UNIVERSITY OF WATERLOO
SENATE GRADUATE & RESEARCH COUNCIL
NOTICE OF MEETING

DATE: Monday 11 May 2020 Chair – C. Dean
TIME: 10:30 a.m. – 12:00 noon
PLACE: Microsoft Teams

AGENDA

Item	Action
1. Declarations of Conflict of Interest	
a. Excerpt from Bylaw 1, section 8*	Information
2. Minutes of 13 April 2020* and Business Arising	Decision (SGRC)
3. Co-chairs' Remarks	Information
4. Academic Program Reviews	
a. Status of Reports under Review	Information
b. Guiding Questions for Final Assessment Reports and Two-Year Progress Reports*	Information
c. Two-Year Progress Report: Guelph-Waterloo Centre for Chemistry and Biochemistry* (Casello/Wettig; reviewer: University of Guelph)	Decision (SGRC)
5. Curricular Submissions	
a. Arts* (Liz Nilsen)	i; SEN-Regular
b. Engineering * (Siva Sivoththaman)	1;SEN-Regular
c. Mathematics* (Adam Kolkiewicz)	Decision (SGRC)
d. Science* (Shawn Wettig; Liz Meiering/for questions related to CHEM 784/794)	1a; SEN-Regular
6. Graduate Studies Academic Calendar Changes – Required to Withdraw* (Müller)	SEN-Regular
7. Graduate Awards*	
a. Wendy Mitchinson Graduate Award in History - endowment	Information
8. Other Business	Information
9. Next Meeting: 14 September 2020 from 10:30 a.m. - 12 noon; location TBD **NOTE**: the 8 June 2020 SGRC meeting cancelled	Information

*material attached
** to be distributed separately
***will not be in attendance at meeting
"SGRC" to be approved on behalf of Senate
"SEN" to be recommended to Senate for approval

4 May 2020

Kathy Winter, PhD, CPsych
Assistant University Secretary

Excerpt from Senate Bylaw 1

8. Declarations of conflict of interest

8.01	At the beginning of each meeting of Senate or any of Senate's committees or councils, the chair will call for members to declare any conflicts of interest with regard to any agenda item. For agenda items to be discussed in closed session, the chair will call for declarations of conflict of interest at the beginning of the closed portion of the meeting. Members may nonetheless declare conflicts at any time during a meeting.
8.02	A member shall be considered to have an actual, perceived or potential conflict of interest, when the opportunity exists for the member to use confidential information gained as a member of Senate, or any of Senate's committees or councils, for the personal profit or advantage of any person, or use the authority, knowledge or influence of the Senate, or a committee or council thereof, to further her/his personal, familial or corporate interests or the interests of an employee of the university with whom the member has a marital, familial or sexual relationship.
8.03	Members who declare conflicts of interest shall not enter into debate nor vote upon the specified item upon which they have declared a conflict of interest. The chair will determine whether it is appropriate for said member to remove themselves from the meeting for the duration of debate on the specified item(s).
8.04	Where Senate or a committee or council of Senate is of the opinion that a conflict of interest exists that has not been declared, the body may declare by a resolution carried by two-thirds of its members present at the meeting that a conflict of interest exists and a member thus found to be in conflict shall not enter into debate on the specified item upon which they have declared a conflict of interest. The chair will determine whether it is appropriate for said member to remove themselves from the meeting for the duration of debate on the specified item(s).

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Minutes of the 13 April 2020 Meeting
[in agenda order]
Microsoft Teams Meeting Videoconference

Present: Jeff Casello, Amelia Clarke, Peter Deadman, Charmaine Dean**,** Bernard Duncker, Ana Ferrer, Nathan Funk, Rhona Hanning, Alison Hitchens, Lauren Meliss Holt, Julie Joza, Adam Kolkiewicz, Dmitry Marin, Daniel Martel, Kareem Tarek Mostafa, Bruce Muirhead, Kirsten Müller (for Daniela O'Neill), Liz Nilsen, Jack Rehder, Max Salman, Siva Sivoththaman, Richard Staines, Mike Szarka, Shawn Wettig, Kathy Winter (secretary)

Resources: Trevor Clews, Jennifer Kieffer, Carrie MacKinnon, Amanda McKenzie, Alyssa Voigt.

Regrets: David Billedeau**,** David Clausi*, Anita Layton, Naima Samuel*, Shirley Tang.

Organization of Meeting: Jeff Casello, co-chair of the council, took the chair, and Kathy Winter acted as secretary. The secretary advised that due notice of the meeting had been given, a quorum was present, and the meeting was properly constituted.

1. DECLARATIONS OF CONFLICT OF INTEREST

No conflicts of interest were declared.

2. MINUTES OF 9 MARCH 2020 AND BUSINESS ARISING

The minutes were approved as distributed.

3. CO-CHAIRS' REMARKS

Dean reported: (a) Funding update: NSERC discovery grant extensions by default; SSHRC grant and program deadline extensions; (b) CIHR: many and ongoing calls for COVID research; cancelled spring competition; (c) Continuity of student funding: a top priority; working to ensure that graduate students are covered for the spring term; please bring forward any remaining student cases of concern, as well as student questions; and (d) Think tank: a call to council members to come forward with interest in participating in a think tank designed for advancing and reshaping the world post-COVID - for more information contact Dean.

Casello reported: (a) Graduate Student Funding update: outlined 4 types of student funding (scholarships/award, TA's, Tri-agency external research grants, external research grants based on deliverables/timelines) – 3 of which have remained stable through extensions and adjusted duties; ADG's are to inform GSPA of any concerns experienced by students funded in 4th category: external research grants contingent on deliverables/timelines; (b) COVID resource: on GSPA webpage; emphasis is on frank / open discussions between supervisors and supervisees re: academic plans and progress (lab work, comps, research proposals, extensions, etc.), (c) Fall 2020; universities, executive heads / U15 with focused efforts on fall term; emphasis on consistency of messaging; decision on education format by mid-May 2020, and (d) Scholarships: 8 Vanier awards received across 4 faculties (number up significantly from past 5 years); Trudeau Fellow (Environment); AMTD fellowship program (88 applicants; 2-4 offers expected; fall 2020 start date); Tri-Agencies (awaiting some results). In discussion: council members provided consistent accounts of lab and field work TA's being honoured through alternate work duties.

4. RESEARCH CENTRES AND INSTITUTES

a-b. Items were received as information.
c. Renewal – Waterloo Institute for Hellenistic Studies (WIHS). Council heard a motion to approve the five-year renewal of WIHS on behalf of Senate, as presented. Craig Hardiman (director) provided a PowerPoint and executive summary within the agenda package to which Duncker spoke to favourably. Casello voiced support for the Institute; modest budget, impactful graduate students, internationalization. Duncker and Nilsen. Carried with one abstention.

5. CURRICULAR SUBMISSIONS

a. Applied Health Science. Council heard an omnibus motion to approve the addition of a "Work and Health" graduate research field to the School of Public Health and Health Systems field option for both MSc and PhD students, effective 1 September 2020, as presented. The School of Public Health and Health Systems introduced six fields to their thesis-based MSc and PhD programs last year. These fields represent a concentration of courses and milestone work in specific areas that represent an emphasis within the broader degree - Public Health & Health Systems. They now propose a seventh field: Work and Health. This is an area that several Faculty members work in. Moreover, with the inactivation of the AHS Collaborative PhD in Work and Health, which is in progress, this provides a new option to recognize the emphasis. The Field includes existing courses. Hanning and Staines. Carried.

b. Arts. Council heard a motion to approve items I (Nilsen and Ferrer, Carried), omnibus items IV-V (Nilsen and Joza. Carried), item VI (Nilsen and Holt, Carried), and an omnibus motion to approve items VII-XI (Nilsen and Mostafa. Carried), as presented. Casello observed that the number of required courses for the accounting program is at the high end of the limit. Council heard an omnibus motion to recommend items II and III to Senate: to approve the addition of a graduate research field in Peace Integration within the Master of Arts in Global Governance and to approve the addition of a graduate specialization in Peace Integration within the Master of Peace and Conflict Studies, effective 1 September 2020, as presented. Nilsen and Ferrer, Carried

c. Environment. Council heard an omnibus motion to approve items 1a, 1b, 2aII, 2aIII, and 3 (Deadman and Clarke. Carried), omnibus items 2a1 and 2a2 (Deadman and Wettig. Carried), item 2b (Deadman and Martel. Carried), item 2c (Deadman and Clarke. Carried), and item 4 (Deadman and Hanning. Carried), as presented.

