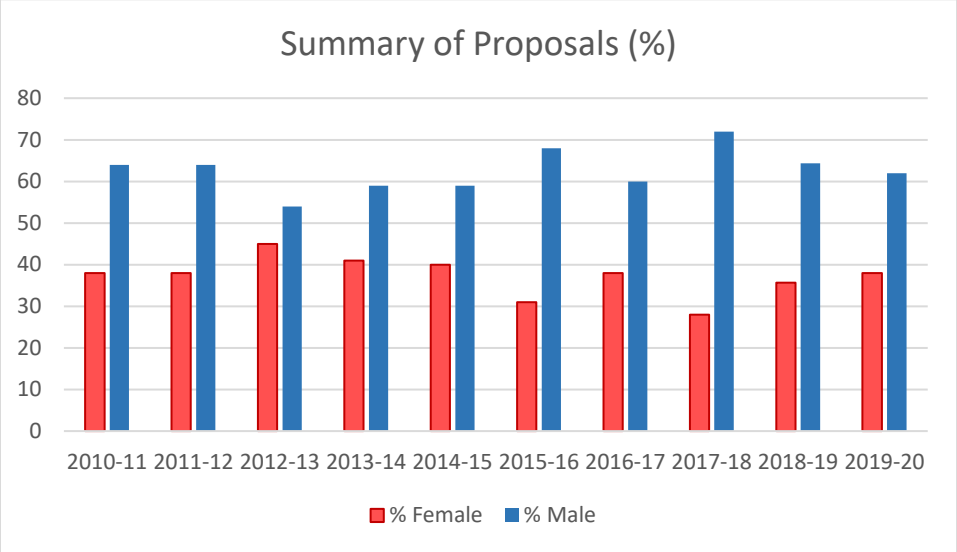
Faculty	Files	Residency			Gender		Appointment Type									Professorial Rank												Results			
		Cdn	PR	For	F	M	Tenure			Probationary			Definite Term			Lecturer			Assistant Professor			Associate Professor			Full Professor			Offers	Accepted	Declined	Pending
								F	M		F	M		F	M		F	M		F	M		F	M		F	M				
ARTS	3	2	0	1	1	2	0	0	0	2	1	1	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	3	3	0	0
ENG	15	7	2	6	4	11	1	1	0	11	3	8	3	0	3	3	0	3	10	3	7	1	0	1	1	1	0	15	9	6	0
ENV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEALTH	3	3	0	0	1	2	0	0	0	2	0	2	1	1	0	1	1	0	2	0	2	0	0	0	0	0	0	3	3	0	0
MATH	26	7	1	18	10	16	4	1	3	20	9	11	2	0	2	2	0	2	19	9	10	3	0	3	2	1	1	26	9	17	0
SCIENCE	3	3	0	0	3	0	0	0	0	0	0	0	3	3	0	3	3	0	0	0	0	0	0	0	0	0	0	3	3	0	0
TOTAL	50	22	3	25	19	31	5	2	3	35	13	22	10	4	6	10	4	6	33	13	20	4	0	4	3	2	1	50	27	23	0

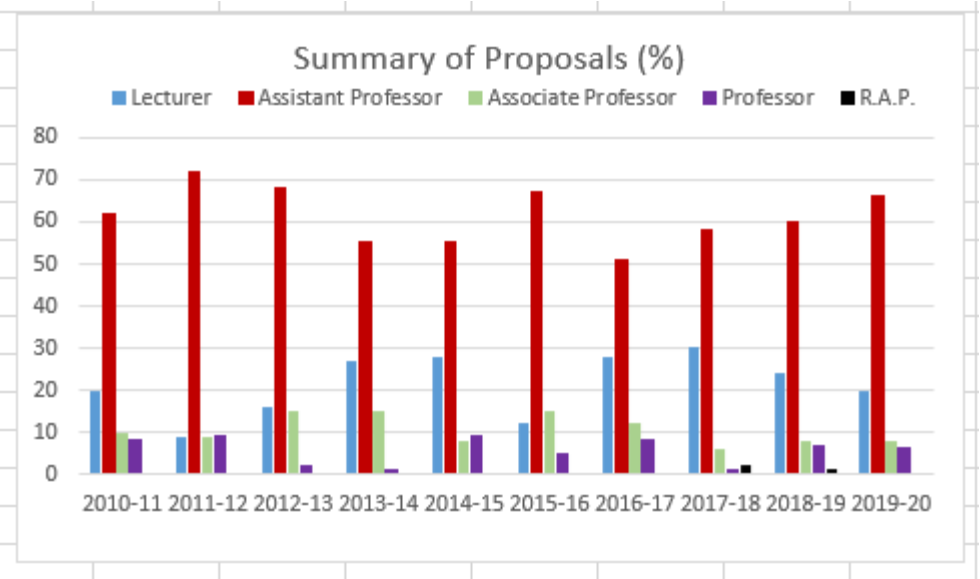
Of the 27 who accepted offers: 11 (41%) were female, 16 (59%) were male, 0 were of unknown gender (0%). Of the 23 who declined offers: 8 were female (34.8%), 15 were male (65.2%), 0 were of unknown gender (0%). There are no offers still pending.

