University of Waterloo
SENATE EXECUTIVE COMMITTEE
Notice of Meeting

Date: Monday 1 June 2020
Time: 3:30 p.m.
Place: Teams Videoconference

AGENDA	Action
1. Minutes of the 4 May 2020 Meeting	Decision
2. Business Arising from the Minutes	
3. Draft 15 June 2020 Senate Agenda	Decision
4. Report of the Vice-President, Academic & Provost a. Roster of Graduands†	Decision
5. Other Business	

25 May 2020

Karen Jack
University Secretary

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

University of Waterloo
SENATE EXECUTIVE COMMITTEE
Minutes of the 4 May 2020 Meeting

Present: Kofi Campbell, Jeff Casello, Joan Coutu, George Freeman, Feridun Hamdullahpur (chair), Karen Jack (secretary), Christiane Lemieux, Bill Power, Sam Rubin, James Rush, Abbie Simpson, Richard Staines, Bryan Tolson, Johanna Wandel

Regrets: Naima Samuel

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

1. MINUTES OF THE 7 APRIL 2020 MEETING

Members heard a motion to approve the minutes of the 7 April 2020 meeting.

Power and Campbell. Carried unanimously.

2. BUSINESS ARISING FROM THE MINUTES

There was no business arising.

3. ELECTIONS TO SENATE COMMITTEES

The committee heard a motion to acclaim the new and revised membership of Senate committees and councils received after the 20 April 2020 Senate meeting, per the report distributed to the committee this morning.

Tolson and Power. In discussion: the terms of the faculty members appointed to the Board are unclear. [Secretary's note: Senators Fieguth, Woo, and Yang will serve two-year terms, and Senator Milligan will serve a one-year term (which is coincident with his term on Senate).]

The question was called and the motion carried unanimously.

4. REPORT OF THE VICE PRESIDENT, ACADEMIC & PROVOST

Roster of Graduands. The committee heard a motion to recommend that Senate delegate the approval of the roster of graduands for the June convocation ceremony to its Executive Committee for its 1 June 2020 meeting.

Tolson and Casello. Carried unanimously.

5. DRAFT 19 MAY 2020 SENATE AGENDA

Members heard that the May meeting will occur without the glitches encountered at the April meeting. Members heard a motion to approve the agenda.

Freeman and Wandel.

In discussion: members heard that there will not be a report from Undergraduate Council, and a department name change will be added to the consent agenda; agreement to add a new agenda item #7, "Outlining Discussions and Decisions Regarding COVID-19 and the Fall Term"; Casello provided further rationale for the parental leave change proposed for the Graduate Studies Calendar; agreement that the Secretary will ensure correct dates for Karim Karim's appointment on page 15 of the agenda; the provost will look into whether a decision is being put forward with respect to the course evaluation matter.

The question was called and the motion carried unanimously.

6. OTHER BUSINESS

There was no other business.

5 May 2020

Karen Jack
University Secretary

draft

University of Waterloo
SENATE
Notice of Meeting

Date: Monday 15 June 2020
Time: 3:30 p.m.
Place: Teams Videoconference

	OPEN SESSION	Action
3:30	**Consent Agenda** **Motion:** To approve or receive for information by consent items 1-6 below.	
	1. Minutes of the 19 May 2020 Meeting*	Decision
	2. Reports from Committees and Councils	
	a. Graduate & Research Council	Information
	b. Undergraduate Council*	Decision/Information
	3. Reports from Teaching Awards Committees	
	a. Amit & Meena Chakma Awards for Exceptional Teaching by a Student Committee*	Information
	b. Distinguished Teacher Awards Committee*	Information
	4. Report of the President	
	a. Recognition and Commendation	Information
	5. Reports from the Faculties**	Information
	6. Committee Appointment	Decision
	Regular Agenda	
3:35	7. Business Arising from the Minutes	Information
	8. Reports from Committees and Councils	
3:40	a. Graduate & Research Council	Decision
3:50	b. Undergraduate Council*	Decision/Information
4:10	9. Report of the President	Information
4:20	10. Q&A Period with the President	Information
4:30	11. Report of the Vice-President, Academic & Provost	Information
4:40	12. Report of the Vice-President, University Research & International*	Information
	a. Waterloo's International Strategic Direction*	Information
4:50	13. Other Business	

	CONFIDENTIAL SESSION	
4:55	14. Minutes of the 19 May 2020 Meeting*	Decision
5:00	15. Business Arising from the Minutes	
5:05	16. Report from Committees a. Nominating Committee for Honorary Degrees	Decision
5:15	17. Other Business	

25 May 2020
KJJ/ees

Karen Jack
University Secretary
Secretary to Senate

*to be distributed
**Applied Health Sciences and Arts to be distributed

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
15 June 2020

Senate Graduate & Research Council met on 11 May 2020 and agreed to forward the following items to Senate for approval or information as part of the consent agenda.

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

FOR INFORMATION

CURRICULAR SUBMISSIONS

On behalf of Senate, council approved new courses, course revisions, course inactivations, new milestones, milestone inactivations, and minor program revisions for the Faculty of Arts (master of digital experience innovation; MDEI), Faculty of Engineering (conrad school of entrepreneurship and business, department of civil and environmental engineering), Faculty of Mathematics (applied mathematics, pure mathematics), and Faculty of Science (physics, pharmacy, chemistry).

ACADEMIC PROGRAM REVIEW REPORTS

On behalf of Senate, council approved:

- Two-Year Progress Report – Guelph-Waterloo Centre for Chemistry and Biochemistry (review completed by University of Guelph), as presented at Attachment 1.

/kw

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

Charmaine Dean
Vice President, Research & International

OFFICE of THE PROVOST AND VICE-PRESIDENT (ACADEMIC)
OFFICE OF QUALITY ASSURANCE

Cyclical Program Review of the Guelph-Waterloo Centre for Graduate Work in Chemistry and Biochemistry

Follow-up Report on the Implementation Plan

[Insert report submission date]

The review took place during the [eg 2016-2017] cycle.

The final stage of the cyclical program review is a follow-up report describing the progress to-date on the agreed upon implementation plan. Complete the table below and include further information, if necessary. The Chair/Director responsible for the program(s) under review is responsible for completing the table and, prior to final submission to the Senate Committee on Quality Assurance, will review this with the Dean and Associate Deans (Academic and/or Graduate Studies and Research) of the applicable College. For interdisciplinary programs with joint management responsibility, the submission should be reviewed with all relevant parties. For programs with a joint external partner, the submission should be reviewed by the joint partner. For interdisciplinary and joint programs, the signature page must include the relevant Chair/Director/Dean from the partner academic unit and/or partner institution.

SCQA reviews the submission and reports to Senate per the University's IQAP. If necessary, reports may also be shared with other relevant Senate Committees/Boards (ie Board of Undergraduate Studies, Board of Graduate Studies).

Questions on follow-up reporting, this template or the cyclical review process may be directed to the Office of Quality Assurance.

Updated Implementation Plan: Briefly describe the status of each recommendation (completed, in progress, incomplete) and provide rationale for any alterations to the original implementation plan.

#	Recommendations	Proposed Follow-up	Responsibility for Leading Follow-up	Original Timeline for Completion	Status and Updated Timeline with Follow-up Plan
1.	Faculty Renewal at Guelph	3 new positions to be filled	Department Chair	January 2017	Guelph: 1 faculty position was filled in 2017 at the full professor level (Prof. Aicheng Chen, CRC-Tier1) and another was filled in 2018 (Prof. Khash Ghandi associated with Prof. Tremaine's Industrial Research Chair). 3 additional appointments were recently made at the Assistant Professor level (Dr Leanne Chen (computational chemistry), Dr Rui Huang (NMR Spectroscopy and protein dynamics), Dr Derek O'Flaherty (RNA/DNA replication)); the new faculty will join the Department in Mar-Sept 2020**.** Waterloo: Since 2017, 3 appointments were made at the Assistant Professor level (Dr Rodney Smith (electrochemistry), Dr Anna Klinkova (nanomaterials), Subha Kalyaanamoorthy (computational biochemistry). The department is seeking to fill a faculty position in analytical chemistry in 2021. With the current department age demographic, it is anticipated there will be ~1 faculty hire/year for the next ~10 years.
2.	Link rooms update	Task force formed in Feb 2017	GWC Director / Task Force	Summer 2018	Ongoing videoconferencing facilities and support remain a critical requirement for GWC2 programs. Guelph: Full replacement of all communications equipment in MainLink and MiniLink. Phase 1 was

					completed in Summer 2017; Phase II was completed in Summer 2018. Waterloo: >10 yr old CODEC from Guelph used to upgrade MainLink. Staff support is Joe Mignacca (Guelph, university wide audio-visual support) and Paul Miskovsky (Waterloo, director, information technology). Commitment for maintenance of existing equipment is in place. The equipment in the MainLink at Waterloo is functional but limited in current capabilities and lifetime. It is clear there is an upcoming need for new videoconferencing capabilities, but there is no plan in place to meet this important need to support ongoing GWC2 graduate courses, comprehensive exams, committee meetings, and seminar series.
3.	Admission of International students increased at Guelph		University	Ongoing	Implementation of a sustainable internationalization plan is the responsibility of the Provost's office. Guelph: Increased International Student enrollment is planned as part of the University of Guelph's Strategic Mandate Agreement 3, but details are not yet official. Currently all international PhD students who maintain >80% average have differential fees waived.
4./ 5.	New graduate courses	Curriculum committee formed	Director / Dept Chairs	Fall 2018	Course curriculum committee formed in 2018. A plan has been made and is in the process of being implemented to enhance graduate training in written and oral communication skills and professional development. A pilot course (CHEM 7100/710: Manuscript Writing) including e-learning is being developed by Prof Kathryn Preuss (Guelph) in Winter 2020 and will be offered

					Summer 2020. New core courses in communication (including revising CHEM 7940/794: Masters Seminar) are in development for approval in 2020.
6.	Raise profile and brand awareness	New website	Director	Fall 2017	New GWC2 website was launched in March 2018, business cards, GWC2 flyer, Facebook page / Twitter. Social media presence remains only weakly developed due to the exchange of student leaders but is expected to expand in Winter 2020. Guelph will follow the Waterloo model of providing Departmental support for maintaining Faculty member web profiles.
7.	Integration between campuses		Director	Spring 2017	GWC2 graduate student club formed; undergrad/grad socials; continuing GWC2 seminar series. CFI application for Free Electron Laser based at Waterloo includes both campuses.
8.	Staff transition	New hires	Dept Chairs	Fall 2017	Guelph: Lisa O'Dwyer was hired as Graduate Program Assistant in Summer 2017; Dan D'Aoust was hired into a regular full time position in the Chemistry Stockroom, and Karen Ingram has been transferred from the College of Biological Sciences to Chemistry as the regular full-time Stockroom Assistant. Rick Ford was hired as Chemistry's Software Manager and Web Support Staff. No other retirement replacement hires to date.
9.	Students offices separated from labs		University and Departments	2018	Guelph: MacN-West Phase 1 renovations were completed in Summer 2017; this created flexible common spaces on each of the four levels in MacN-West, and no students now have offices in the MacN-West laboratories. All workstations in MacN-West w**ere** replaced in December 2019 as part of the Phase 2 budget. Chemistry students in Summerlee Science Complex already have office spaces

					separate from laboratory spaces. Shared student office space will be created in Summer 2020 for Chemistry students in MacN-East.
10.	Reduce MSc completion time		Director / Chairs	2017	Guelph: Funding from Provost's office for students expires at end of eligibility period (2 years MSc, 4 years PhD), providing financial incentives for appropriate timelines. Guelph is exploring a 4+1 BSc+MSc program to streamline and accelerate the transition to graduate, see also 2.5 below. Revisions to graduate courses (see **4./5.** above) are being designed to reduce MSc completion time.
11.	Recruitment		Director	2018	Recruitment committee formed and met several times in 2018. Undergraduate socials in late Fall 2018 were expanded to include outside undergraduate students. Guelph is exploring the possibilities of expanding the number and quality of summer internships available to the College and the Department. 2020: Guelph is exploring developing website promotional videos.
12.	Increase Centre resources to reduce workload	Increase staff	Department / University	2017	GWC2 streamlined comprehensive and Guelph streamlined routine student reporting paperwork through adoption of online document workflow systems. Resources for workload have been somewhat improved through hiring of Graduate Program Assistant (see **8.** above).