6. GRADUATE STUDIES ACADEMIC CALENDAR CHANGES

Council heard a motion to recommend to Senate the approval of the Graduate Studies' Academic Calendar changes, effective 1 May 2020, as presented. Müller and Rehder. Carried.

1) Removing the Michigan English Language Assessment Battery (MELAB) as an accepted examination for the English language proficiency (ELP) requirements.
   Rationale: The MELAB is no longer being offered. After July 2020, MELAB results will no longer be accepted to meet English language requirements and as such, the MELAB is being removed from the ELP page in the GSAC.

2) Editorial update to the parental leave requirements.
   Rationale: A minor editorial update is being proposed to the parental leave requirements to provide better clarity.

7. GRADUATE AWARDS

Council received one item for information, as presented.

8. OTHER BUSINESS

There was no other business.

9. NEXT MEETING

The next meeting will be held on Monday 11 May 2020 from 10:30 a.m. to 12 noon; Microsoft Teams.
The 8 June 2020 SGRC meeting is cancelled.

14 April 2020

Kathy Winter, PhD, CPsych,
Assistant University Secretary

Handling of Final Assessment Reports & Two-Year Progress Reports related to academic program reviews

Introduction

Waterloo's Senate Undergraduate Council (SUC) and Senate Graduate and Research Council (SGRC) have a duty to consider all aspects relating to the academic quality of undergraduate studies and graduate studies within the University. As described in Waterloo's Institutional Quality Assurance Process (IQAP), documentation emerging from the cyclical program review process includes:

- **Final Assessment Report**, which summarizes the self-study, external reviewers' report, program response, and implementation plan, and
- **Two-Year Progress Report**, which reports on progress related to the implementation plan.

Final Assessment Reports (FARs), require two SUC or SGRC members to review the report, whereas, Two-Year Progress Reports only require one SUC or SGRC member, although at the SUC/SGRC Chair's discretion, a second reviewer may be sought. In order to ensure that student representatives have the opportunity to review each report, the WUSA VP, Education and GSA President receive these documents in advance for information. Any questions or concerns they might have can be raised and addressed, if needed, prior to the report being approved at SUC/SGRC. This review process is coordinated by the Quality Assurance (QA) Office.

To promote transparency and foster integrity in the review process, reviewers should not be members of the Faculty or Affiliated and Federated Institutions of Waterloo (AFIW) from which the report originates.

Assessment

Reviewers will consider a series of **guiding questions** (see below) in arriving at their recommendation for revision or approval to SUC or SGRC. Before reporting to SUC or SGRC, reviewers will ask questions and share their observations, as well as any concerns they have identified with the report, to the Quality Assurance Office, who will then connect with the Chair or Director of the program. The FEDS and GSA representative will also receive these reports for information prior to submission to SUC/SGRC.

The Quality Assurance Office will ensure that any revisions to the reports are completed by the Chair or Director of the program, prior to the QA Office submitting the report for approval at a SUC or SGRC.

Does the Final Assessment Report:

1) Include a credible implementation plan that not only addresses the substantive issues identified from the program review process but also identifies clearly:
   - What actions will follow from specific recommendations?
   - Who will be responsible for acting on those recommendations?
   - Who will be responsible for providing resources?
   - Priorities for implementation and realistic timelines for initiating and monitoring actions?
2) Provide a rationale as to why a recommendation(s) will not be pursued?

Does the Two-Year Progress Report:

1) Clearly describe progress achieved on the various action items in the implementation plan?

2) Explain convincingly any circumstances that would have altered the original implementation plan?

3) For items that are behind schedule, propose an amended implementation schedule that is reasonable and credible?

4) Address significant developments or initiatives that have arisen since the program review process, or that were not contemplated by the program review process?

The program Chair or Director (or their chosen delegate) will attend the SUC or SGRC meeting to address any questions or concerns that might arise during SUC/SGRC.

SUC's and SGRC's responsibility will be to focus on the overall credibility and feasibility of the report and the proposed plan of action – seeking to uncover, for example, unexplained disjunctions between the reviewers' recommendations and the program's response – as opposed to the minutiae of course content and curriculum structure.

A Final Assessment Report or Two-Year Progress Report that is approved by a majority vote of SUC/SGRC will be submitted to Senate for information. Should the discussion at SUC or SGRC reveal issues of concern that require revision, the Quality Assurance Office will work with the program Chair or Director to address the concern(s). If minor revisions are needed, the report will be edited and then it will proceed to Senate for information without re-approval from SUC/SGRC; however, any major revisions will require SUC/SGRC review and approval.

Status of Reports under Review

A summary of the status of all reports under review, including reports for which the QA Office is seeking reviewers, can be found at the following link:
https://uwaterloo.ca/academic-program-reviews/status-reports-under-review

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 Mersing

_____ **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

ARTS GRADUATE STUDIES

October 12, 2016

TO: Members, Senate Graduate and Research Council

FROM: Angela Christelis, Administrative Coordinator, Arts Graduate Studies & Research

RE: Graduate Affairs Group Reports March - April 2020

The attached Arts Graduate Affairs Group reports were approved by the Arts Faculty Council meeting on March 17, 2020 and are now being submitted for approval by the Senate Graduate and Research Council in May 2020.

Angela Christelis

Attach.

Associate Dean of Arts, Graduate Studies: Liz Nilsen. E-mail: enilsen@uwaterloo.ca
Administrative Co-ordinator, Arts Graduate Studies & Research: Angela Christelis. E-mail: angela.christelis@uwaterloo.ca

ARTS FACULTY COUNCIL REPORT TO

SENATE GRADUATE AND RESEARCH COUNCIL

CURRICULAR ITEMS for approval [bottom right pagination]

i. **MDEI –** *program revision:* changing program from on-campus to hybrid on-campus/online. [1-10]
ii. **MDEI –** *new courses:* DEI 616, DEI 627. [11-12]
iii. **MDEI –** *course revisions:* DEI 612, DEI 613, DEI 614, DEI 623, DEI 625, DEI 626. [13-19]
iv. **MDEI –** *course inactivations:* DEI 615, DEI 624, DEI 631. [20-22]
v. **MDEI –** *new milestones:* Program Intensive I, Program Intensive II. [23-24]
vi. **MDEI –** *milestone inactivation:* Master's Workshop. [25]

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

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: 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):

Faculty: Arts
Effective term: Term/Year Fall 2021

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 616
Course Title (max. 100 characters incl. spaces): Special Topics 1
Course Short Title (max. 30 characters incl. spaces): Special Topics 1
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐
Course Description: This course addresses special topics related to design, innovation or emerging trends in digital technologies. This course is restricted to students enrolled in the Master of Digital Experience Innovation program.
New course description (for revision only):

Meet Type(s): Lecture
Primary Meet Type: Lecture
Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☒ No ☐
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: We are proposing a special topics course to enable the program to include new and emerging topics related to the program, and to provide learning opportunities with invited experts.

Prepared by: **Jessica Thompson, Associate Director, Graduate UW-Stratford** Date: 14-Feb-20

Faculty: Arts
Effective term: Term/Year Fall 2021

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 627
Course Title (max. 100 characters incl. spaces): Special Topics 2
Course Short Title (max. 30 characters incl. spaces): Special Topics 2
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐
Course Description: This course addresses special topics related to applied innovation or emerging trends in business. This course is restricted to students enrolled in the Master of Digital Experience Innovation program.
New course description (for revision only):

Meet Type(s): Lecture
Primary Meet Type: Lecture
Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☒ No ☐
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: We are proposing a special topics course to enable the program to include new and emerging topics related to the program, and to provide learning opportunities with invited experts.