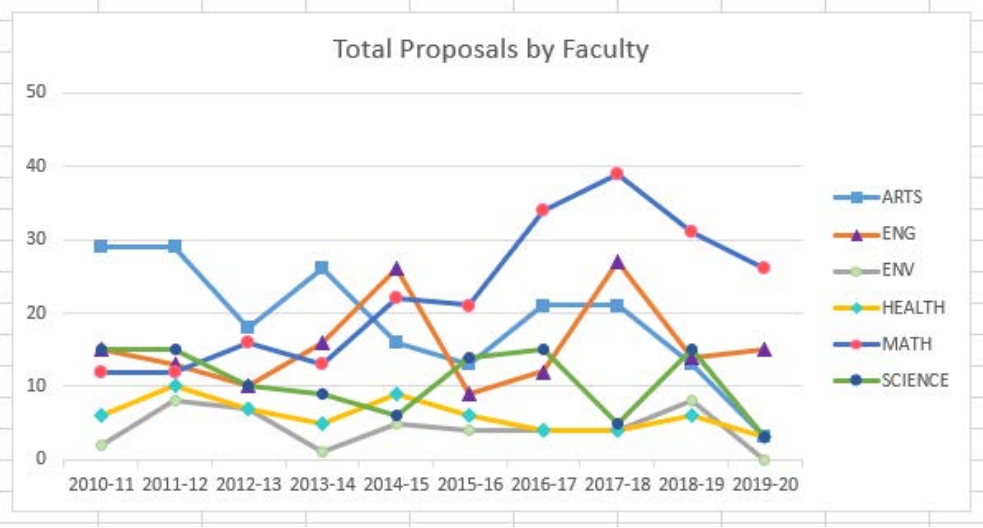
Gerry Schneider
Chair, University Appointments Review Committee

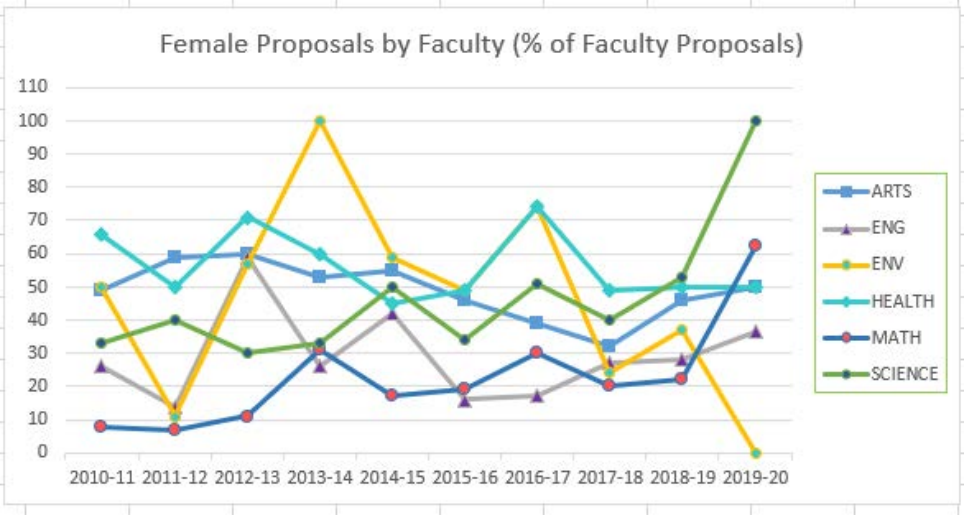

Total Number of Proposals
120
100
80
60
40
20
0
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20


Summary of Proposals (%)
80
70
60
50
40
30
20
10
0
2010-11 2011-12 2012-13 2013-14 2014-15 2015-16 2016-17 2017-18 2018-19 2019-20
Canadian/PR
Foreign
Unknown


Summary of Proposals (%)
80
70
60
50
40
30
20
10
0
2010-11 2011-12 2012-13 2013-14 2014-15 2015-16 2016-17 2017-18 2018-19 2019-20
% Female
% Male







Gerry Schneider
Chair, University Appointments Review committee

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

Introduction

This report to Senate highlights research outputs and outcomes for the period March 2021 by the thematic areas as outlined in Waterloo's Strategic Plan 2020-25.