The Department Chair/Director, in consultation with the Dean, is responsible for monitoring the Implementation Plan on an ongoing basis.

If necessary, use the following sections to include any additional, relevant information.

1. Explain any circumstances that have affected the original implementation plan:

1.1) Change of Directorship (to Waterloo) was to be effective September 2018, however, did not take effect until January 2019. The previous Director (at Guelph) stayed on in the interim.

1.2) Faculty renewal at Guelph was delayed (see **1.** above).

2. Address any significant developments or initiatives that have arisen since the cyclical review, or that were not considered during the review:

2.1) The University of Guelph has begun the process of replacing its 300 MHz NMR system that is used extensively for undergraduate teaching and graduate students' research. Product and vendor selections are expected in early 2020. The University of Waterloo obtained CFI funding in 2019 for a new console for the 600 MHz NMR (installed Jan 2020) and a new 300 MHz system (to be installed Spring 2020); both instruments are used very predominantly for research, including training of many graduate students.

2.2) The Surface Analysis facility at the University of Guelph (managed by the Electrochemistry Technology Centre) has been upgraded by a new higher throughput electron analyzer (~$200K); a funding application has been made to improve the sample handling systems (~$175K).

2.3) New faculty office furnishings have been purchased upon demand at the University of Guelph; all faculty offices in MacN-West will have been renovated by the end of Summer 2020.

2.4) The completion of the MacN-West renovations in Sept 2020 will bring the Guelph facilities into full workplace compliance.

2.5) The University of Guelph is actively exploring the creation of a '4+1' streaming option for strong students that would lead to a combined undergraduate and Master's degree in a total of 5 years, and provide gifted students with enhanced access to the research facilities and projects of the Department. This 'managed enrollment' would help us to identify the strongest students in our programs, and it would serve as a recruiting tool for our programs. This '4+1' pathway has the support of the Assistant Vice-President (Graduate Studies) and is being considered at the College level. Once a framework is established, the Department of Chemistry at Guelph will assess its viability and implementation with GWC2.

Date of Next Program Review: April 2023
Date

Signatures of Approval:

Elizabeta Mercury

_____ **Feb 10 2020**_____
Chair/Director **Date**

Bob Lemieux

Digitally signed by Bob Lemieux
DN: cn=Bob Lemieux, o, ou, email=rplemieux@uwaterloo.ca, c=CA
Date: 2020.02.13 15:05:47 -05'00'

_____
Dean **Date**

Mary Wells
Dean College of Eng and Physical Scis, U Guelph

University of Waterloo
SENATE
Report of the President
15 June 2020

FOR INFORMATION

Recognition and Commendation

Wes Graham (1932–1999), the first director of the University's computing centre and the "Father of Computing" at the University of Waterloo, has been posthumously awarded the **2019 Lifetime Achievement Award from CS-Can/Info-Can**. "Wes Graham provided exceptional leadership in software developed for education that has given Waterloo and Canada an international reputation. His contributions shaped computer science education worldwide. He was pivotal in acquiring some of the world's fastest computer hardware during our early days at Waterloo," said Mark Giesbrecht, Director of the Cheriton School of Computer Science. From the 1960s until his death in 1999, Graham's pioneering work and leadership changed the way programming and other computer-related skills were taught at the University of Waterloo, across Canada and internationally. Thousands of copies of the software produced under his direction were used in more than 60 countries, and influenced the teaching of hundreds of thousands of students as well as encouraged dramatic improvements in software development for business and government. His impact on Canadian and international computer science education and software development practices has been dramatic.

Graham recognized that commercial software was not designed for teaching, and so, in 1965, Wes led four students and a junior faculty member in building WATFOR — Waterloo Fortran Compiler — for the IBM 7040 computer to solve the speed and error problems. This software made Waterloo a leader in teaching undergraduate students about computers. Graham led the development of other educational software, including software for COBOL, Pascal, BASIC, APL, and local area networks called Waterloo MicroNET, Waterloo JANET and MacJANET. His research also created early versions of word processors, spreadsheets and databases. As well, in the early 1960s, Wes convinced the University to invest in an IBM 7040. With the creation of the Faculty of Mathematics at Waterloo, he again provided leadership to obtain an IBM 360/75, the largest computer installed in Canada. Because of the widespread use of Waterloo software, Graham acquired over $35 million from major computer companies such as IBM, Digital Equipment and Hewlett Packard. Graham also assisted former students in starting spin-off companies including Watcom (now a division of SAP), Waterloo Maple (now Maplesoft), and OpenText.

(adapted from the Cheriton School of Computer Science News, 8 April 2020)

Professor and Nobel Laureate **Donna Strickland** and University Professor and Canada Research Chair **Linda Nazar** have been named **Fellows of the Royal Society**, the world's oldest independent scientific academy. Strickland and Nazar join more than 60 exceptional scientists from around the world who have been elected as Fellows and Foreign Members of the Royal Society. The 51 new Fellows, 10 Foreign Members and one Honorary Fellow have been selected for their outstanding contributions to scientific understanding. "They embody the global nature of science, with representation from Sweden, Israel, Germany, Australia, Canada, UK-born scientists working in Europe and beyond, and researchers from around the world enriching Britain's own research and innovation sector," says a Royal Society news release. "Their ranks include six Nobel laureates, as well as internationally recognised leaders in industry and science policy." New Fellows are formally admitted to the Society at the Admissions Day ceremony,

traditionally in July, when they sign the Charter Book and the Obligation of the Fellows of the Royal Society. However, the Royal Society reports that, considering current circumstances, this year's Admissions Day will take place in May 2021.

(adapted from the *Daily Bulletin*, 30 April 2020)

The Warriors football program saw three of their stars **drafted to CFL clubs** last week, tying the highest number of players drafted in one season. **Tyler Ternowski**, **Kurtis Gray**, and **Dion Pellerin** all got to live out their childhood dream of hearing they named called out on draft night. "I could not be more proud of these three Warriors," said head coach Chris Bertoia. "They have all come so far in their careers and have worked so hard to earn this feeling. I know when the chance presents, they will do everything they can to earn rosters spots on their respective clubs."

(adapted from the *Daily Bulletin*, 6 May 2020)

Every year, six exceptional co-op students, one from each Faculty, are recognized by the University of Waterloo for their contribution to their employer, their community, and the further development of experiential education. "These exceptional individuals have shown that co-op students at the University of Waterloo have a significant impact long before graduation," says Feridun Hamdullahpur, president and vice-chancellor. "It is wonderful to see their ability to learn, adapt to change and harness a range of essential skills that have made their employer and society better. We will continue to need the spirit and determination of these students more than ever."

The following are the University of Waterloo's 2019 Co-op Students of the Year:

Yasmeen Mihad Razvi – Health Studies (Faculty of Applied Health Sciences): Razvi served as a Clinical Research Assistant at Sunnybrook's Odette Cancer Centre. During her time there, she initiated a study analyzing the accuracy of survival predictions for patients seen in the palliative clinic. The manuscripts were accepted into *Supportive Care in Cancer* and *Annals of Palliative Medicine*. Razvi also co-initiated a review of radiation doses to the heart and lung of approximately 5,000 patients seen at the Odette Cancer Center spanning from 2011 to 2018. In addition, she created a literature review on the lack of adherence of clinicians to treatment guidelines which were published in *Supportive Care in Cancer* and cited and shared by researchers around the world.

Taylor Legere – Peace and Conflict Studies (Faculty of Arts): Legere served as an Operations Coordinator at the Intact Centre on Climate Adaptation for the University of Waterloo's Faculty of Environment. During her time there, she created a "Three Steps to Basement Flood Protection Infographic" which has been shared broadly across Canada. Legere also developed an app mock-up for her team that provided residents with a customized action list on how to reduce their flood risk. During her personal time, she promotes both co-operative education and her area of study to incoming students by participating in open houses and orientation.

Eric Jihoon Song – Biomedical Engineering (Faculty of Engineering): Song served as a Software Developer at Maisha Meds. During his time there he worked on a core Android Application that allowed customers in Kenya to buy pharmaceuticals. Song also improved the old application by redesigning the basic data models within the app to target user complaints, help with future scalability and ensure full backward compatibility. For his capstone project, he is studying the effects of how the sub-Saharan African climate influences the effectiveness and quality of pharmaceutical drugs in East Africa – a notable problem for the public in this region.

David Pau – Planning (Faculty of Environment): Pau served as a Student Planner for the Region of Waterloo's Transportation & Environmental Services department, focused on development for Grand River Transit. During his time there, Pau helped successfully launch the largest transit infrastructure project in Waterloo Region's history: the ION Light Rail Transit. During the launch process he identified and fixed an error, that previously inflated the number of bus riders by approximately 35 per cent, to increase the accuracy of bus rider data in an annual region-wide report. In support of co-op, he spoke to over 20 Canadian transportation professionals at the 2019 Unified Mobility Summit about his contributions to the GRT as a co-op student and the benefits of co-operative education as whole.

Keer Liu – Computer Science (Faculty of Mathematics): Liu served as a Software Infrastructure Intern at Slack Technologies Inc. During her time there, she performed a data migration from Slack's old database to a more reliable database which resulted in reduced costs and improved efficiency and quality. Liu also de-provisioned the old database which saved a large amount of server maintenance money and improved the database quality, saving engineers from operational overheads. In addition, she successfully organized the 2018 UW Engineering Hackathon, hosting more than 300 students and over 10 organizations at the event's Career Fair, promoting student-employer connections.

Lydia Vermeer – Biochemistry (Faculty of Science): Vermeer served as a Genetic Counsellor Assistant at Sunnybrook Health Sciences Centre in the Cancer Genetics department. During her time there, Vermeer prepared a 40-page document along with numerous supporting materials for the development of a new format of genetic counselling and testing for breast-cancer that is physician-initiated. Vermeer also helped curate a database of clinic patients with mutations which involved comparing 4,000 mutations to online databases to ensure they were entered in standard notation. To ensure a smooth transition into the workplace for future successive Waterloo co-op students, she also rewrote the student manual for the position.

In addition to the students listed above, **Emily Lam** (Applied Health Sciences), **Jonathan Lee** (Arts), **Meggin Crisp** (Engineering), **Binoy Pattharwala** (Environment), **Spencer Whitehead** (Mathematics) and **Jonathan Hsu** (Science) received honourable mentions for Waterloo's awards.

(adapted from the Co-operative and Experiential Education News, 13 May 2020)

Kelly Grindrod never was your traditional neighbourhood pharmacist. An educator and practicing pharmacist, Grindrod holds the OCP Professorship in Pharmacy Innovation for the University of Waterloo. The diversity of her roles and accomplishments led to her receiving the **Pharmacist of the Year Award for 2020**. This highest distinction for Canadian pharmacists is presented annually by **the Canadian Pharmacists Association**, the national advocacy body for pharmacy in Canada. As an educator, innovator, and pharmacist, Grindrod has been at the forefront of encouraging pharmacists to embrace scope changes. That's what led her to design Pharmacy5in5, an online platform where pharmacists can learn five things about complex health topics in five minutes or less. She works with digital arts experts across the University of Waterloo and employs game theories and evidence-based health information in developing modules on topics like cannabis and pharmacy, opioids and naloxone, and, most recently, COVID-19. "I love figuring out messy problems and showing others how to navigate a similar problem," said Grindrod. "Pharmacy can be a puzzle, where you have dozens of pieces that need to fit together. In a busy pharmacy, it can be hard to find the time to solve the puzzle. That's why we started making our infographics and animated videos for Pharmacy5in5. Through my work, I've been able to find creative solutions to show pharmacists how to embrace these challenges and to feel empowered to help their patients."

As faculty at the School of Pharmacy, Grindrod has been recognized for her teaching and mentorship, held several academic leadership positions, and built a research group that examines medication use and digital technologies. The focus on technology emerged in part as a response to the way new technology is disrupting traditional pharmacy practice. Grindrod continues to model that kind of assertive and evidence-based practice for her students. “I love being a pharmacist but for me, “pharmacist” has meant many different things. I love that I get to show people a different side of pharmacy, and to also show my students how rewarding an academic career can be.”