Prepared by: **Jessica Thompson, Associate Director, Graduate UW-Stratford** Date: 14-Feb-20

Faculty: Arts

Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☒ Inactivation ☐

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes: Requisites
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 612

Course Title (max. 100 characters incl. spaces): Working in Teams

Course Short Title (max. 30 characters incl. spaces): Working in Teams

Grading Basis: NUMERICAL

Course Credit Weight: 0.50

Course Consent Required: ☐

Course Description: This course will cover the three key areas for working in teams: communicating, differing and facilitating. To master the art of managing and participating in high performing, problem-solving teams, team members must be aware of both their own and others' strengths and weaknesses when working in teams. They must also be aware of the dynamics of teams throughout the phases of a problem-solving cycle. Theory on teams and on team development will be introduced, as well as the particulars of working in teams on early-stage innovation projects. The course will then focus on deepening and practicing relevant skills. It will begin with a self-assessment of personal capacities and of the distribution of skills in the team as a whole. Following this, it will focus on deepening skills in a sequence which shadows the phase of the project on which the teams are working. Students will be trained in the skills of reflective listening, problem identification and analysis, supportive listening and facilitation, creative brainstorming and alternatives generation, construction differing and choice, idea development and presentation, and team process evaluation. The format of the course will combine short lecture with experiential skill-building exercises. Coaches assigned to each team will support individual and team learning. Students will be required to enter a "contract" relative to their team role and performance.

New course description (for revision only):

Meet Type(s): Lecture Lab Seminar Reading

Primary Meet Type: Seminar

Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request:

To provide clarity on the course delivery mode and to ensure that MDEI students have direct access to the course without needing to obtain department consent/permission numbers.

Prepared by: Jessica Thompson, Associate Director, Graduate UW-Stratford Date: 14-Feb-20

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Arts

Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☒ Inactivation ☐

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes: Requisites
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 613

Course Title (max. 100 characters incl. spaces): Digital Media Solutions 1: Design Principles and Practice

Course Short Title (max. 30 characters incl. spaces): Digital Media Solutions 1

Grading Basis: NUMERICAL

Course Credit Weight: 0.50

Course Consent Required: ☐

Course Description: This course combines the creation of an analysis or digital design projects. Students will be provided with a theoretical and critical framework in order to learn how to contextualize digital design within the broader social, cultural, political, economic, and global context. Students will also receive hands on training in design processes, digital tools, as well as the principles of design.

New course description (for revision only):

Meet Type(s): Lecture Lab Seminar

Primary Meet Type: Seminar

Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request:

To provide clarity on the course delivery mode and to ensure that MDEI students have direct access to the course without needing to obtain department consent/permission numbers.

Prepared by: Jessica Thompson, Associate Director, Graduate UW-Stratford Date: 14-Feb-20

Faculty: Arts

Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☒ Inactivation ☐

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes: Title and requisites
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 614

Course Title (max. 100 characters incl. spaces): Principles of Marketing

Course Short Title (max. 30 characters incl. spaces): Principles of Marketing

Grading Basis: NUMERICAL

Course Credit Weight: 0.50

Course Consent Required: ☐

Course Description: The objectives of this course are to provide the students with a firm understanding of market strategy and the techniques used for marketing in a globalized context. This course aims to instruct students in two primary, fundamental areas of marketing: (1) basic principles of marketing, which includes market segmentation strategies, the use of marketing channels, how to develop promotion and pricing strategies, and how to develop competitive advantage, and (2) how to leverage technology-driven, digital media for achieving marketing goals.

New course description (for revision only):

Meet Type(s): Lecture Lab Seminar

Primary Meet Type: Seminar

Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request: Current title, 'Principles of Marketing in a Globalized World: Leveraging Digital Technology' was created as a companion to 'Understanding the Consumer Universe: Market Research in Digital Media'. We are proposing having only one marketing course in the program.

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Faculty: Arts

Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☒ Inactivation ☐

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes: Requisites
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 623

Course Title (max. 100 characters incl. spaces): Digital Media Solutions 2: Project Management

Course Short Title (max. 30 characters incl. spaces): Digital Media Solutions 2

Grading Basis: NUMERICAL

Course Credit Weight: 0.50

Course Consent Required: ☐

Course Description: This course will focus on managing production processes and resources for digital media projects, from initial planning and budgeting through the management of milestones, tasks, personnel, technical resources and delivery. Students will receive training in initiating and tracking individual tasks within the overall structure of a project, learning how to adjust for change in project needs and available resources.

New course description (for revision only):

Meet Type(s): Lecture Lab Seminar Reading

Primary Meet Type: Seminar

Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request:

To provide clarity on the course delivery mode and to ensure that MDEI students have direct access to the course without needing to obtain department consent/permission numbers.

Prepared by: Jessica Thompson, Associate Director, Graduate UW-Stratford Date: 14-Feb-20

Faculty: Arts

Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☒ Inactivation ☐

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes: Title and requisites
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 625

Course Title (max. 100 characters incl. spaces): Business Innovation and Impact

Course Short Title (max. 30 characters incl. spaces): Business Innovation and Impact

Grading Basis: NUMERICAL

Course Credit Weight: 0.50

Course Consent Required: ☐

Course Description: Changing media have a profound impact on our economy, governance, and community life. Our institutions, our approaches to economic and cultural development, and traditional business models are challenged to adapt to the realities of an information-rich, technology-enabled society. This course will provide a survey of the broad implications of evolving technology through research and case studies focusing on personal, institutional, and political choices.

New course description (for revision only):

Meet Type(s): Lecture Seminar

Primary Meet Type: Lecture

Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request:

We propose a change to the title from 'Media Innovation and Impact' to better reflect the course content.

Faculty: Arts

Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☒ Inactivation ☐

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes: Requisites
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 626

Course Title (max. 100 characters incl. spaces): User Experience (UX) Fundamentals and User Research (UER)

Course Short Title (max. 30 characters incl. spaces): UX Fundamentals & UER

Grading Basis: NUMERICAL

Course Credit Weight: 0.50

Course Consent Required: ☐

Course Description: This course will cover the fundamental concepts of User Experience (UX) design and research (UR). It provides students with insights into "real-life" user evaluation and/or design processes, challenges, considerations, tools, teams and models. Students will learn how to design, evaluate, implement, and/or measure engaging user experiences.

New course description (for revision only):

Meet Type(s): Seminar Lab

Primary Meet Type: Seminar

Requisites: MDEI Students Only / Only offered Online

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request:

To provide clarity on the course delivery mode and to ensure that MDEI students have direct access to the course without needing to obtain department consent/permission numbers.

Prepared by: Jessica Thompson, Associate Director, Graduate UW-Stratford Date: 14-Feb-20

Faculty: Arts
Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☐ Inactivation ☒
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 615
Course Title (max. 100 characters incl. spaces): New Perspectives: Media History and Analysis
Course Short Title (max. 30 characters incl. spaces):
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐

Course Description: In this course, students will be introduced to key moments in the building of mediated communication networks, where knowledge and information are interlinked on a large scale. Students will receive training in the critical analysis of these media through the use of conceptual tools possibly including but not limited to semiotics, cultural criticism, discourse analysis, visual anthropology and others.

New course description (for revision only):

Meet Type(s): Lecture Seminar
Primary Meet Type: Lecture
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: Course content does not align with overall program objectives. We propose using this course slot to add one of two special topics courses.

Prepared by: **Jessica Thompson, Associate Director, Graduate UW-Stratford** Date: 14-Feb-20

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Arts

Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☐ Inactivation ☒

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 624

Course Title (max. 100 characters incl. spaces): Understanding the Consumer Universe: Market Research in Digital Media

Course Short Title (max. 30 characters incl. spaces):

Grading Basis: NUMERICAL

Course Credit Weight: 0.50

Course Consent Required: ☐

Course Description: This course instructs students in the key methods of exploratory and confirmatory research for understanding consumer behavior. Students are instructed in the qualitative methods of market ethnography, where they learn how to develop the tools to recognize business opportunity through interviews, focus groups, and personal observation. Students are also instructed in the quantitative methods of market survey, where they learn how to measure the potential of business opportunity through sampling with consumer polls, questionnaires, and combined research strategies.

New course description (for revision only):

Meet Type(s): Lecture Lab Seminar

Primary Meet Type: Lecture

Requisites:

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request: Content is closely related to DEI 614 (Principles of Marketing). We propose adding content from 624 to 614, and using course slot to add one of two special topics courses.