Waterloo International

Agreements

- Waterloo International facilitated the signing of one student mobility agreement in March: *Korea Advanced Institution of Science and Technology (South Korea) Student Mobility Agreement*.

Awards and Distinctions

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

- **2021 Keith Fagnou Award: Graham Murphy** (Science, Chemistry)

The award, sponsored by the University of Ottawa and the Canadian Society for Chemistry (CSC)'s Organic Chemistry Division, is presented to a distinguished organic chemist in Canada within 12 years of receiving their PhD.

- **2021 Macromolecular Science and Engineering Award: Jean Duhamel** (Science, Chemistry)

Awarded by the Chemical Institute of Canada, this award is presented to an individual who has made a distinguished contribution to macromolecular science or engineering: "*Duhamel is considered as a modern pioneer of the use of fluorescence spectroscopy techniques in polymer science*," says Professor Vassili Karanassios, who nominated Duhamel for the award. "*His methods go far beyond designing novel methods for studying the properties of polymers. This research places him in a very special category of distinguished scientists*."

Tri-Council Funding

Waterloo received Project grants and Priority Announcement funding resulting from the CIHR fall 2020 Project Grant competition.

Project grants

- **Monica Maly** (Health, Kinesiology): *"Improving Care for Knee Osteoarthritis by Predicting Who Will Get Worse: Exploring the Interactions of Joint Biomechanics, Inflammation and Immunity"* **$1,091,275 over 5 years**

- **Paul Stolee** (Health, SPHHS): "*Developing strategies and resources to support patient and family engagement with racialized immigrant older adults*" **$229,500 over 3 years**

Priority Announcements

COVID-19 research gaps and priorities

- **Mark Oremus** (Health, SPHHS): "*Social Isolation and Cognitive Function in Middle-aged and Older Adults: A Prospective Analysis of the Canadian Longitudinal Study on Aging"* **$195,075 over 2.5 years**

Population and Public Health – Health Cities

- **Leia Minaker** (Environment, Planning): *"Urban environments and youth mental health: examining how adolescent mental health indicators are associated with urban design and cognitive architecture in a mid-sized Ontario city*" $100,000 over 1 year

Patient-Oriented Research

- William Wong (Science, Pharmacy): *"Understanding the treatment benefits of chimeric antigen receptor T-cells for lymphoma: quality of life, health utility, cost, and return to work"* $100,000 over 1 year

COVID Research

PIs: Trevor Charles, Andrew Doxey, and Jozef Nissimov (Science, Biology)

The Waterloo Centre for Microbial Research has received funding support for the implementation of a pilot COVID-19 saliva testing programming, spanning an initial period of six months. The main goals of the project will be to use a rapid in-house testing of individuals on campus for the detection of asymptomatic infections, thereby contributing to the prevention of outbreaks at the University of Waterloo. The project will be an important stepping stone in preparation for future reopenings on campus that may be under conditions of long term circulation of the virus, and could provide novel insights on the type of variants that are associated with asymptomatic individuals.

International Research and Partnerships

In March, Waterloo received notice of three new research partnership agreements:

- **John Hirdes**, School of Public Health and Health Systems, has been awarded an international grant of $500,000 from the New Frontiers in Research Fund – Global stream (NFRF) to join a 13 country European consortia funded by Horizon 2020, for the project "*Individualized CARE for Older Persons with Complex Chronic Conditions in Home Care and Nursing Homes (I-CARE4OLD).*"

- **Anita Layton**, Department of Applied Mathematics, has successfully joined a Netherlands – Canada Type 2 Diabetes Research Consortium Team Grant, and has been awarded an international grant of $200,000 from the Canadian Institutes of Health Research (CIHR) through the University of Sherbrooke for the project "*Restoring 24-hour substrate rhythmicity to improve glycemic control by timing of lifestyle factors.*"

- **Hyock Ju Kwon**, Department of Mechanical and Mechatronics Engineering, has been awarded an international grant of $280,000 from the Korean Electrotechnology Research Institute to continue the second phase of the project "*Development and Application of AI System for Manufacturing*."