(adapted from the School of Pharmacy News, 20 May 2020)

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF ENGINEERING TO SENATE
June 15, 2020

FOR INFORMATION

A. ***APPOINTMENTS***

New Definite Term Full-time

EL-HAG, Ayman, Lecturer, Department of Electrical and Computer Engineering, May 1, 2020 – April 29, 2022. PhD in Electrical Engineering, Thesis: Effect of Insulator Profile on Aging Performance of Silicone Rubber Insulators, University of Waterloo, Waterloo, ON, 2003; MS in Electrical Engineering, Thesis: Transformer No-Load Current Harmonics, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, 1998; BS in Electrical Engineering, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, 1993.

New Definite Term Reappointment Full-time

NASSAR, Mohammed, Lecturer, Department of Electrical and Computer Engineering, May 1, 2020 – April 29, 2022. PhD, University of Waterloo, Waterloo, ON, 2017; MSc, Alexandria University, Alexandria, Egypt, 2010; BSc, Alexandria University, Alexandria, Egypt, 2006.

SHAH, Muhammad Umair, Lecturer, Department of Management Sciences, August 31, 2020 – August 29, 2022. PhD, Doctor of Philosophy, Department of Management Sciences, University of Waterloo, Waterloo, ON, 2016; MSc, Department of Management Sciences, University of Waterloo, Waterloo, ON, 2011; BBA, Department of Management Sciences, National University of Computer and Emerging Sciences, Lahore, 2009.

SHAVANDI, Hassan, Lecturer, Department of Management Sciences, September 1, 2020 – August 31, 2021.PhD, Department of Industrial Engineering, Sharif University of Technology, Tehran, Iran, 2005; MSc, Department of Industrial Engineering, Sharif University of Technology, Tehran, Iran, 1998; BSc, Department of Industrial Engineering, Azad University of Qazvin, Qazvin, Iran, 1996.

Visiting Appointments

LIANG, Yu, Scholar, Department of Mechanical and Mechatronics Engineering, August 1, 2020 – January 31, 2021.

NIE, Qianqian, Scholar, Department of Mechanical and Mechatronics Engineering, March 1, 2020 – November 29, 2020.

Special Reappointments

Undergraduate Instruction, Research and Other

MURRAY, Mike, Engineer in Residence, Department of Civil and Environmental Engineering, May 1, 2020 – August 31, 2020.

Adjunct Appointments

Graduate Supervision and Research

KIM, Jong Uk, Associate Professor, Department of Mechanical and Mechatronics Engineering, May 1, 2020 – April 30, 2023.

Adjunct Reappointments

Graduate Supervision
KOLLER, Heinz, Lecturer, School of Architecture, May 1, 2020 – August 31, 2020.

Adjunct Reappointments
Graduate Supervision and Research
BOHNS, Vanessa, Associate Professor, Department of Management Sciences, July 1, 2020 – June 30, 2023.

HABERKAMP, Jens, Professor, Department of Civil and Environmental Engineering, May 1, 2020 – April 30, 2023.

Cross-Appointments
NACKE, Lennart, Associate Professor, Stratford School of Interaction Design and Business to Department of Management, Sciences, May 1, 2020 – April 30, 2023.

Changes in Appointments
BASIR, Nada, Assistant Professor, Conrad School of Entrepreneurship and Business, second probationary term appointment extended one year (COVID-19). New end date July 1, 2024.

ADMINISTRATIVE APPOINTMENTS
AUCOIN, Marc, Associate Chair, Undergraduate Studies, May 1, 2020 – April 30, 2022.

KARIM, Karim, Executive Director, Centre for Bioengineering and Biotechnology, April 1, 2020 – March 31, 2025.

B. ***SABBATICAL LEAVES***
KHAJEPOUR, Amir, Professor, Department of Mechanical and Mechatronics Engineering, September 1, 2020 – March 31, 2021, six months sabbatical at 100% salary.

LI, Dongqing, Professor, Department of Mechanical and Mechatronics Engineering, September 21, 2021 – February 28, 2022, six months sabbatical at 100% salary.

PARKER, Wayne, Professor, Department of Civil and Environmental Engineering, September 1, 2020 – August 31, 2021, twelve months sabbatical at 100% salary.

REN, Carolyn, Professor, Department of Mechanical and Mechatronics Engineering, September 1, 2020 – February 28, 2021, six months sabbatical at 100% salary.

REVINGTON, Dereck, Associate Professor, School of Architecture, September 1, 2020 - August 31, 2021, twelve months at 85% salary.

Cancelled
DIMITROV, Stanko, Associate Professor, Department of Management Sciences. Early Sabbatical, November 1, 2020 – April 30, 2021, six months at 85% salary.

Change of Dates

CULHAM, Richard, Professor, Department of Mechanical and Mechatronics Engineering, Sabbatical change of dates from July 1, 2020 – December 31, 2020, six months at 100% salary to January 1, 2021 – June 30, 2021, six months at 100% salary.

HANSSON, Carolyn, Professor, Department of Mechanical and Mechatronics Engineering, Sabbatical change of dates from October 1, 2020 – March 31, 2021, six months at 100% of her half time to September 1, 2020 – February 28, 2021, six months at 100% of her half time.

C. ***SPECIAL LEAVES***

Unpaid Leave

ARAMI, Arash, Professor, Department of Mechanical and Mechatronics Engineering, March 11, 2020 - June 30, 2020.

Richard Culham, Interim Dean
Faculty of Engineering

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF THE FACULTY OF ENVIRONMENT TO SENATE
June 15, 2020

FOR INFORMATION

A. APPOINTMENTS

Cross Appointments

CRAIG, James, Associate Professor, Department of Civil and Environmental Engineering to the Department of Geography and Environmental Management, May 1, 2020 to April 30, 2023.

RUTTY, Michelle, Assistant Professor, Faculty of Environment, Dean's Office to the Department of Geography and Environmental Management, June 1, 2020 to May 31, 2023.

SWATUK, Larry, Professor**,** School of Environment, Enterprise and Development to the Department of Geography and Environmental Management, May 1, 2020 to April 30, 2023

B. ADMINISTRATIVE APPOINTMENT

DEAN, Jennifer, Associate Professor, School of Planning, Associate Director, Undergraduate Studies, School of Planning, July 1, 2020 to June 30, 2023.

C. SABBATICAL LEAVES

For approval by the Board of Governors

DOUCET, Brian, Associate Professor, School of Planning, July 1, 2020 to December 31, 2020, *special early sabbatical* at 100% salary.

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Jean Andrey
Dean

University of Waterloo
REPORT OF THE DEAN OF MATHEMATICS TO SENATE
June 15, 2020

FOR INFORMATION

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

Probationary-Term Appointments

McINTOSH, Shane (BA, 2008; MSc, 2011; PhD, 2015, both from Queen's University), Associate Professor, David R. Cheriton School of Computer Science, July 1, 2020 – June 30, 2023. Currently, Dr. McIntosh is a Canada Research Chair in Software Release Engineering at McGill University. He was one of two PhD graduates from the Queen's University class of 2015 to be recognized with the Academic Gold Medal from the Governor General of Canada for his PhD work. Dr. McIntosh's research area is in empirical software engineering. More specifically he has focused his research on release engineering. He has made significant research contributions in intelligent release pipelines, code review analysis and mining software repositories. His presentation and very strong reference letters confirm that he will be a great teacher, supervisor and colleague with numerous potential collaborations. Dr. McIntosh will strengthen our Software Engineering area within the School.

Continuing - Appointments

BALKA, Peter, Lecturer, Dept. of Statistics and Actuarial Science, effective July 1, 2020.

Definite Term - Reappointments

ADCOCK, James, Lecturer, Dept. of Statistics and Actuarial Science, August 30, 2020 – August 29, 2021.

BLAKE, Peter, Lecturer, Office of the Dean, September 1, 2020 – August 31, 2023.

GARBARY, Robert, Lecturer, Office of the Dean, September 1, 2020 – August 31, 2022.

LANCTOT, Kevin, Lecturer, David R. Cheriton School of Computer Science, May 1, 2020 – August 31, 2021.

McGRATH, Paul, Lecturer, Office of the Dean, September 1, 2020 – August 31, 2022.

PAYNE, Ian, Lecturer, Office of the Dean, September 1, 2020 – August 31, 2022.

Visiting Appointments

BURGER, Reinhold, Research Associate, David R. Cheriton School of Computer Science, May 1, 2020 – April 30, 2021.

Adjunct Appointments

Research

MALTON, Andrew (BlackBerry), Professor, David R. Cheriton School of Computer Science, June 1, 2020 – June 30, 2023.

TORNATORE, Massimo (Politecnico di Milano), Associate Professor, February 1, 2021 – June 30, 2024.

Adjunct Reappointments
Instructor
BRADLEY, Kirsten, Lecturer, David R. Cheriton School of Computer Science, May 1, 2020 – August 31, 2020.

JAMSHIDPEY, Armin, Lecturer, David R. Cheriton School of Computer Science, May 1, 2020 – August 31, 2020.

Graduate Students reappointed as Part-time Lecturers
TOTH, Justin, Lecturer, Dept. of Combinatorics and Optimization, May 1, 2020 – August 31, 2020.

Postdoctoral Fellows appointed as Part-time Lecturers
KNIGHT, Erick, Dept. of Pure Mathematics, July 1, 2020 – June 30, 2020.

Postdoctoral Fellow reappointed as part-time Lecturers
FADINA, Tolulope, Dept. of Statistics and Actuarial Science, October 1, 2020 – April 15, 2021.

RATEAU, Hanae, David R. Cherition School of Computer Science, May 1, 2020 – April 30, 2021.

Change in Appointment
MORLAND, Cameron, Lecturer, (*ref.* Dean's Report to Senate, May 2018*)*
From: Office of the Dean, July 31, 2018 – July 29, 2020.
To: David R. Cheriton School of Computer Science, May 1, 2020 – August 31, 2021.

B. SABBATICALS (already approved by the Board of Governors)
ILYAS, Ihab (Professor), David R. Cheriton School of Computer Science, September 1, 2020 – August 31, 2021, with 85% salary.

(to be approved by the Board of Governors)
POULIN, Francis (Professor), Dept. of Applied Mathematics, September 1, 2020 – August 31, 2021.

C. SPECIAL LEAVE
SALEM, Ken, Professor David R. Cheriton School of Computer Science, September 1, 2020 – August 31, 2021. This is an unpaid leave.

Kevin Hare
Interim Dean

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF SCIENCE TO SENATE
June 15, 2020

For information:

A. *APPOINTMENTS*

New Definite Term

RONAGH, Pooya, Research Assistant Professor, Department of Physics and Astronomy, September 1, 2020 to August 31, 2023. [B.S. Computer Science, B.S. Math, Sharif University of Technology, Iran (2009); M.Sc. Math, University of British Columbia (2011); Ph.D. Math, University of British Columbia (2016).] Dr. Pooya Ronagh's research focuses on the synergy between mathematical programming, machine learning, and quantum computation. His appointment overlaps several research directions in the Department, including condensed matter physics and quantum information. Dr. Ronagh, with Professor Roger Melko, developed a successful new Machine Learning and Artificial Intelligence course in Physics & Astrononomy. The course will become a permanent part of our new emphasis on computational physics. Pooya's appointment is intended to strengthen ties between IQC and Perimeter Institute.

SHALHOUB, Julie, Clinical Lecturer, School of Optometry and Vision Science, July 15, 2020 to July 14, 2023. [B.Sc., Biological Sciences, University of Guelph (2011); OD, School of Optometry, Indiana University (2015); Residency Certificate, Pediatrics and Vision Therapy, Southern College of Optometry (2016).] Dr. Julie Shalhoub will be working in the area of Binocular Vision (BV)/Vision Therapy (VT)/Vision Rehabilitation. We look forward to her leadership in growing the clinic specialty practice, increasing community access to care, and sharing her passion for clinical education and training.

Adjunct Appointments

Graduate Supervision

BOUDREAULT, Richard, Professor, Department of Earth and Environmental Sciences, April 1, 2020 to March 31, 2023.

Graduate Supervision and Research

STEEVES, Jennifer, Professor, School of Optometry and Vision Science, May 1, 2020 to April 30, 2023.