Prepared by: **Jessica Thompson, Associate Director, Graduate UW-Stratford** Date: 14-Feb-20

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Faculty: Arts
Effective term: Term/Year Fall 2021

Course ☒ New ☐ Revision ☐ Inactivation ☒
Milestone ☒ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: DEI Course number: 631
Course Title (max. 100 characters incl. spaces): Projects
Course Short Title (max. 30 characters incl. spaces):
Grading Basis: NUMERICAL
Course Credit Weight: 1.50
Course Consent Required: ☒ Instructor
Course Description: This final milestone ~~course~~ will serve as a capstone course for the program. Student teams will work intensively on their project, applying lessons during the other courses and working closely with industry consultants and coaches to bring their project to the stages of delivery and implementation.
New course description (for revision only):

Meet Type(s): Lab Lecture Seminar
Primary Meet Type:
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: Industry project (DEI 631) will be completed as a second in-person 'Program Intensive' milestone at the end of the program. 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.

Prepared by: **Jessica Thompson, Associate Director, Graduate UW-Stratford** Date: 14-Feb-20

Faculty: Arts
Effective term: Term/Year Fall 2021

Course ☐ New ☐ Revision ☐ Inactivation ☐
Milestone ☒ New ☒ Revision ☐ Inactivation ☐

New milestone title: Program Intensive 1

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: Course number:
Course Title (max. 100 characters incl. spaces):
Course Short Title (max. 30 characters incl. spaces):
Grading Basis:
Course Credit Weight:
Course Consent Required: ☐
Course Description:
New course description (for revision only):

Meet Type(s):
Primary Meet Type:
Requisites:

Special topics course: Yes ☐ No ☐
Cross-listed: Yes ☐ No ☐
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

The DEI Bootcamp will now be completed as a first in-person 'Program Intensive' at the start of the program. Program Intensive 1 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.

Prepared by: **Jessica Thompson, Associate Director, Graduate UW-Stratford** Date: 14-Feb-20

Faculty: Arts
Effective term: Term/Year Fall 2021

Course ☐ New ☐ Revision ☐ Inactivation ☐
Milestone ☒ New ☒ Revision ☐ Inactivation ☐

New milestone title: Program Intensive 2

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: Course number:
Course Title (max. 100 characters incl. spaces):
Course Short Title (max. 30 characters incl. spaces):
Grading Basis:
Course Credit Weight:
Course Consent Required: ☐
Course Description:
New course description (for revision only):

Meet Type(s):
Primary Meet Type:
Requisites:

Special topics course: Yes ☐ No ☐
Cross-listed: Yes ☐ No ☐
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

Industry project (DEI 631) will be completed as a second in-person 'Program Intensive' milestone at the end of the program. 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.

The milestone should be added to the following program:
1) Master of Digital Experience Innovation (MDEI)

UNIVERSITY OF WATERLOO

GRADUATE STUDIES OFFICE
Waterloo, Ontario, Canada N2L 3G1
uwaterloo.ca/graduate-studies | gsoffice@uwaterloo.ca
Fax 519-746-3051

Faculty: Arts
Effective term: Term/Year Fall 2021

Course ☐ New ☐ Revision ☐ Inactivation ☐
Milestone ☒ New ☐ Revision ☐ Inactivation ☒
New milestone title: Master's Workshop

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: Course number:
Course Title (max. 100 characters incl. spaces):
Course Short Title (max. 30 characters incl. spaces):
Grading Basis:
Course Credit Weight:
Course Consent Required: ☐
Course Description:
New course description (for revision only):

Meet Type(s):
Primary Meet Type:
Requisites:

Special topics course: Yes ☐ No ☐
Cross-listed: Yes ☐ No ☐
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

The milestone should be removed to the following program:
1) Master of Digital Experience Innovation (MDEI)

Prepared by: **Jessica Thompson, Associate Director, Graduate UW-Stratford** Date: 14-Feb-20

UNIVERSITY OF WATERLOO
FACULTY OF ENGINEERING

M E M O

TO: Kathy Winter, Assistant University Secretary & Privacy Officer
Secretariat

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

RE: Senate Graduate and Research Council Agenda

DATE: February 27, 2020

Please place the following motions forward for approval at the next meeting of SGRC. These motions were approved by EFC on April 27, 2020.

1. The department of **Mechanical and Mechatronics Engineering** would like to make the following calendar changes:
    a. Update of MEng degree requirements to include 1 new specialization.
    b. Discontinue Graduate Diploma (GDip) in Green Energy (direct entry)
    c. Discontinue (type 2) Graduate Diploma (GDip) in Green Energy.

    Rationale for Request:

    a. 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.

    b. 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.
    c. 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. **Conrad School of Entrepreneurship and Business** would like to make the following calendar changes:
    a. Turn the Corporate Innovation Project (formerly "the practicum") into a for-credit course (BET 615 – Consulting and Corporate Innovation).
    b. Replace BET 620 (Social Entrepreneurship) with a new course: BET 612 – Entrepreneurial Organizations

Rationale for Request:

1. Turning the Corporate Innovation Project (CIP – also noted as the Master's Project on the GSAC page) into a credit course appropriately signals the essential nature of related classroom content to program objectives, and by assigning a grade, addresses the challenge of motivation and focus we have sometimes noted. This has no resource implications because Conrad already staffs the CIP milestone as a course.
2. The curriculum is being updated after extensive consultations with faculty and students - every student currently enrolled in the MBET program was interviewed as well as some graduates of the program. The result is the desire to revise the curriculum and, by extension, improve students' learning outcomes. A need to focus more on the people and organizational design dimensions of ventures was identified, including for startups and for corporate entrepreneurship.
3. BET 620 has long been a problematic course in MBET. Faculty experiences have been that a small proportion of the students love the course because it aligns with their particular interests or passions, while a majority of students feel it is a distraction from what their priorities should be in the latter half of the program. Teaching evaluations have been very positive, but that has not changed the students' collective assessment of the course or its value (or comparative lack of it) in the program. The course was originally designed to both address business ethics (good practice and a requirement of the Certified Management Consultant designation MBET students can pursue) and to expand students' thinking about how entrepreneurship can play a role in addressing social problems. Careful consideration of student and instructor feedback yielded the conclusion we could address those important objectives and other needs more effectively in a newly conceptualized course. The proposed new course (BET 612, see below) will include ethics, corporate social responsibility, and social enterprise while also presenting topics deemed to be more important for students to accomplish overall program objectives.
4. NOTE: BET 620 and the Master's Project will be inactivated once all three existing cohorts of the Part-time MBET program have graduated (expected in 2022).

3. The department of **Civil and Environmental Engineering** would like to make the following calendar change:
    a. Update the MEng application requirements: we now require 2 references (instead of 3), where a reference can be either academic or professional.

Rationale for Change:

1. We are making this change to be more in line with other Departments in the Faculty of Engineering; to alleviate the burden of finding academic references for those applicants who have been working in a professional capacity for a number of years and no longer have connections in academia; to create less work for administrators and faculty who are reviewing MEng files.

Your attention to these matters is kindly appreciated.

Siva Sivoththaman

SS/la

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):

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 Business, Entrepreneurship and Technology (MBET)

Program contact name(s): Chris Holt

Form completed by: Marc Hurwitz

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).

1. Turn the Corporate Innovation Project (also noted as the Master's Project and formerly the "Graduate Studies Practicum") milestone into a for-credit course (BET 615 – Consulting and Corporate Innovation).
2. Replace BET 620 (Social Entrepreneurship) with a new course: BET 612 – Entrepreneurial Organizations.

Is this a major modification to the program? No

Rationale for change(s):

1. Turning the Corporate Innovation Project (CIP – also noted as the Master's Project) milestone into a credit course appropriately signals the essential nature of related classroom content to program objectives, and by assigning a grade, addresses the challenge of motivation and focus we have sometimes noted. This has no resource implications because Conrad already staffs the CIP milestone as a course.
2. The curriculum is being updated after extensive consultations with faculty and students - every student currently enrolled in the MBET program was interviewed as well as some graduates of the program. The result is the desire to revise the curriculum and, by extension, improve students' learning outcomes. A need to focus more on the people and organizational design dimensions of ventures was identified, including for startups and for corporate entrepreneurship.
3. BET 620 has long been a problematic course in MBET. Faculty experiences have been that a small proportion of the students love the course because it aligns with their particular interests or passions, while a majority of students feel it is a distraction from what their priorities should be in the latter half of the program. Teaching evaluations have been very positive, but that has not changed the students' collective assessment of the course or its value (or comparative lack of it) in the program. The course was originally designed to both address business ethics (good practice and a requirement of the Certified Management Consultant designation MBET students can pursue) and to expand students' thinking about how entrepreneurship can play a role in addressing social problems. Careful consideration of student and instructor feedback yielded the conclusion we could address those important objectives and other needs more effectively in a newly conceptualized course. The proposed new course (BET 612, see below) will include ethics, corporate social responsibility, and social enterprise while also presenting topics deemed to be more important for students to accomplish overall program objectives.
4. NOTE: BET 620 will be inactivated once all three existing cohorts of the Part-time MBET program have graduated (expected in 2022).

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/conrad-school-entrepreneurship-and-business/master-business-entrepreneurship-and-technology-mbet

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Degree requirements **Coursework option:** • Graduate Academic Integrity Module (Graduate AIM) • Courses o Students must complete the following ~~9~~ graduate-level courses (0.50 unit weight): ▪ BET 600 Applied Business Leadership Skills for Entrepreneurs ▪ BET 601 Strategically Managing the Entrepreneurial Organization ▪ BET 602 Marketing Strategies for New Technology-based Ventures ▪ BET 603 Entrepreneurial Finance for the Technology-based Enterprise ▪ BET 604 New Technology-based Venture Creation ▪ BET 605 Essential Accounting for Entrepreneurs ▪ BET 607 Managing Technological Innovation ▪ BET 608 Business Model Validation ▪ ~~BET 620 Social Entrepreneurship~~ • Link(s) to courses o Business, Entrepreneurship and Technology (BET) courses o Graduate course search • ~~Master's Project~~ o ~~Students must complete a Master's Project (also referred to as the Corporate Innovation Project) that will provide students with the opportunity to practice the consulting skills they have learned through the MBET program and to experience innovation in a corporate setting.~~	**Degree requirements** **Coursework option:** • Graduate Academic Integrity Module (Graduate AIM) • Courses o Students must complete the following <u>10</u> graduate-level courses (0.50 unit weight): ▪ BET 600 Applied Business Leadership Skills for Entrepreneurs ▪ BET 601 Strategically Managing the Entrepreneurial Organization ▪ BET 602 Marketing Strategies for New Technology-based Ventures ▪ BET 603 Entrepreneurial Finance for the Technology-based Enterprise ▪ BET 604 New Technology-based Venture Creation ▪ BET 605 Essential Accounting for Entrepreneurs ▪ BET 607 Managing Technological Innovation ▪ BET 608 Business Model Validation ▪ <u>BET 612 Entrepreneurial Organizations</u> ▪ <u>BET 615 Corporate Innovation and Consulting</u> • Link(s) to courses o Business, Entrepreneurship and Technology (BET) courses o Graduate course search

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

There will be no change for current full-time students as this is a 1-year cohort-based program beginning each Fall.

There will be no change for current part-time students – they will continue with the existing courses and will be grandfathered into the program structure in place when they were accepted into the PT MBET.

The new part-time cohort starting in Fall 2020 will use revised program design and courses in this document.

Department/School approval date (04/16/20): 04/16/2020
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 04/21/2020
Faculty approval date (mm/dd/yy):
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

Faculty: Engineering
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: BET Course number: 615
Course Title (max. 100 characters incl. spaces): Corporate Innovation and Consulting
Course Short Title (max. 30 characters incl. spaces): Innovation and Consulting
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐
Course Description:

This course gives students an opportunity to develop and exercise the skills to help businesses explore strategic opportunities and threats using the same frameworks used in start-up environments. It includes identifying problems, assessing opportunities and developing creative solutions in an existing corporate context. The course will involve a mix of theory and practice in the form of lectures, group work, cases, guest speakers, and an innovation consulting team project with an established firm.

New course description (for revision only):

Meet Type(s): Lecture
Primary Meet Type: Lecture
Requisites: MBET Students Only

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

Turning the Corporate Innovation Project (CIP – also noted as the Master's Project) milestone into a credit course appropriately signals the essential nature of related classroom content to program objectives, and by assigning a grade, addresses the challenge of motivation and focus we have

sometimes noted. This has no resource implications because Conrad already staffs the CIP milestone as a course.

Prepared by: Marc Hurwitz Date: 16-Apr-20

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Waterloo, Ontario, Canada N2L 3G1
uwaterloo.ca/graduate-studies | gsoffice@uwaterloo.ca
Fax 519-746-3051

Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Engineering
Effective term: Term/Year Fall 2020

Course ☐ New ☐ Revision ☐ Inactivation ☐
Milestone ☒ New ☐ Revision ☐ Inactivation ☒
New milestone title: **Master's Project**

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: Course number:
Course Title (max. 100 characters incl. spaces):
Course Short Title (max. 30 characters incl. spaces):
Grading Basis:
Course Credit Weight:
Course Consent Required: ☐
Course Description:
New course description (for revision only):

Meet Type(s):
Primary Meet Type:
Requisites:

Special topics course: Yes ☐ No ☐
Cross-listed: Yes ☐ No ☐
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

The Master's Project milestone is being converted into a credit course (BET 615). The Master's Project milestone should be removed from the Master of Business, Entrepreneurship and Technology (MBET) program.

Prepared by: Date:

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Engineering
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: BET Course number: 612
Course Title (max. 100 characters incl. spaces): Entrepreneurial Organizations
Course Short Title (max. 30 characters incl. spaces): Entrepreneurial Organizations
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐
Course Description:

The objective of the course is to equip students to better design, manage and navigate organizations as entrepreneurs and in effective entrepreneurial ways. This includes consideration of ethical behavior in business and organizational contexts, organizational form and design, building and managing entrepreneurial talent and capacity, and acting as an effective agent of entrepreneurial change in organizations.

New course description (for revision only):

Meet Type(s): Lecture
Primary Meet Type: Lecture
Requisites: MBET Students Only

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

We are updating our curriculum after extensive consultations with faculty and students - every student currently enrolled in the MBET program was interviewed as well as some graduates of the program. The result is the desire to revise the curriculum and, by extension, improve students' learning outcomes. A need to focus more on the people side of venture development was identified, including for startups and for corporate entrepreneurship. This course will replace the existing MBET course, BET 620.

BET 620 has long been a problematic course in MBET. Faculty experiences have been that a small proportion of the students love the course because it aligns with their particular interests or passions, while a majority of students feel it is a distraction from what their priorities should be in the latter half of the program. Teaching evaluations have been very positive, but that has not changed the students' collective assessment of the course or its value (or comparative lack of it) in the program. The course was originally designed to both address business ethics (good practice and a requirement of the Certified Management Consultant designation MBET students can pursue) and to expand students' thinking about how entrepreneurship can play a role in addressing social problems. Careful consideration of student and instructor feedback yielded the conclusion we could address those important objectives and other needs more effectively in a newly conceptualized course. The proposed new course (BET 612) will include ethics, corporate social responsibility, and social enterprise while also presenting topics deemed to be more important for students to accomplish overall program objectives.

Prepared by: Marc Hurwitz Date: 16-Apr-20

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

Programs: 1) Master of Engineering (MEng) in Civil Engineering

2) Master of Engineering (MEng) in Civil Engineering - Nuclear Engineering

Program contact name(s): Victoria Tolton

Form completed by: Victoria Tolton

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).

1. *Update the MEng application requirements: we now require 2 references (instead of 3), where a reference can be either academic or professional.*

Is this a major modification to the program? No

Rationale for change(s):

1. *We are making this change to be more in line with other Departments in the Faculty of Engineering; to alleviate the burden of finding academic references for those applicants who have been working in a professional capacity for a number of years and no longer have connections in academia; to create less work for administrators and faculty who are reviewing MEng files.*

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-civil-and-environmental-engineering/master-engineering-meng-civil-engineering

https://uwaterloo.ca/graduate-studies-academic-calendar/engineering/department-civil-and-environmental-engineering/master-engineering-meng-civil-engineering-nuclear-engineering

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Admission requirements • **References** o Number of references: ~~3~~ o Type of references: ~~at least 2 must normally be from academic sources.~~	**Admission requirements** • **References** o Number of references: 2 o Type of references: academic or professional

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

Students currently applying will not be impacted, because we do allow for flexibility in instances where a third reference cannot be provided. Eg. The ACGS can waive the reference requirement.