Adjunct Reappointments

Graduate Supervision

LEFEBVRE, Rene, Professor, Department of Earth and Environmental Sciences, April 1, 2020 to March 31, 2023.

QUINTON, William, Professor, Department of Earth and Environmental Sciences, February 1, 2020 to January 31, 2023.

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

Other

LEE, Joseph, Assistant Professor, School of Pharmacy, July 1, 2020 to June 30, 2023.

Graduate Supervision and Research

PARK, Chul, Professor, Department of Physics and Astronomy, May 1, 2020 to August 31, 2024.

Cross Reappointments

LEUNG, Debbie, Professor, Department of Combinatorics and Optimization, cross appointed to Department of Physics and Astronomy, April 1, 2020 to December 31, 2023.

Changes in Appointment

HAINES, Lacey, Assistant Clinical Professor, School of Optometry and Vision Science, second probationary term appointment extended one year (Covid-19). New end date June 30, 2023.

KATZENBACK, Barbara, Assistant Professor, Department of Biology, second probationary appointment extended one year (Covid-19). New end date June 30, 2023.

KHAN, Shamrozé (Zay), Assistant Clinical Professor, School of Optometry and Vision Science, second probationary appointment extended two years (Covid-19 and maternity leave). New end date June 30, 2025.

MacIVER, Sarah, Associate Clinical Professor, School of Optometry and Vision Science, second probationary appointment extended two years (Covid-19 and maternity leave). New end date June 30, 2024.

NISSIMOV, Jozef, Assistant Professor, Department of Biology, first probationary appointment extended one year (Covid-19). New end date June 30, 2024.

STANBERRY, Andre, Associate Clinical Professor, School of Optometry and Vision Science, second probationary term appointment extended one year (Covid-19). New end date June 30, 2023.

B. ***ADMINISTRATIVE APPOINTMENTS***

CHONG, Michael, Associate Chair, Undergraduate Studies and Co-op, Department of Chemistry, July 1, 2020 to June 30, 2023.

MÜLLER, Kirsten, Chair, Department of Biology, January 1, 2021 to December 31, 2024.

ADMINISTRATIVE REAPPOINTMENTS

McNAMARA, Brian, Chair, Department of Physics and Astronomy, January 1, 2021 to December 31, 2024.

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

SABBATICAL LEAVE

ISLAM, Kazi Rajibul, Assistant Professor, Department of Physics and Astronomy, special early leave, July 1, 2020 to December 31, 2020, 100% salary arrangements.

LUPASCU, Adrian, Associate Professor, Department of Physics and Astronomy, early leave, January 1, 2021 to June 30, 2021, 85% salary arrangements.

NAZAR, Linda, Professor, Department of Chemistry, September 1, 2020 to August 31, 2021, 100% salary arrangements.

SPAFFORD, Marlee, Professor, School of Optometry and Vision Science, September 1, 2020 to April 30, 2023, 100% salary arrangements.

RP. Lemieux
Dean

RPL:lw

University of Waterloo
SENATE
Report to Senate
15 June 2020

FOR APPROVAL

Committee Appointment
Motion: To approve the following appointment:

- **Senate Nominating Committee for Honorary Degrees:** Lisa Bauer-Leahy as the alumni member of Senate, term to 30 April 2021.

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
15 June 2020

Senate Graduate & Research Council met on 11 May 2020 and agreed to forward the following items to Senate for approval as part of the regular agenda.

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

FOR APPROVAL

PROGRAM CHANGE

Faculty of Arts

1. **Motion:** To approve the conversion of the Master of Digital Experience Innovation (MDEI) program from its current in-person, on-campus delivery mode to a leading-edge hybrid degree program with most course elements converted to online delivery, effective 1 September 2021, as presented in Attachment 1.

   Rationale: The Stratford School of Interaction Design and Business is proposing this leading-edge hybrid learning environment and mode of delivery in order to reach a broader marketplace across Canada, respond to the needs of today's knowledge workers, and leverage existing assets into new sources of revenue.

   Virtual or online learning has become an attractive alternative learning model for part-time and full-time studies, offering continuing education options to full-time professionals and international students. Online learning provides a framework for innovative teaching methods and forward-thinking pedagogical approaches that are core features of the University of Waterloo and the Stratford School's mandate.

   The Hybrid MDEI, which consists of eight (8) core courses anchored by two (2) on site intensive workshops (the 'Program Intensives') will provide students with the speed and flexibility of a short online program, while also providing valuable real-world learning opportunities developed in collaboration with faculty and our industry partners.

   Domestic and international students who are integrated personally and professionally in their home community will have the advantage of staying in their community instead of relocating to Stratford where they will have no connections.

   At the same time, through the online learning platform and, more importantly, the two Program Intensives, students will have the opportunity to network with their peers both virtually and in person. Industry partners will be part of the learning community through (1) mentorship during the Program Intensives and (2) by commissioning projects for students. This framework will offer students many networking opportunities for professional development, as well as prepare students for a world where more and more professionals work as part of virtual teams.

Faculty of Engineering

1. **Motion:** To update the Master of Engineering (MEng) degree requirements in Mechanical and Mechatronics Engineering (MME) to include 1 new specialization, effective 1 September 2020, as presented in Attachment 2.

   Rationale: The MEng in MME program will be offering "Graduate Specializations" in a given area, in place of the currently offered type 2 Graduate Diplomas. The change from Graduate Diplomas to Graduate Specializations is to better reflect the nature of the course packaging and also to bring the focused course selection into line with Faculty of Engineering objectives. MME will be discontinuing the existing type 2 Graduate Diploma (GDip) in Green Energy offered in conjunction with the MEng. In its place, a Graduate Specialization is being proposed.

2. **Motion:** To approve discontinuation of the (type 3) Graduate Diploma (GDip) in Green Energy (direct entry), effective 1 September 2020, as presented in Attachment 3.

   Rationale: MME is looking to discontinue the direct entry GDip in Green Energy based on very low uptake in the program since its creation in 2013. The direct entry GDip has never met the required steady state of 40 students per year for the program to be viable.

3. **Motion:** To approve the discontinuation of the (type 2) Graduate Diploma (GDip) in Green Energy, effective 1 September 2020, as presented in Attachment 4.

   Rationale: The MEng in MME program will be offering "Graduate Specializations" in a given area, in place of the currently offered type 2 Graduate Diplomas. The change from Graduate Diplomas to Graduate Specializations is to better reflect the nature of the course packaging and also to bring the focused course selection into line with Faculty of Engineering objectives. MME will be discontinuing the existing type 2 Graduate Diploma (GDip) in Green Energy offered in conjunction with the MEng. In its place, a Graduate Specialization is being proposed.

Faculty of Science

1. **Motion:** To approve the addition of a course-based MSc in Physics with a specialization in Quantum Technology, effective 1 September 2020, as presented in Attachment 5.

   Rationale: Quantum technology is based on the application of quantum physics to tasks and challenges related to information theory. They are impacting the way we process and share information as well as learn about the world around us through quantum computers, communication, and sensors. Quantum technology is rapidly evolving and maturing into a new economically important sector. An understanding of quantum mechanics, its applications, and the strengths and limitations of different quantum modalities are required for maximum impact in this field.

   The MSc in Physics with a Graduate Specialization in Quantum Technology is a course-based study option that will provide students with the theoretical foundation for quantum technology through in-class courses offered by the Faculty of Science and through the University of Waterloo Collaborative Graduate Program in Quantum Information. It will further provide hands-on experience with several major quantum platforms through unique laboratory courses.

   The Department of Physics and Astronomy at Waterloo have consulted with the Department of Physics and Astronomy at Guelph and they have no concerns with Waterloo's proposed addition of the coursework study option with a Graduate Specialization in Quantum Technology to the MSc in Physics program.

GRADUATE STUDIES - ACADEMIC CALENDAR CHANGES

1. **Motion:** To approve two Graduate Studies' Academic Calendar changes under Regulations (i.e., Enrolment and Time limits), effective 1 September 2020, as presented:

    a) Add required to withdraw regulations (Attachment 6a). **Rationale:** Required to withdraw regulations are being added to the Graduate Studies Academic Calendar to provide clarity and information for students, faculty, and staff on processes that already occur.

    b) Update voluntarily withdraw regulations (Attachment 6b). **Rationale:** Voluntarily withdraw regulation updates are being made to the Graduate Studies Academic Calendar to provide more clarity and information for students, faculty, and staff on processes that already occur.

/kw

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

Charmaine Dean
Vice President, Research & International

University of Waterloo

Stratford School of Interaction Design and Business

Master of Digital Experience Innovation (MDEI)

Proposal for Change in Mode of Delivery – from On-Campus to Hybrid

Major Modification

Summary:

This document summarizes a proposal to convert the Master of Digital Experience Innovation (MDEI) program from its current in-person, on-campus delivery mode to a leading-edge hybrid degree program with most course elements converted to online delivery. This approach is proposed to ensure the program can appeal to a broader spectrum of potential students from across Canada and beyond, to respond to the needs of today's students, and to leverage the existing assets of the current MDEI program. Specifically, the full-time MDEI program will begin with an in-person intensive learning milestone (1-10 days in duration) designed by faculty in consultation with one or more industry partners, followed by four online courses in the Fall term, four online courses in the Winter term, and conclude with another in-person intensive learning milestone (2-10 days in duration). Similarly, the part-time program will begin and end with the in-person intensives (alongside the full-time students), and require two online courses per term for four terms in between the in-person intensives. This hybrid delivery mode is likely to appeal to more students and to allow the MDEI program to grow.

Present Position:

Currently in its ninth year of operation, the on-campus MDEI program explores new forms of design innovation that emerge through the intersections between business and digital technologies. Students learn to solve complex challenges using best practices from applied management, human-centred approaches to design, and interdisciplinary, forward-thinking modes of collaboration. Working with faculty and partners outside the university, students use creative leadership to develop innovative solutions for industry.

Currently, this professional program is offered as both a full time one-year program and as a part-time two-year program, giving students the opportunity to work directly with both faculty and industry mentors. Currently, the curriculum features team- and project-based learning in the following areas:

1. Design Thinking and Digital Design Solutions
2. User Experience Design
3. Applied Management
4. Working in Teams
5. Marketing Strategy
6. Project Management
7. Cultural Analysis in the Digital Space

MDEI provides a professional education for students seeking careers in the digital media industry or in creative leadership, and is open to students from a wide range of undergraduate disciplines from the humanities, social sciences, science, mathematics, environment, etc.

Specifically, the program aims to equip future leaders, strategic thinkers, and team managers with the skills they need to innovate and thrive in a rapidly evolving field. While the program will provide students with an appreciation for and working knowledge of digital production and implementation, hands-on training in design is not its primary focus. Rather, MDEI focuses on developing broader capabilities in the areas of team and project management, and leadership in the digital media context. As they move through the program, students are asked to apply

learned methodologies for working in teams, mimicking real-world professional environments. Developing core projects in close consultation with both faculty and industry partners, students in the MDEI program graduate with an adaptable, transferable, and highly marketable set of skills. Training in both the theory and practice of team building, business modeling, marketing strategy, critical/cultural analysis, user experience and design thinking position these MDEI graduates to respond to future challenges and be able navigators in the complex and fast-moving digital media industry.

Limitations:

The growth of the current program is severely restricted by its in-person course delivery and its location in Stratford, over one hour from the nearest population density and a forty-minute drive from the University of Waterloo's main campus. Our location limits the impact of our program in that we are unable to attract the ideal target learner group(s), and learners have limited opportunities to connect to the communities in which they plan to work.

Anecdotal evidence suggests that the students experience several barriers to enrolling in the current in-class MDEI program offered in Stratford. Many students who are interested in this program are international students or international recent graduates that do not live near Stratford or do not live in Canada. Some students interested in MDEI are working professionals in the GTA or elsewhere and cannot relocate because of their employment, but do not live close enough to the Stratford Campus to attend in-person classes four times per week. Working professionals looking to take MDEI on a part-time basis require the flexibility to take their courses online. Target learners include:

- Working professionals from the Greater Toronto Area (GTA) and surrounding areas, at the mid-career stage, who are typically employed full-time and who would opt for the part-time stream of the program. For this type of learner, it is often difficult to physically travel to the Stratford School twice a week to attend class.
- Domestic full time students, who find the accelerated course schedule (Monday-Thursday, 4:00 – 7:00 pm) a barrier.
- International students, many of whom have completed undergraduate degrees in the US and in Canadian schools, do not typically have ties to the Stratford region, and find the location too remote.
- Recent graduates who reside in the KW area are often reluctant to commit to a 45 minute commute to Stratford.

Rationale:

Virtual or online learning has become an attractive alternative learning model for part-time and full-time studies, offering continuing education options to full-time professionals and international students. Online learning provides a framework for innovative teaching methods and forward-thinking pedagogical approaches that are core features of the University of Waterloo and the Stratford School's mandate.

The Hybrid MDEI, which consists of eight (8) core courses anchored by two (2) on site intensive workshops (the 'Program Intensives') will provide students with the speed and flexibility of a short online program, while also providing valuable real-world learning opportunities developed in collaboration with faculty and our industry partners.

Domestic and international students who are integrated personally and professionally in their home community will have the advantage of staying in their community instead of relocating to Stratford where they will have no connections.

At the same time, through our online learning platform and, more importantly, the two Program Intensives, students will have the opportunity to network with their peers both virtually and in person. Our industry partners will be part of the learning community through (1) mentorship during the

Program Intensives and (2) by commissioning projects for our students. This framework will offer students many networking opportunities for professional development as well as prepare students for a world where more and more professionals work as part of virtual teams.

Program Delivery - Full-time Students:

Students who wish to complete the program full time will take four courses per semester, and will complete the program in 8 months. MDEI Program Intensives will take place at the beginning and the end of the program:

		Year 1	
Course		**Fall**	**Winter**
DEI INT1	*Intensive 1 – 10 days*		
DEI 612	Working in Teams		
DEI 613	Digital Media Solutions: Design		
DEI 626	User experience (UX) Fundamentals & User experience Research (UER)		
DEI 623	Digital Media Solutions: Project Management		
DEI 614	Principles of Marketing		
DEI 625	Business Innovation and Impact *(Revision)*		
DEI 616	*Special Topics 1 (New course)*		
DEI 627	*Special Topics 2 (New course)*		
DEI INT2	*Intensive 2 – 10 days*		

Program Delivery - Part-time Students:

Students who wish to complete the program part time will take two courses per semester, and will complete the program in 2 years (20 months). MDEI Program Intensives will take place at the beginning and the end of the program:

		Year 1		Year 2	
Course		**F**	**W**	**F**	**W**
DEI INT1	*Intensive 1 – 10 days*				
DEI 612	Working in Teams				
DEI 613	Digital Media Solutions: Design				
DEI 614	Principles of Marketing				
DEI 625	Business Innovation and Impact *(Revision)*				
DEI 626	User experience (UX) Fundamentals & User experience Research (UER)				
DEI 623	Digital Media Solutions: Project Management				
DEI 616	*Special Topic 1 (New course)*				
DEI 627	*Special Topic 2 (New course)*				
DEI INT2	*Intensive 2 – 10 days*				

Residency Requirements:

Students will be required to attend two Program Intensives, one at the beginning and one at the end of the program. Part-time students will attend one Intensive per year, one at the beginning of the program and one in their final semester, alongside the full-time students. The Intensives will run over a ten-day period, from Friday to Sunday; the number of contact hours is six to eight hours per day. Students will be required to attend in person, however, we will develop a policy that provides alternate arrangements for those student for whom attending in person will cause extreme hardship. Each case will be carefully reviewed and decisions will be made on a case- by-case basis.

Program Intensives:

The Program Intensives will be designed by faculty in collaboration with one or more industry partners. Intensive 1 takes place in August, and is designed to build fundamental team-building skills that will enable students to work effectively in virtual team environments throughout the program. Students will complete the equivalent of the first four classes of Working in Teams (DEI 612), which covers the elements of designing, managing and working in teams. Learning outcomes will include:

1. Communication
2. Basic team processes, cooperation and competition, leadership
3. Decision-making
4. Problem-solving and creativity
5. Introduction of first assignment, working sessions and project presentations

We will also cover the following topics, which will introduce students to the program in general:

1. Program introduction/overall learning objectives

2. Applied innovation workshop
3. Marketing mini-workshop
4. UX mini-workshop
5. Design mini-workshop
6. Special Topics/Guest Speaker Presentations (sneak preview of topics from term 2)

Program Intensive 2 will follow a similar structure to the current MDEI Capstone (DEI 631), where students will be presented with a complex problem from our industry partners, for which they will develop a business solution. The learning objectives and outcomes are based on predefined challenges provided by industry partners. The introduction to and selection of the partners and team assignments will occur during the previous semester, and students are expected to have completed the following prior to the start of the Intensive:

1. Conducting background research
2. Conceptualizing a project
3. Assessing the business dimension with a business plan

During the Intensive, students will complete the following:

1. Developing a business model canvas
2. Designing, creating and evaluating prototypes using iterative user testing
3. Presenting the final solution to the industry partner who commissioned the project

Both full- and part-time students will complete the Program Intensives. The cost of the Intensives will be included in the tuition for each semester, meaning that students would only be charged for either two or four semesters. The Program Intensives will be a “milestone” requirement.

Proposed Schedule and Cost of Development:

All online courses will be delivered through LEARN and will be developed in collaboration with the course instructor and the Centre for Extended Learning (CEL). The quoted development cost from CEL is $0/course. The cost of development to the Faculty of Arts Stratford budget is $20K per course in order to pay for two sessional instructors allowing faculty members a two- course release for development of one course.

		2019	2020			2021			2022
Course	**Instructor**	**F**	**W**	**Spr**	**F**	**W**	**Spr**	**F**	**W**
DEI 612 (Working in Teams)	Linda Carson	Dev	Dev	C			C	Launch	
DEI 613 (Digital Media Solutions: Design)	Jessica Thompson	Dev	Dev	A			A	Launch	
DEI 626 (User Experience Design)	Lennart Nacke		Dev	P Dev			P	Launch	
DEI 623 (Digital Media Solutions: Project Management)	Tabatha Dominguez			S Dev	Dev		S	Launch	
DEI 614 (Principles of Marketing)	TBC			T	Dev	Dev	T		Launch
DEI 625 (Business Innovation and Impact)	TBC			O	Dev	Dev	O		Launch
DEI 616 (Special Topics 1)	TBC			N		Dev	N Dev		Launch
DEI 627 (Special Topics 2)	TBC			E		Dev	E Dev		Launch
PROGRAM DELIVERY		Stratford	Stratford		Stratford	Stratford		Online	Online

Prepared by:
Christine McWebb, Director
Jessica Thompson, Associate Director, Graduate

February 10, 2020

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: Arts

Program: Master of Digital Experience Innovation (MDEI)

Program contact name(s): Emanuel Carvalho, Acting Director, Stratford School

Form completed by: Jessica Thompson, Associate Director, Graduate

Description of proposed changes:
Note: changes to courses and milestones also require the completion/submission of the SGRC Course/Milestone-New/Revision/Inactivation form (PC docx version or MAC docx version).

The Stratford School of Interaction Design and Business is proposing the conversion of the on-campus part-time and full-time options for the Master of Digital Experience Innovation (MDEI) program be into a leading-edge hybrid learning environment and mode of delivery in order to reach a broader marketplace across Canada, respond to the needs of today's knowledge workers, and leverage our existing assets into new sources of revenue.

Currently in its 9th year of operation, the MDEI program explores new forms of design innovation that emerge through the intersections between business and digital technologies. Students learn to solve complex challenges using best practices from applied management, human-centred approaches to design, and interdisciplinary, forward-thinking modes of collaboration. Working with partners outside the university, students use creative leadership to develop innovative solutions for industry.

The program focuses on the development of creative leaders, with a strong focus on user experience design, marketing, project management, leadership, and business development. Students are taught by faculty as well as industry leaders, and the purpose-built campus offers state-of-the-art tools and lab space for user research, design, content creation, gamification, and user experience.

Is this a major modification to the program? Yes

Rationale for change(s):

Virtual or online learning has become an attractive alternative learning model for part-time and full-time studies, offering continuing education options to full-time professionals and international students. Online learning provides a framework for innovative teaching methods and forward-thinking pedagogical approaches that are core features of the University of Waterloo and the Stratford School's mandate.

The hybrid MDEI, which consists of eight (8) core courses anchored by two (2) on site intensive workshops (the 'Program Intensives') will provide students with the speed and flexibility of a short online program, while also providing valuable real-world learning opportunities developed in collaboration with our industry partners.

The current program is severely restricted by its location in Stratford, Ontario, over one hour from the nearest population density and a forty-minute drive from the University of Waterloo's main campus. Our location limits the impact of our program in that we are unable to attract the ideal target learner group(s). With this new hybrid delivery model, domestic and international students who are integrated personally and professionally in their home community will have the advantage of staying in their community instead of relocating to Stratford where they will have no connections.

At the same time, through online chat groups and, more importantly, the two Program Intensives, students will have the opportunity to network with their peers both virtually and in person. Our industry partners will be part of the learning community through (1) mentorship during the Program Intensives and (2) by commissioning projects for our students. This framework will offer students many networking opportunities for professional development.

Proposed effective date: Term: Fall 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/arts/stratford-school-interaction-design-and-business/master-digital-experience-innovation-mdei

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Program information • **Admit term(s)** o Fall • **Delivery mode** o ~~On-campus (Stratford campus)~~ • **Program type** o Master's o Professional • **Registration option(s)** o Full-time o Part-time • **Study option(s)** o Coursework **Degree requirements** **Coursework option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must successfully complete the following 8 required courses: ▪ DEI 612 Working in Teams ▪ DEI 613 Digital Media Solutions 1: Design Principles and Practice ▪ DEI 614 Principles of Marketing ~~in a Globalized World: Leveraging Digital Technology~~ ▪ ~~DEI 615 New Perspectives: Media History and Analysis~~ ▪ DEI 623 Digital Media Solutions 2: Project Management ▪ ~~DEI 624 Understanding the Consumer Universe: Market Research in Digital Media~~ ▪ DEI 625 ~~Media~~ Innovation and Impact	**Program information** • **Admit term(s)** o Fall • **Delivery mode** o Online / hybrid • **Program type** o Master's o Professional • **Registration option(s)** o Full-time o Part-time • **Study option(s)** o Coursework **Degree requirements** **Coursework option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must successfully complete the following 8 required courses: ▪ DEI 612 Working in Teams ▪ DEI 613 Digital Media Solutions 1: Design Principles and Practice ▪ DEI 614 Principles of Marketing ▪ DEI 616 Special Topics 1 ▪ DEI 623 Digital Media Solutions 2: Project Management ▪ DEI 625 Business Innovation and Impact ▪ DEI 626 User Experience (UX) Fundamentals and User Research (UER) ▪ DEI 627 Special Topics 2 • **Link(s) to courses** o Digital Experience Innovation (DEI) courses

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
▪ DEI 626 User Experience (UX) Fundamentals and User Research (UER) o ~~The courses are taught by faculty from a range of disciplines including Speech Communication, Economics, Fine Arts, and Sociology. In addition, senior-level industry partners of the University of Waterloo Stratford Campus may be invited to give special seminars and teach certain course components.~~ o ~~Students must also complete DEI 631 Projects. A major project course which must be completed in the final term of study. Supervised by a University of Waterloo faculty member and supported by an industry partner, the project will normally be undertaken by teams of 4-6 students and will address an approved topic derived from the previous course work or based on a relevant issue in the digital economy.~~ • **Link(s) to courses** o Digital Experience Innovation (DEI) courses o Graduate course search • **Academic Integrity Workshop** • ~~**Master's Workshop**~~ o ~~The Master's Workshop for MDEI is otherwise known as Bootcamp. Bootcamp is the first milestone requirement for the MDEI which is held the two weeks leading up to the first day of class. It gives students the chance to engage with their classmates and learn valuable skills that will be applied throughout the program.~~	o Graduate course search • **Academic Integrity Workshop** • **Program Intensive 1** o Students must complete the mandatory Program Intensive 1 academic milestone at the Stratford School of Interaction Design and Business. Program Intensive 1 takes place over 10 days in August (at the beginning of the program) and is designed to introduce students to the program and to develop fundamental team-building skills that will enable students to work effectively in virtual environments throughout the program. Students will complete the equivalent of the first four classes of DEI 612 Working in Teams, which covers the elements of designing, managing and working in teams. • **Program Intensive 2** o Students must complete the mandatory Program Intensive 2 academic milestone at the Stratford School of Interaction Design and Business. Program Intensive 2 takes place over 10 days in April (at the end of the program). Students will be presented with a complex challenge from our industry partners, for which they will develop a business solution based on relevant issues in the digital economy. Learning objectives and outcomes are specific to each partner and challenge, and students will be supervised by a University of Waterloo faculty member and 1-2 representative from each partner. Projects will normally be undertaken in teams of 4-6 students, working in person, on a schedule determined by the project scope.