Department/School approval date (mm/dd/yy): 01/31/20
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 02/04/2020
Faculty approval date (mm/dd/yy):
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

Motions for approval from Faculty of Mathematics at May SGRC

Motions Approved by Faculty of Mathematics on April 21, 2020

Course Changes:

APPLIED MATHEMATICS

1. New course activation AMATH 840: Advanced Numerical Methods for Computational and Data Sciences – Effective Fall 2020
2. New course activation AMATH 841: Finite Element Methods – Effective Fall 2020

PURE MATHEMATICS:

1. Changes to title and description for PMATH 665: Smooth Manifolds – Effective Fall 2020
2. New course activation PMATH 868: Connections and Riemannian Geometry – Effective Fall 2020

These have been approved by the Mathematics Faculty Council on April 21, 2020

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Math
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: AMATH Course number: 840
Course Title (max. 100 characters incl. spaces): Advanced Numerical Methods for Computational and Data Sciences
Course Short Title (max. 30 characters incl. spaces): Computation and Data Science
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐ Choose an item.
Course Description:

Theory and practice of a selection of advanced numerical methods for computational and data sciences. Algorithms for eigenvalues and singular value decomposition. Multigrid methods for linear and nonlinear systems. Sparse optimization and compressed sensing. Low-rank tensor and matrix decomposition. Nonlinear convergence acceleration. Randomized numerical linear algebra. Adjoint methods and automatic differentiation for neural networks and optimal control. Stochastic gradient descent and variants. Efficient computer implementation of the algorithms and applications with real-world data. Students should have completed an introductory course on numerical methods.

New course description (for revision only):

Meet Type(s): Lecture Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lecture
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

This course focuses on the theory and practice of a selection of advanced numerical methods for computational and data sciences. While scientific computing is an active research area in the Applied

Mathematics department, there are currently no scientific computing AMATH courses at the 800-level. This is one of two new proposed 800-level AMATH courses to fill this void. At the same time, the advanced numerical methods that are the focus of this course also play an integral part in the development of data science, and broad areas of the computational sciences. As such, this course will also be of interest to graduate students in the areas of data science, computer science, electrical engineering, numerical optimization, and related fields. There is no substantial overlap between this course and other AMATH graduate courses. The topics discussed in the course directly relate to areas of research activity in the Applied Mathematics department. The course does not have substantial overlap with but is complementary to existing related graduate courses in the data science area. This will broaden the offering in this growth area, with access for applied mathematics students and students from other graduate programs.

Prepared by: Date: Click here to enter a date.

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Math
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: AMATH Course number: 841
Course Title (max. 100 characters incl. spaces): Finite Element Methods
Course Short Title (max. 30 characters incl. spaces): Finite Element Methods
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐ Choose an item.
Course Description:

Mathematical theory of finite element methods, with error analysis and stability. Continuous and discontinuous Galerkin methods and mixed finite element methods, applied to elliptic, parabolic, and hyperbolic partial differential equations including compressible and/or incompressible Euler and Navier-Stokes equations. Implementation in two and three dimensions. Students should have completed an introductory course on numerical methods for partial differential equations.

New course description (for revision only):

Meet Type(s): Lecture Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lecture
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

This course focuses on advanced finite element methods. While scientific computing is an active research area in the Applied Mathematics department, there are currently no scientific computing AMATH courses at the 800-level. This is one of two new proposed 800-level AMATH courses to fill this void. Finite element methods are a cornerstone methodology that is used for many application areas of applied mathematics and engineering, including fluid mechanics, solid mechanics, and electromagnetism. No advanced course exists on

the mathematical theory of finite element methods at the University of Waterloo. This course will benefit graduate students in Applied Mathematics, and related areas of Engineering and Computational Science.

Prepared by: Date: Click here to enter a date.

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Math
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.
For course revisions, indicate the type(s) of changes: description and title

Course Subject code: PMATH Course number: 665
Course Title (max. 100 characters incl. spaces): Smooth Manifolds
Course Short Title (max. 30 characters incl. spaces): Smooth Manifolds
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐ Choose an item.
Course Description: Point-set topology; smooth manifolds, smooth maps and tangent vectors; the tangent and cotangent bundles; vector fields, tensor fields and differential forms. Other topics may include: de Rham cohomology; Frobenius Theorem; Riemannian metrics, connections and curvature.
New course description (for revision only):

Point-set topology; smooth manifolds, smooth maps, and tangent vectors; the tangent and cotangent bundles; vector fields, tensor fields, and differential forms; Stokes's theorem; integral curves, Lie derivatives, the Frobenius theorem; de Rham cohomology.

Meet Type(s): Lecture Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lecture
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith: Antireq: PMATH 465

Rationale for request: The original course description was too ambitious, and in practice, the material listed could not be covered. The proposed title and description reflect the core of what can be achieved in one term, and what has been actually covered in the recent offerings. The corresponding changes to PMATH 465 are already in the undergraduate calendar.

Prepared by: Barbara Csima Date: 1-Apr-20

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Math
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PMATH Course number: 868
Course Title (max. 100 characters incl. spaces): Connections and Riemannian Geometry
Course Short Title (max. 30 characters incl. spaces): Connections & Riemannian Geom
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐ Choose an item.

Course Description: Review of smooth manifolds. Vector bundles. Connections and curvature, holonomy, characteristic classes. Connections on tangent bundle: torsion, geodesics, exponential map. Riemannian geometry: Levi-Civita connection, Riemannian geodesics, Hopf-Rinow Theorem. Additional topics if time permits.

New course description (for revision only):

Meet Type(s): Lecture Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lecture
Requisites: Prerequisite PMATH 665

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: This course covers the basics of mathematical gauge theory (connections and curvature on vector bundles) together with an introduction to Riemannian geometry. Both of these topics are fundamental topics with which all graduate students in geometry and topology must be familiar. Various combinations of this material have been offered as topics courses in the Pure Math Department at least every two years, sometimes more frequently, in the last seven years. It makes sense to finally formalize this into a regularly offered course with a fixed syllabus.

Prepared by: Barbara Csima Date: 1-Apr-20

FACULTY OF SCIENCE
519-888-4567 | fax 519-746-2543
uwaterloo.ca/science

MEMORANDUM

To : Kathy Winter

From : Shawn Wettig, Associate Dean of Science, Graduate Studies

Date : 24 April 2020

Re : Senate Graduate And Research Council Agenda

I would ask that the motions for approval below be placed on the agenda for the next meeting of SGRC. These motions were approved by Science Faculty Council on 27 March 2020.

Thank you,

Faculty of Science Calendar Changes:

1. **Physics** (see included package)
    a. New Specialization in Quantum Technology for course-based MSc in Physics Program

    Motion: To approve the addition of a coursework study option with a Graduate Specialization in Quantum Technology to the MSc program.

    b. New Courses:
        i. PHYS 760 / QIC 860 – Laboratory on Control of Quantum Technology
        ii. PHYS 761 / QIC 861 – Laboratory on Photonic Quantum Technology
        iii. PHYS 762 / QIC 862 – Laboratory on Low Temperature Quantum Technology and Nanofabrication
        iv. PHYS 763 / QIC 863 – Independent Project in Quantum Technology

    Motion: To approve new courses PHYS 760 / QIC 860; PHYS 761 / QIC 861; PHYS 762 / QIC 862; PHYS 763 / QIC 863 for the course-based Quantum Technology Specialization for the MSc in Physics program.