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

Students currently registered in the program will not be impacted by these changes. Students who begin the program full time in Fall 2020 will be completing the program by August 2021 and will not be affected. Students who begin the program part-time in Fall 2020 will start their program with in-person delivery and will finish their program with hybrid delivery.

Department/School approval date (mm/dd/yy):

Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 02/18/2020

Faculty approval date (mm/dd/yy): 03/17/20
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

SECRETARY NOTE:
This program change was endorsed and recommended to Senate for approval by Senate Graduate and Research Council (SGRC) on 11 May 2020.

This program change was endorsed and recommended to Senate for approval by the Vice-President, Academic and Provost, as communicated by Dean of Arts, Sheila Ager, on 19 May 2020.

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: Engineering

Program: Master of Engineering (MEng) in Mechanical and Mechatronics Engineering

Program contact name(s): Allison Walker

Form completed by: Allison Walker

Description of proposed changes:
Note: changes to courses and milestones also require the completion/submission of the SGRC Course/Milestone-New/Revision/Inactivation form (PC docx version or MAC docx version).

Update of MEng degree requirements to include 1 new specialization.

Is this a major modification to the program? Yes

Rationale for change(s):

The MEng in MME program will be offering "Graduate Specializations" in a given area, in place of the currently offered type 2 Graduate Diplomas. The change from Graduate Diplomas to Graduate Specializations is to better reflect the nature of the course packaging and also to bring the focused course selection into line with Faculty of Engineering objectives.

MME will be discontinuing the existing type 2 Graduate Diploma (GDip) in Green Energy offered in conjunction with the MEng. In its place, a Graduate Specialization is being proposed.

Proposed effective date: Term: Fall Year: 2020

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/engineering/department-mechanical-and-mechatronics-engineering/master-engineering-meng-mechanical-and-mechatronics-engineering

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

Program information
 	
• **Admit term(s)**
  o Fall
  o Winter
  o Spring
• **Delivery mode**
  o On-campus
• **Program type**
	Graduate specialization
	• Green Energy
	
	Program information
	
	• **Admit term(s)**
	  o Fall
	  o Winter
	  o Spring

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
o Master's o Professional • **Registration option(s)** o Full-time o Part-time • **Study option(s)** o Coursework • **Additional program information** o The University of Waterloo does not provide funding for MEng in Mechanical and Mechatronics Engineering students, and the candidates are expected to be self-supporting. **Admission requirements** • **Minimum requirements** o The Department of Mechanical and Mechatronics Engineering 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 a Master's 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 a Master's program for applicants educated outside of Canada. o Graduate Record Examination (GRE) test scores (requirement only for applicants who completed their undergraduate degree from an institution located outside of Canada or the United States of America). • **Application materials** o Résumé o Supplementary information form o Transcript(s) • **References** o Number of references: 2 o Type of references: academic • **English language proficiency (ELP)** (if applicable) **Degree requirements** **Coursework option:**	• **Delivery mode** o On-campus • **Program type** o Master's o Professional • **Registration option(s)** o Full-time o Part-time • **Study option(s)** o Coursework • **Additional program information** o The University of Waterloo does not provide funding for MEng in Mechanical and Mechatronics Engineering students, and the candidates are expected to be self-supporting. **Admission requirements** • **Minimum requirements** o The Department of Mechanical and Mechatronics Engineering 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 a Master's 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 a Master's program for applicants educated outside of Canada. o Graduate Record Examination (GRE) test scores (requirement only for applicants who completed their undergraduate degree from an institution located outside of Canada or the United States of America). • **Application materials** o Résumé o Supplementary information form o Transcript(s) • **References** o Number of references: 2 o Type of references: academic • **English language proficiency** (ELP) (if applicable) **Degree requirements**

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
• **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must complete 8 one-term (0.50 unit weight) graduate level courses (or courses acceptable for graduate credit). o A maximum of 2 500-level courses may be counted for credit. o An English for Multilingual Speakers (EMLS) technical/professional course is normally required for all students who were not English Language Proficiency (ELP) exempt at the time of admission. This course is normally taken in the first term of the program. o The EMLS communication course can be waived at the discretion of the Department. o At least 2 out of the 8 required courses must be taken from the following list of ME graduate core courses: ▪ ME 620 Mechanics of Continua ▪ ME 621 Advanced Finite Element Method ▪ ME 631 Mechanical Metallurgy ▪ ME 632 Experimental Methods in Materials Engineering ▪ ME 640 Autonomous Mobile Robotics ▪ ME 649 Control of Machines and Processes ▪ ME 651 Heat Conduction ▪ ME 652 Convective Heat Transfer ▪ ME 653 Radiation Heat Transfer ▪ ME 662 Advanced Fluid Mechanics ▪ ME 664 Turbulent Flow o ~~MEng students completing 1 of the 3 GDip program options are allowed to use their GDip mandatory courses to count toward 2 of the 8 core courses.~~ o MEng students must attend at least 4 MME research seminars. o Additional Faculty regulations concerning Master's degree requirements are: ▪ The candidate must obtain a pass in all courses credited to their program, with a minimum overall average of 70% (a grade	**Coursework option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must complete 8 one-term (0.50 unit weight) graduate level courses (or courses acceptable for graduate credit). o A maximum of 2 500-level courses may be counted for credit. o An English for Multilingual Speakers (EMLS) technical/professional course is normally required for all students who were not English Language Proficiency (ELP) exempt at the time of admission. This course is normally taken in the first term of the program. o The EMLS communication course can be waived at the discretion of the Department. o At least 2 out of the 8 required courses must be taken from the following list of ME graduate core courses: ▪ ME 620 Mechanics of Continua ▪ ME 621 Advanced Finite Element Method ▪ ME 631 Mechanical Metallurgy ▪ ME 632 Experimental Methods in Materials Engineering ▪ ME 640 Autonomous Mobile Robotics ▪ ME 649 Control of Machines and Processes ▪ ME 651 Heat Conduction ▪ ME 652 Convective Heat Transfer ▪ ME 653 Radiation Heat Transfer ▪ ME 662 Advanced Fluid Mechanics ▪ ME 664 Turbulent Flow o <u>MEng students completing 1 of the 2 Graduate Diploma (GDip) program options or the Graduate Specialization are allowed to use the mandatory courses from the GDips or Graduate Specialization to count toward 2 of the 8 core courses.</u> o MEng students must attend at least 4 MME research seminars. o Additional Faculty regulations concerning Master's degree requirements are:

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
of less than 65% in any course counts as a failure). ▪ At least half of the courses used for credit must normally be Faculty of Engineering courses and the other half need to be Mechanical & Mechatronics Engineering courses.	▪ The candidate must obtain a pass in all courses credited to their program, with a minimum overall average of 70% (a grade of less than 65% in any course counts as a failure). ▪ At least half of the courses used for credit must normally be Faculty of Engineering courses and the other half need to be Mechanical & Mechatronics Engineering courses. Students in the MEng in Mechanical and Mechatronics Engineering program may choose to pursue the following Graduate Specialization: 1. Green Energy A Graduate Specialization is a University credential that is recognized on the student's transcript but not on the diploma and is intended to reflect that a student has successfully completed a set of courses that together provide an in-depth study in the area of the Graduate Specialization. A student will only obtain the Graduate Specialization on their transcript if they have completed the requirements associated with the MEng degree and the requirements associated with the Graduate Specialization. All MEng Graduate Specializations in Mechanical and Mechatronics Engineering consist of a set of at least 4 graduate (0.50 weight) level courses and this set is comprised of a mix of *compulsory* and *elective* courses. *Compulsory* courses are those that are prescribed as part of the Graduate Specialization. *Elective* courses are those that are on a list of courses designated as electives for a given Graduate Specialization. The requirements for the Graduate Specialization are described below. 1. Graduate Specialization in Green Energy • To receive the Graduate Specialization in Green Energy, students must successfully complete 1 compulsory course and 3 elective courses: o Compulsory course: ▪ ME 659 Energy and Environment o Elective courses (choose 3 from the following list): ▪ ME 738 Special Topics in Materials: Hydrogen Storage Materials ▪ ME 751 Fuel Cell Technology ▪ ME 753 Solar Energy

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
	▪ ME 760 Special Topics in Thermal Engineering: Low Energy Building Systems ▪ ME 760 Special Topics in Thermal Engineering: Building Energy Performance ▪ ME 760 Special Topics in Thermal Engineering: Air Pollution and Greenhouse Gases ▪ ME 760 Special Topics in Thermal Engineering: Wind Energy

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

Students admitted to the MEng in MME program prior to Fall 2020 that complete the course requirements for the type 2 GDip in Green Energy, will receive the GDip upon degree completion.

Department/School approval date (mm/dd/yy): February 12, 2020
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 01/14/2020
Faculty approval date (mm/dd/yy):
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: Engineering

Program: Graduate Diploma (GDip) in Green Energy (direct entry)

Program contact name(s): Allison Walker

Form completed by: Allison Walker

Description of proposed changes:
Note: changes to courses and milestones also require the completion/submission of the SGRC Course/Milestone-New/Revision/Inactivation form (PC docx version or MAC docx version).

Discontinue (type 3) Graduate Diploma (GDip) in Green Energy (direct entry).

Is this a major modification to the program? Yes

Rationale for change(s):

The department is looking to discontinue the direct entry GDip in Green Energy based on very low up take in the program since its creation in 2013. The direct entry GDip has never met the required steady state of 40 students per year for the program to be viable.

Proposed effective date: Term: Fall Year: 2020

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/engineering/department-mechanical-and-mechatronics-engineering/graduate-diploma-gdip-green-energy-direct-entry

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

~~**GRADUATE DIPLOMA (GDIP) IN GREEN ENERGY (DIRECT ENTRY)**~~
 	
~~**Program information**~~
 	
• ~~Admit term(s)~~
  ○ ~~Fall~~
  ○ ~~Winter~~
  ○ ~~Spring~~
• ~~Delivery mode~~
  ○ ~~Online~~
• ~~Length of program~~	

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
~~o 1 mandatory course and 3 elective courses must be completed within two years (six terms).~~ ~~• Program type~~ ~~o Diploma~~ ~~• Registration option(s)~~ ~~o Full-time~~ ~~o Part-time~~ ~~• Study option(s)~~ ~~o Coursework~~ ~~• Additional program information~~ ~~o The GDip in Green Energy program uses a state-of-the-art interactive instruction facility called the Live-Link. This remote learning environment is enabled through the use of smart boards and multi-point interactive video conferencing.~~ ~~o The Live-Link technology provides an immersive, real-time experience where students seamlessly participate with the instructor and others in the class as if they were in the same location.~~ ~~o If students miss a class, they will have the opportunity to watch a recorded session of the class and email questions to the instructor.~~ ~~o When using the E5 Live System the minimum requirements to ensure the quality of the experience are:~~ ~~▪ Up to date computer or laptop with 1GB video card and current drivers.~~ ~~▪ Wired network connection with a minimum 1 Mbps to 2 Mbps upload speed.~~ ~~▪ Web camera, microphone, speakers or headphones.~~ ~~▪ Microsoft Windows OS or current Mac OS (Linux is not supported at this time).~~ **~~Admission requirements~~** ~~• Minimum requirements~~ ~~o The Department of Mechanical and Mechatronics Engineering 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 a Master's~~	

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
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 a Master's program for applicants educated outside of Canada. • Application materials o Résumé o Transcript(s) • References o Number of references: 2 o Type of references: 1 must be academic • English language proficiency (ELP) (if applicable) **Degree requirements** Coursework option: • Graduate Academic Integrity Module (Graduate AIM) • Courses o The GDip program is completed by taking 4 graduate level courses and without pursuing a formal graduate studies degree program. Students can study part-time, taking 1 course per term, or full-time, taking 2 courses per term. 1 mandatory course and 3 elective courses must be completed within two years (six terms). o Students must complete the following courses: o Mandatory course: ▪ ME 659 Energy and Environment o Choose 3 electives from the following list of courses: ▪ ME 751 Fuel Cell Technology ▪ ME 753 Solar Energy ▪ ME 760 Special Topics in Thermal Energy: Building Energy Performance ▪ ME 760 Special Topics in Thermal Energy: Low Energy Building Systems ▪ ME 760 Special Topics in Thermal Energy: Air Pollution and Greenhouse Gases ▪ ME 765 Special Topics in Fluid Mechanics: Wind Energy • Link(s) to courses o Mechanical Engineering (ME) courses	

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
o ~~Graduate course search~~	

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

Students admitted to the direct entry GDip in Green Energy prior to Fall 2020, will receive the GDip upon degree completion.

Department/School approval date (mm/dd/yy): February 12, 2020
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 01/14/2020
Faculty approval date (mm/dd/yy):
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: Engineering

Program: Graduate Diploma (GDip) in Green Energy

Program contact name(s): Allison Walker

Form completed by: Allison Walker

Description of proposed changes:
Note: changes to courses and milestones also require the completion/submission of the SGRC Course/Milestone-New/Revision/Inactivation form (PC docx version or MAC docx version).

Discontinue (type 2) Graduate Diploma (GDip) in Green Energy.

Is this a major modification to the program? Yes

Rationale for change(s):

The MEng in MME program will be offering "Graduate Specializations" in a given area, in place of the currently offered type 2 Graduate Diplomas. The change from Graduate Diplomas to Graduate Specializations is to better reflect the nature of the course packaging and also to bring the focused course selection into line with Faculty of Engineering objectives.

MME will be discontinuing the existing type 2 Graduate Diploma (GDip) in Green Energy offered in conjunction with the MEng. In its place, a Graduate Specialization is being proposed.

Proposed effective date: Term: Fall Year: 2020

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/engineering/department-mechanical-and-mechatronics-engineering/graduate-diploma-gdip-green-energy

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

~~**GRADUATE DIPLOMA (GDIP) IN GREEN ENERGY**~~
 	
~~**Program information**~~
 	
• ~~Delivery mode~~
  ○ ~~On-campus~~
• ~~Program type~~
  ○ ~~Diploma~~
• ~~Study option(s)~~	

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
~~o Coursework~~ ~~**Admission requirements**~~ ~~• Minimum requirements~~ ~~o Students in the Master of Engineering (MEng) in Mechanical and Mechatronics Engineering program may complete the requirements for the GDip in Green Energy in conjunction with their MEng requirements.~~ ~~**Degree requirements**~~ ~~**Coursework option:**~~ ~~• Courses~~ ~~o Students must complete the following courses:~~ ~~o Mandatory courses:~~ ~~▪ ME 659 Energy and Environment~~ ~~o Specific courses: 3 from the following list:~~ ~~▪ ME 738 Special Topics in Materials: Hydrogen Storage Materials~~ ~~▪ ME 751 Fuel Cell Technology~~ ~~▪ ME 753 Solar Energy~~ ~~▪ ME 760 Special Topics in Thermal Engineering: Low Energy Building Systems~~ ~~▪ ME 760 Special Topics in Thermal Engineering: Building Energy Performance~~ ~~▪ ME 760 Special Topics in Thermal Engineering: Air Pollution and Greenhouse Gases~~ ~~▪ ME 765 Special Topics in Fluid Mechanics: Wind Energy~~ ~~o General courses: 4 additional Faculty of Engineering graduate courses (subject to the approval of the Department).~~ ~~o All courses are 600 and 700 level courses and students are not allowed to take more than 2 500 level courses (courses open to both undergraduates and graduates) out of their 8 required courses.~~ ~~• Link(s) to courses~~ ~~o Mechanical Engineering (ME) courses~~ ~~o Graduate course search~~	

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
~~Department of Mechanical and Mechatronics Engineering website~~	

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

Students admitted to the MEng in MME program prior to Fall 2020 that complete the course requirements for the type 2 GDip in Green Energy, will receive the GDip upon degree completion.

Department/School approval date (mm/dd/yy): February 12, 2020
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 01/14/2020
Faculty approval date (mm/dd/yy):
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

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INSTITUTE FOR QUANTUM COMPUTING
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Memo

To: Sean Wettig, Associate Dean, Graduate Studies (Science) Agnes Kolic, Administrator Graduate & Research	From: Brian McNamara, Chair of Physics & Astronomy Kevin Resch, Interim Executive Director, IQC
Phone:	Date: March 6, 2020
Re: MSc Physics with specialization in Quantum Technology	Cc: Trevor Clews, Academic Officer Jeannie Bairos, IQC Director Assistant, Sandy Dickenson, Administrative Assistant, Physics & Astronomy

Hello Sean,

Please find attached a proposal for a new course-based MSc in Physics with a specialization in quantum technology.

This proposal was endorsed by both the faculty of the Department of Physics & Astronomy and the faculty of the Institute for Quantum Computing.

We are submitting this proposal for approval at the faculty level.

Sincerely,

Brian McNamara
Chair of Physics & Astronomy

Kevin Resch
Interim Executive Director, IQC

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: Science

Program: Master of Science (MSc) in Physics

Program contact name(s): Kevin Resch, Brian McNamara

Form completed by: Kevin Resch

Description of proposed changes:
Note: changes to courses and milestones also require the completion/submission of the SGRC Course/Milestone-New/Revision/Inactivation form (PC docx version or MAC docx version).

Adding a Coursework study option with a Graduate Specialization in Quantum Technology to the MSc in Physics program.

Is this a major modification to the program? Yes

Rationale for change(s):

Quantum technology is based on the application of quantum physics to tasks and challenges related to information theory. They are impacting the way we process and share information as well as learn about the world around us through quantum computers, communication, and sensors. Quantum technology is rapidly evolving and maturing into a new economically important sector. An understanding of quantum mechanics, its applications, and the strengths and limitations of different quantum modalities are required for maximum impact in this field.

The MSc in Physics with a Graduate Specialization in Quantum Technology is a course-based study option that will provide students with the theoretical foundation for quantum technology through in-class courses offered by the Faculty of Science and through the University of Waterloo Collaborative Graduate Program in Quantum Information. It will further provide hands-on experience with several major quantum platforms through unique laboratory courses.

The Department of Physics and Astronomy at Waterloo have consulted with the Department of Physics and Astronomy at Guelph and they have no concerns with Waterloo's proposed addition of the coursework study option with a Graduate Specialization in Quantum Technology to the MSc in Physics program.

Proposed effective date: Term: Fall Year: 2020

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

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Graduate research fields • Astrophysics and Gravitation • Atomic Molecular and Optical Physics • Biophysics • Chemical Physics • Condensed Matter and Materials Physics • Industrial and Applied Physics • Quantum Computing • Subatomic Physics **Program information** • **Admit term(s)** o Fall o Winter o Spring • **Delivery mode** o On-campus • **Program type** o Joint o Master's o Research • **Registration option(s)** o Full-time o Part-time • **Study option(s)** o Thesis o Master's Research Paper **Admission requirements** • **Minimum requirements** o An Honours Bachelor's degree (or equivalent) in Science with at least a 75% standing. • **Application materials** o Graduate Record Examination (GRE) Physics subject test scores for all students who have completed their post-secondary education outside of Canada. o Supplementary information form	**Graduate research fields** • Astrophysics and Gravitation • Atomic Molecular and Optical Physics • Biophysics • Chemical Physics • Condensed Matter and Materials Physics • Industrial and Applied Physics • Quantum Computing • Subatomic Physics **Graduate specialization** • Quantum Technology **Program information** • **Admit term(s)** o Fall o Winter o Spring • **Delivery mode** o On-campus • **Program type** o Joint o Master's o Research • **Registration option(s)** o Full-time o Part-time • **Study option(s)** o Thesis o Master's Research Paper o Coursework • **Additional program information** o Note: the coursework study option is only open to students at the University of Waterloo. **Admission requirements** • **Minimum requirements** o An Honours Bachelor's degree (or equivalent) in Science with at least a

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
o Transcript(s) • **References** o Number of references: 3 o Type of references: 2 of which are normally from academic sources • **English language proficiency** (ELP) (if applicable) **Degree requirements** **Thesis option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must complete 4 one-term courses (0.50 unit weight) acceptable for graduate credit. o 1 of the 4 courses must include at least 1 of the following: ▪ PHYS 701 Quantum Mechanics 1 ▪ PHYS 703 Introduction to Quantum Field Theory ▪ PHYS 704 Statistical Physics 1 ▪ PHYS 706 Electromagnetic Theory ▪ PHYS 767 Quantum Information Processing ▪ PHYS 781 Fundamentals of Astrophysics ▪ PHYS 782 Fundamentals of Astrophysics II o 1 of the 4 courses may be an upper level undergraduate course. The supervisor must submit a memo justifying why the undergraduate course is acceptable for graduate credit and approval must be received from the Physics and Astronomy Graduate Officer and the Associate Dean of Science for Graduate Studies prior to enrolment in the course. o An average of at least 70% must be obtained in the required courses. A minimum grade of 65% is required for a pass in each course. No more than 2 courses, of the first 4 taken, can have averages of less than 70%. If a student does not meet these minimum grade requirements, or receives a failing grade in any course, the student may	75% standing. • **Application materials** o Graduate Record Examination (GRE) Physics subject test scores for all students who have completed their post-secondary education outside of Canada. o Supplementary information form o Transcript(s) • **References** o Number of references: 3 o Type of references: 2 of which are normally from academic sources • **English language proficiency** (ELP) (if applicable) **Degree requirements** **Thesis option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must complete 4 one-term courses (0.50 unit weight) acceptable for graduate credit. o 1 of the 4 courses must include at least 1 of the following: ▪ PHYS 701 Quantum Mechanics 1 ▪ PHYS 703 Introduction to Quantum Field Theory ▪ PHYS 704 Statistical Physics 1 ▪ PHYS 706 Electromagnetic Theory ▪ PHYS 767 Quantum Information Processing ▪ PHYS 781 Fundamentals of Astrophysics ▪ PHYS 782 Fundamentals of Astrophysics II o 1 of the 4 courses may be an upper level undergraduate course. The supervisor must submit a memo justifying why the undergraduate course is acceptable for graduate credit and approval must be received from the Physics and Astronomy Graduate Officer and the Associate Dean of Science for Graduate Studies prior to enrolment in the course.