2. **Pharmacy** (see included package)
    a. Calendar Revisions:
        i. Revise course descriptions for PHARM 602 to 607 to require instructor consent
        ii. Revise course descriptions for Pharm 601 and 616 to require Department Consent
        iii. Inactivate the PhD Thesis Proposal Milestone
        iv. Revise course description for PHARM 616 and renumber as PHARM 616A

Motion: To approve the above Calendar revisions for the Pharmacy Program

b. New Courses:
    i. PHARM 619 – Drug Discovery
    ii. PHARM 616B – PhD Thesis Proposal
    iii. PHARM 656 – Analysis of Quantitative Health Care Data

Motion: To approve new courses PHARM 616B and PHARM 565 for the School of Pharmacy

3. Chemistry (see included package)

a. New Courses:
    i. CHEM 784 – Foundations of Literature Review

Motion: To approve new course CHEM 784 for the MSc in Chemistry Program

b. Calendar Revision:
    i. ADD CHEM 784 – Foundations of Literature Review as a REQUIRED course for the Master of Science in Chemistry Program
    ii. Correct the required number of courses for the MRP option from 8 to 7
    iii. Revise the Course description for CHEM 794 to remove the written research proposal component

Motion: To approve the Calendar revisions for the MSc in Chemistry Program

ATTACHMENTS:

1) Memo from Department of Physics and Astronomy / Institute for Quantum Computing re Specialization in Quantum Technology
2) Program Revision Form for Specialization in Quantum Technology
3) Calendar Descriptions and Details for Quantum Technology Courses
4) New Course Form for PHYS 760
5) New Course Form for PHYS 761
6) New Course Form for PHYS 762
7) New Course Form for PHYS 763
8) New Course Form for QIC 860
9) New Course Form for QIC 861
10) New Course Form for QIC 862
11) New Course Form for QIC 863
12) Memo from Pharmacy – May 2019
13) Course Revision Form for PHARM 602
14) Course Revision Form for PHARM 603
15) Course Revision Form for PHARM 604
16) Course Revision Form for PHARM 605
17) Course Revision Form for PHARM 606
18) Course Revision Form for PHARM 607
19) Course Revision Form for PHARM 601
20) New Course Form for PHARM 619

21) Memo from Pharmacy – Sept 2019
22) Milestone Inactivation Form for PhD Thesis Proposal Milestone (Pharmacy)
23) Course Revision Form for Pharm 616A
24) Program Revision Form for PhD Thesis Proposal (Pharmacy)
25) New Course Form for PHARM 616B
26) Memo from Pharmacy – March 2020
27) New Course Form for PHARM 656
28) New Course Form for Chem 784
29) Course Revision form for Chem 794
30) Program Revision form for MSc in Chemistry

UNIVERSITY OF WATERLOO | IQC Institute for Quantum Computing

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ATTACHMENT 1

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):

https://uwaterloo.ca/graduate-studies-academic-calendar/science/department-physics-and-astronomy/master-science-msc-physics

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):

ATTACHMENT 3

UNIVERSITY OF WATERLOO

GRADUATE STUDIES OFFICE
Waterloo, Ontario, Canada N2L 3G1
uwaterloo.ca/graduate-studies | gsoffice@uwaterloo.ca
Fax 519-746-3051

Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PHYS Course number: 760
Course Title (max. 100 characters incl. spaces): Laboratory on Control of Quantum Technology
Course Short Title (max. 30 characters incl. spaces): Lab Control of Quantum Tech
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:
Experiments to control and characterize quantum systems.

New course description (for revision only):

Meet Type(s): Lab Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lab
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: QIC 860
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. This is 1 of 3 lab courses serving as the foundation for this study option.

Prepared by: Kevin Resch Date: 19-Feb-20

MSc in Physics with Specialization in Quantum Technology

Note: In the following, the calendar description will appear in the course calendar. The details will not appear in the calendar and are a more complete description of what each course will cover.

QIC 860/PHYS 760 LAB 0.50
Laboratory on Control of Quantum Technology

Calendar Description: Experiments to control and characterize quantum systems.

Details: This laboratory uses nuclear magnetic resonance (NMR) as a testbed for exploring quantum dynamics of few qubit systems. It provides an introduction to experiments for characterizing qubit relaxation, and qubit control. It also introduces methods of coherent control including average Hamiltonian theory and optimal control theory. It connects these to implementations of basic quantum algorithms, quantum error correction and benchmarking.

The experiments will include using optically detected magnetic resonance of the nitrogen vacancy defect of diamond.

QIC 861/PHYS 761 LAB 0.50
Laboratory on Photonic Quantum Technology

Calendar Description: Selected advanced experiments in photonic quantum technology.

Details: This laboratory course will introduce students to photonic implementations of quantum information and quantum optics. At first, a suite of labs will be developed around an entangled photon source enabling quantum cryptography, tests of Bell's inequalities, state and process tomography, one and two-photon interference, quantum erasure, and photon correlation measurements.

Other experiments based on aspects of atomic physics, such as laser-cooled atoms, room temperature atomic vapours, or ion trapping could be incorporated. The entangled photon system is further suitable for investigating POVMs, quantum state discrimination methods, nonmaximally entangled photons and entanglement concentration, noncontextuality, weak values, and linear optics quantum gates.

QIC 862/PHYS 762 LAB 0.50
Laboratory on Low Temperature Quantum Technology and Nanofabrication

Calendar Description: Methods in low temperature physics as applied to quantum technology and an introduction to fabrication techniques.

Details: This laboratory introduces students to methods for achieving extremely low temperatures, from He cryostats to dilution refrigerators. It includes methods for

precision measurements at low temperatures along with the essentials of wiring a refrigerator. It briefly introduces control of superconducting magnets.

Experiment include those to characterize superconducting films, microwave resonators, Josephson Junctions and superconducting qubits. All of these devices will be fabricated by the students including sputtering, lithography, and device fabrication.

QIC 863/PHYS 763 PRJ 0.50
Independent Project in Quantum Technology

A research project in any area of Quantum Technology approved by the course co-ordinator(s). The student is required to present a summary of the project orally and to submit a written report.

Details: The course based MSc may be the terminal degree for students or students may go on to PhD programs. The independent project, modelled after fourth year projects, will provide students with the opportunity for independent study to develop and demonstrate research aptitude. Suitable projects include extensions of experimental work from any of the laboratory courses or independent literature reviews on special topics in quantum information science.

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8Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PHYS Course number: 761
Course Title (max. 100 characters incl. spaces): Laboratory on Photonic Quantum Technology
Course Short Title (max. 30 characters incl. spaces): Lab Photonic Quantum Tech
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:
Selected advanced experiments in photonics-based quantum technology.
New course description (for revision only):

Meet Type(s): Lab Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lab
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: QIC 861
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. This is 1 of 3 lab courses serving as the foundation for this study option.

Prepared by: Kevin Resch Date: 19-Feb-20

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8Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PHYS Course number: 762
Course Title (max. 100 characters incl. spaces): Laboratory on Low Temperature Quantum Technology and Nanofabrication
Course Short Title (max. 30 characters incl. spaces): Lab Low Temp Q Tech/Nanofab
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:

Methods in low temperature physics as applied to quantum technology and an introduction to fabrication techniques.

New course description (for revision only):

Meet Type(s): Lab Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lab
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: QIC 862
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. This is 1 of 3 lab courses serving as the foundation for this study option.

Prepared by: Kevin Resch Date: 19-Feb-20

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8Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PHYS Course number: 763
Course Title (max. 100 characters incl. spaces): Independent Project in Quantum Technology
Course Short Title (max. 30 characters incl. spaces): Ind. Project in Quantum Tech
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:

A research project in any area of Quantum Technology approved by the course co-ordinator(s). The student is required to present a summary of the project orally and to submit a written report.

New course description (for revision only):

Meet Type(s): PRJ Choose an item. Choose an item. Choose an item.
Primary Meet Type: PRJ
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: QIC 863
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. The independent project will provide students with the opportunity for independent study to develop and demonstrate research aptitude.

Prepared by: Kevin Resch Date: 19-Feb-20

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: QIC Course number: 860
Course Title (max. 100 characters incl. spaces): Laboratory on Control of Quantum Technology
Course Short Title (max. 30 characters incl. spaces): Lab Control of Quantum Tech
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:
Experiments to control and characterize quantum systems.

New course description (for revision only):

Meet Type(s): Lab Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lab
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: PHYS 760
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. This is 1 of 3 lab courses serving as the foundation for this study option.

Prepared by: Kevin Resch Date: 19-Feb-20

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8Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: QIC Course number: 861
Course Title (max. 100 characters incl. spaces): Laboratory on Photonic Quantum Technologies
Course Short Title (max. 30 characters incl. spaces): Lab Photonic Quantum Tech
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:
Selected advanced experiments in photonics-based quantum technology.
New course description (for revision only):

Meet Type(s): Lab Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lab
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: PHYS 761
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. This is 1 of 3 lab courses serving as the foundation for this study option.