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
be required to withdraw from the program. • **Link(s) to courses** o Physics (PHYS) courses o Graduate course search • **Academic Integrity Workshop** o This is a milestone requirement for all full-time students. Part-time students are not required to complete this workshop. This is a mandatory workshop on academic integrity and intellectual property which will be offered to all new incoming graduate students within the Faculty of Science during the first term of each Fall and Winter. o Note: students will be required to complete both the Academic Integrity Module as a required course along with the Academic Integrity Workshop milestone. The Module will appear on the student's transcript as a course. The Workshop will appear on the student's transcript as a milestone. • **Master's Thesis** o Students must complete a thesis based on some original research. The subject of research must be approved by the candidate's supervisor and the thesis must be read and approved by the supervisor and two other faculty members. Part of the research may be conducted off-campus at a collaborating laboratory. The supervisor based at that laboratory will be an adjunct member of the Department of Physics and Astronomy and a member of the joint Physics graduate program with the University of Guelph. There will also be an on-campus co-supervisor. o An acceptable thesis on a research topic must be submitted. Detailed specifications of the format of the thesis are available from the appropriate Graduate Office. Acceptance of the thesis requires the approval by an Examining Committee following an oral defence of the thesis. • **Other requirements** o Supervisory Committee meetings: it is required that the student meet formally	o An average of at least 70% must be obtained in the required courses. A minimum grade of 65% is required for a pass in each course. No more than 2 courses, of the first 4 taken, can have averages of less than 70%. If a student does not meet these minimum grade requirements, or receives a failing grade in any course, the student may be required to withdraw from the program. • **Link(s) to courses** o Physics (PHYS) courses o Graduate course search • **Academic Integrity Workshop** o This is a milestone requirement for all full-time students. Part-time students are not required to complete this workshop. This is a mandatory workshop on academic integrity and intellectual property which will be offered to all new incoming graduate students within the Faculty of Science during the first term of each Fall and Winter. o Note: students will be required to complete both the Academic Integrity Module as a required course along with the Academic Integrity Workshop milestone. The Module will appear on the student's transcript as a course. The Workshop will appear on the student's transcript as a milestone. • **Master's Thesis** o Students must complete a thesis based on some original research. The subject of research must be approved by the candidate's supervisor and the thesis must be read and approved by the supervisor and two other faculty members. Part of the research may be conducted off-campus at a collaborating laboratory. The supervisor based at that laboratory will be an adjunct member of the Department of Physics and Astronomy and a member of the joint Physics graduate program with the University of Guelph. There will also be an on-campus co-supervisor. o An acceptable thesis on a research topic must be submitted. Detailed specifications of the format of the thesis

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
with their Supervisory Committee within the first six months of registration and subsequently at least once every six months. While one meeting in a year must be a formal one, the other meeting may be held informally; in the latter case, the meeting may simply take the form of a brief discussion of the student's academic progress, but, apart from the student and the supervisor, the meeting must involve at least one other member of the Committee. o A student in the MSc in Physics program, who shows a particular aptitude for research, may be permitted under certain circumstances to transfer to the PhD program without writing an MSc thesis. **Master's Research Paper option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must complete 7 one-term courses (0.50 unit weight) acceptable for graduate credit. o 2 of the courses may be upper level undergraduate courses. The supervisor must submit a memo justifying why the undergraduate course(s) are acceptable for graduate credit, and approval must be received from the Physics and Astronomy Graduate Officer and the Associate Dean of Science for Graduate Studies prior to enrolment in the course. o An average of at least 70% must be obtained in the required courses. A minimum grade of 65% is required for a pass in each course. No more than 2 courses, of the first 4 taken, can have averages of less than 70%. If a student does not meet these minimum grade requirements, or receives a failing grade in any course, the student may be required to withdraw from the program. • **Link(s) to courses** o Physics (PHYS) courses	are available from the appropriate Graduate Office. Acceptance of the thesis requires the approval by an Examining Committee following an oral defence of the thesis. • **Other requirements** o Supervisory Committee meetings: it is required that the student meet formally with their Supervisory Committee within the first six months of registration and subsequently at least once every six months. While one meeting in a year must be a formal one, the other meeting may be held informally; in the latter case, the meeting may simply take the form of a brief discussion of the student's academic progress, but, apart from the student and the supervisor, the meeting must involve at least one other member of the Committee. o A student in the MSc in Physics program, who shows a particular aptitude for research, may be permitted under certain circumstances to transfer to the PhD program without writing an MSc thesis. **Master's Research Paper option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must complete 7 one-term courses (0.50 unit weight) acceptable for graduate credit. o 2 of the courses may be upper level undergraduate courses. The supervisor must submit a memo justifying why the undergraduate course(s) are acceptable for graduate credit, and approval must be received from the Physics and Astronomy Graduate Officer and the Associate Dean of Science for Graduate Studies prior to enrolment in the course. o An average of at least 70% must be obtained in the required courses. A minimum grade of 65% is required for a pass in each course. No more than 2 courses, of the first 4 taken, can have averages of less than 70%. If a student

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
o Graduate course search • **Academic Integrity Workshop** o This is a milestone requirement for all full-time students. Part-time students are not required to complete this workshop. This is a mandatory workshop on academic integrity and intellectual property which will be offered to all new incoming graduate students within the Faculty of Science during the first term of each Fall and Winter. o Note: students will be required to complete both the Academic Integrity Module as a required course along with the Academic Integrity Workshop milestone. The Module will appear on the student's transcript as a course. The Workshop will appear on the student's transcript as a milestone. • **Master's Research Paper** o The Master's Research Paper will have to be approved by the candidate's Supervisory Committee. • **Other requirements** o Supervisory Committee meetings: it is required that the student meet formally with their Supervisory Committee within the first four months of registration and subsequently at least once every six months. While one meeting in a year must be a formal one, the other meeting may be held informally; in the latter case, the meeting may simply take the form of a brief discussion of the student's academic progress, but, apart from the student and the supervisor, the meeting must involve at least one other member of the Committee.	does not meet these minimum grade requirements, or receives a failing grade in any course, the student may be required to withdraw from the program. • **Link(s) to courses** o Physics (PHYS) courses o Graduate course search • **Academic Integrity Workshop** o This is a milestone requirement for all full-time students. Part-time students are not required to complete this workshop. This is a mandatory workshop on academic integrity and intellectual property which will be offered to all new incoming graduate students within the Faculty of Science during the first term of each Fall and Winter. o Note: students will be required to complete both the Academic Integrity Module as a required course along with the Academic Integrity Workshop milestone. The Module will appear on the student's transcript as a course. The Workshop will appear on the student's transcript as a milestone. • **Master's Research Paper** o The Master's Research Paper will have to be approved by the candidate's Supervisory Committee. • **Other requirements** o Supervisory Committee meetings: it is required that the student meet formally with their Supervisory Committee within the first four months of registration and subsequently at least once every six months. While one meeting in a year must be a formal one, the other meeting may be held informally; in the latter case, the meeting may simply take the form of a brief discussion of the student's academic progress, but, apart from the student and the supervisor, the meeting must involve at least one other member of the Committee. **<u>Coursework option:</u>**

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	• **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o At this time, the only MSc in Physics coursework option includes a Graduate Specialization in Quantum Technology. o A Graduate Specialization is a University credential that is recognized on the student's transcript but not on the diploma and is intended to reflect that a student has successfully completed a set of courses that together provide an in-depth study in the area of the Graduate Specialization. Students must complete the following 8 one-term courses (0.50 unit weight) acceptable for graduate credit in order to obtain the Graduate Specialization in Quantum Technology on their transcript: ▪ PHYS 701 Quantum Mechanics 1 ▪ PHYS 760/QIC 860 Laboratory on Control of Quantum Technology ▪ PHYS 761/QIC 861 Laboratory on Photonic Quantum Technology ▪ PHYS 762/QIC 862 Laboratory on Low Temperature Quantum Technology and Nanofabrication ▪ PHYS 763/QIC 863 Independent Project in Quantum Technology or 1 QIC 800 level elective ▪ PHYS 767/QIC 710 Quantum Information Processing ▪ QIC 750 Quantum Information Processing Devices ▪ 1 PHYS 700 level or QIC 800 level elective o Substitutions of courses are possible subject to approval from the Graduate Officer. o It is recommended that students who wish to go on to PhD programs choose the PHYS 763/QIC 863 Independent Project in Quantum Technology course to develop their research capabilities. o An average of at least 70% must be obtained in the required courses. A minimum grade of 65% is required for a

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	pass in each course. No more than 2 courses, of the first 4 taken, can have averages of less than 70%. If a student does not meet these minimum grade requirements, or receives a failing grade in any course, the student may be required to withdraw from the program. • **Link(s) to courses** o Physics (PHYS) courses o Graduate course search • **Academic Integrity Workshop** o This is a milestone requirement for all full-time students. Part-time students are not required to complete this workshop. This is a mandatory workshop on academic integrity and intellectual property which will be offered to all new incoming graduate students within the Faculty of Science during the first term of each Fall and Winter. o Note: students will be required to complete both the Academic Integrity Module as a required course along with the Academic Integrity Workshop milestone. The Module will appear on the student's transcript as a course. The Workshop will appear on the student's transcript as a milestone.

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

Students accepted to the regular MSc program (thesis or MRP option) may transfer to this coursework option subject to approval from the Graduate Officer. Note that the funding offer for the regular MSc program (thesis or MRP option) does not carry over to this coursework option.

Department/School approval date (mm/dd/yy):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 03/04/2020
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 Studies and Postdoctoral Affairs
Waterloo, Ontario, Canada N2L 3G1
uwaterloo.ca/graduate-studies | gsoffice@uwaterloo.ca

May 1, 2020

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

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

RE: Graduate Studies Academic Calendar changes

Items for approval:

1) Required to withdraw regulations

Description and rationale for proposed changes:

Required to withdraw regulations are being added to the Graduate Studies Academic Calendar to provide clarity and information for students, faculty, and staff on processes that already occur.

Proposed effective date: Term: Fall Year: 2020

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

https://uwaterloo.ca/graduate-studies-academic-calendar/general-information-and-regulations/enrolment-and-time-limits

Proposed Graduate Studies Academic Calendar content:

Required to Withdraw

A Required to Withdraw decision is made by a Faculty and a Department/School or Program, when a student cannot continue at the University of Waterloo (without subsequent re-application). These reasons may include but are not limited to:

- a failed PhD thesis examination;
- failure to maintain minimum academic standing;
- an unsuccessful comprehensive exam;
- insufficient progress in program;
- failure to submit or a “not approved” program extension;
- the absence of a graduate research supervisor, following the discontinuation with a previous supervisor, as identified in the University Responsibilities regarding Supervisory Relationships; and
- a penalty as outlined in Policy 71.

Prior to arriving at a Required to Withdraw decision, if a student is struggling in their program, support for that student must be provided consistent with the practices outlined in *Guidelines for evaluating and providing feedback on graduate student progress*.

Guidelines for evaluating and providing feedback on graduate student progress in PhD and research Masters programs

Guidelines for evaluating and providing feedback on graduate student progress in coursework programs

Proposed Graduate Studies Academic Calendar content:

When a Required to Withdraw decision is reached, the Graduate Officer (or Faculty Associate Dean, Graduate Studies) shall communicate that decision formally to the student, in writing, specifying the sequence of events that led to the decision. This letter will be reviewed by the Faculty Associate Dean, Graduate Studies prior to distribution to ensure that decisions are consistent with the Faculty's practices. The Faculty Associate Dean, Graduate Studies and the University's Associate Vice-President Graduate Studies and Postdoctoral Affairs must be copied on the final correspondence.

Upon receipt of the letter, the student may elect to Voluntarily Withdraw if they are not being Required to Withdraw under Policy 71. The student's transcript will reflect whether the student's withdrawal was voluntary or required.

A student receiving a Required to Withdraw decision may challenge that decision through Policy 70.

Graduate Operations Committee approval date (mm/dd/yy): 04/21/2020

UNIVERSITY OF WATERLOO

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

May 15, 2020

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

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

RE: Graduate Studies Academic Calendar changes

Items for approval:

1) Voluntarily withdraw regulation updates

Description and rationale for proposed changes:

Voluntarily withdraw regulation updates are being made to the Graduate Studies Academic Calendar to provide more clarity and information for students, faculty, and staff on processes that already occur.

Proposed effective date: Term: Fall Year: 2020

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

https://uwaterloo.ca/graduate-studies-academic-calendar/general-information-and-regulations/enrolment-and-time-limits

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Voluntarily withdraw Students who are unable to ~~participate~~ in their program ~~of study for more than two consecutive terms should voluntarily withdraw from the program by completing a Change of enrolment status form. In advance of voluntary withdrawal, students must discuss with their department any conditions which must be met if they are approved for readmission.~~ Students who reapply to a program and are approved for readmission, will be required to ~~enrol~~ for a minimum of one full term, without tuition refund, to complete their program. ~~The University reserves the right to require a student to withdraw from a program for academic reasons.~~	**Voluntarily withdraw** Students who are unable to continue in their program, or who have been inactive for more than two consecutive terms (outside of parental leave or an approved inactive period beyond the usual limit of two terms for exceptional circumstances), should voluntarily withdraw from the program by completing a change of enrolment status. If students wish to have the option to reapply to the program from which they are withdrawing, they should discuss with their department any conditions which must be met to be granted readmission. Students who reapply to a program and are approved for readmission, will be required to be enrolled for a minimum of one full term, without tuition refund, to complete their program. Readmission is not guaranteed.

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
	Students who voluntarily withdraw will have "voluntary withdrawal" reflected on their transcripts.

SECRETARY NOTE:
This item was endorsed and recommended to Senate for approval by Senate Graduate and Research Council (SGRC) by e-vote on 19 May 2020.