Prepared by: Kevin Resch Date: 19-Feb-20

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8Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: QIC Course number: 862
Course Title (max. 100 characters incl. spaces): Laboratory on Low Temperature Quantum Technologies and Nanofabrication
Course Short Title (max. 30 characters incl. spaces): Lab Low Temp Q Tech/Nanofab
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:

Methods in low temperature physics as applied to quantum technology and an introduction to fabrication techniques.

New course description (for revision only):

Meet Type(s): Lab Choose an item. Choose an item. Choose an item.
Primary Meet Type: Lab
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: PHYS 762
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. This is 1 of 3 lab courses serving as the foundation for this study option.

Prepared by: Kevin Resch Date: 19-Feb-20

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Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: QIC Course number: 863
Course Title (max. 100 characters incl. spaces): Independent Project in Quantum Technology
Course Short Title (max. 30 characters incl. spaces): Ind. Project in Quantum Tech
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:

A research project in any area of Quantum Technology approved by the course co-ordinator(s). The student is required to present a summary of the project orally and to submit a written report.

New course description (for revision only):

Meet Type(s): PRJ Choose an item. Choose an item. Choose an item.
Primary Meet Type: PRJ
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☒ No ☐
Course Subject(s) to be cross-listed with and approval status: PHYS 763
Sections combined/heldwith:

Rationale for request: This course is part of a new course-based MSc in Physics study option with a specialization in Quantum Technology. The independent project will provide students with the opportunity for independent study to develop and demonstrate research aptitude.

Prepared by: Kevin Resch Date: 19-Feb-20

ATTACHMENT 12

SCHOOL OF PHARMACY
Report to Science Faculty Council
June 2019

GRADUATE STUDIES & RESEARCH

The School of Pharmacy submits the following items for approval:

1. New Graduate Course

   MOTION: To approve new course PHARM 619 Drug Discovery, as presented in Attachment #1

   Background: This course is offered relatively often under the Special Topics Course code. This course is now being proposed as a unique course in Pharmacy.

2. Graduate Course Revisions

   MOTION: To approve course revisions to PHARM 602-607, inclusive, to add instructor consent, as presented in Attachment #2

   Background: These revisions will bring these courses into line with all other Pharmacy grad courses where the instructor's permission is needed to enrol in the course.

   MOTION: To approve course revisions to PHARM 601 and PHARM 616, to add department consent, as presented in Attachment #3

   Background: This revision will allow the school to screen when graduate students enrol in the thesis proposal course, to ensure that they enrol in the correct semester (the semester they actually plan to do their thesis proposal).

/mr

David Edwards
Hallman Director, School of Pharmacy

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes: Consent
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 602
Course Title (max. 100 characters incl. spaces): Grant Writing in the Sciences
Course Short Title (max. 30 characters incl. spaces): Grant Writing in the Sciences
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Instructor
Course Description:

The course is designed to teach the student how to critically review the literature, ask the right scientific questions, generate hypotheses, and write a professional curriculum vita and a fundable grant proposal. The course will include lectures from the instructor and guest speakers, small group discussion, student presentations and a final written grant proposal.

Topic titles:

New course description (for revision only):

n/a

Meet Type(s): Lecture
Primary Meet Type: Lecture
Antirequisite(s) Corequisite(s) Prerequisite(s):

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: Adding instructor consent allows instructor to ensure students have suitable knowledge and background to take this course.

Prepared by: Melinda Recchia, Administrative Coordinator Graduate Studies and Research, School of Pharmacy Date: 3-May-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes: Consent
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 603
Course Title (max. 100 characters incl. spaces): Selected Topics in Medicinal Chemistry
Course Short Title (max. 30 characters incl. spaces): Selected Topics in Medicinal Chemistry
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Instructor
Course Description:

This course provides an introduction to basic principles in medical chemistry such as physiochemical properties, drug design and pharmacological actions. A brief overview of the theory and application of computer aided drug design principles will provide a basic understanding of the "in silico" drug design concepts. The student will develop an understanding toward the concepts of peptide/peptidomimetic design as therapeutic agents. A series of case studies on clinical drugs will be presented with major emphasis on their design, synthesis, reaction mechanisms and structure-activity relationship studies. A section of the course will address the pathophysiology and pharmacology of diseases affecting the central nervous system. In addition, learning activities and assignments include a term paper submission and in class presentation of current topics in medicinal chemistry.

Topic titles:

New course description (for revision only):

n/a

Meet Type(s): Lecture
Primary Meet Type: Lecture
Antirequisite(s) Corequisite(s) Prerequisite(s):

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request: Adding instructor consent allows instructor to ensure students have suitable knowledge and background to take this course.

Prepared by: Melinda Recchia, Administrative Coordinator Graduate Studies and Research, School of Pharmacy Date: 3-May-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes: Consent
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 604
Course Title (max. 100 characters incl. spaces): Gene Therapy
Course Short Title (max. 30 characters incl. spaces): Gene Therapy
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Instructor
Course Description:

Gene therapy offers extraordinary potential to treat both inherited and acquired diseases by using the body's own machinery to produce a therapeutic compound or protein, or up-regulate/down-regulate specific cellular processes. This course will examine the various extra- and intracellular barriers to DNA transfection, and the common vectors used in gene therapy. Various routes of administration, such as injected, inhaled, and transdermal will be discussed in terms of their challengers, and the successes of recent formulations described in the literature.

New course description (for revision only):

n/a

Meet Type(s): Lecture
Primary Meet Type: Lecture
Antirequisite(s) Corequisite(s) Prerequisite(s):

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: Adding instructor consent allows instructor to ensure students have suitable knowledge and background to take this course.

Prepared by: Melinda Recchia, Administrative Coordinator Graduate Studies and Research, School of Pharmacy Date: 3-May-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes: Consent
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 605
Course Title (max. 100 characters incl. spaces): Physical Chemistry and Application of Surfactants
Course Short Title (max. 30 characters incl. spaces): Phys Chem & Applctn Surfactnts
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Instructor
Course Description:

Surface active compounds, more commonly known as surfactants are found in nearly every aspect of day to day life, including motor oils, pharmaceuticals, cosmetics, detergents, and paints and inks to name a few. This course will introduce the student to the structures of classical and emerging classes of surfactants and their fundamental properties that make these systems so useful. The self-assembly of these compounds into micelles will be discussed in detail using both thermodynamic and kinetic modules and modern methods of characterizing these systems will be examined. The application of surfactants in a variety of industries will be introduced. The capstone activity of this course will entail a critical analysis of a relevant recent journal article, and presentation to the class.

Topic titles:

New course description (for revision only):

n/a

Meet Type(s): Lecture
Primary Meet Type: Lecture
Antirequisite(s) Corequisite(s) Prerequisite(s):

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: Adding instructor consent allows instructor to ensure students have suitable knowledge and background to take this course.

Prepared by: Melinda Recchia, Graduate Administrator, School of Pharmacy Date: 3-May-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes: Consent
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 606
Course Title (max. 100 characters incl. spaces): Neuroscience in the 21st Century
Course Short Title (max. 30 characters incl. spaces): Neurosci in the 21st Century
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Instructor
Course Description:

Intensively examines medical and technological advances in neuroscience. Students will first develop a deep understanding of the structure and function of the central nervous system, neuronal cell biology and physiology, and neurotransmission. Explores selected CNS disease states and identify mechanisms of neuropathology by biological, environmental, and iatrogenic causes. Advances in technology and nanotechnology is and will continue to transform the treatment of diseases of the nervous system and these issues will be explored by expert guest lecturers.

New course description (for revision only):

n/a

Meet Type(s): Lecture
Primary Meet Type: Lecture
Antirequisite(s) Corequisite(s) Prerequisite(s):

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: Adding instructor consent allows instructor to ensure students have suitable knowledge and background to take this course.

Prepared by: Melinda Recchia, Administrative Coordinator Graduate Studies and Research, School of Pharmacy Date: 3-May-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes: Consent
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 607
Course Title (max. 100 characters incl. spaces): Advanced Pharmaceutical Analysis
Course Short Title (max. 30 characters incl. spaces): Adv. Pharmaceutical Analysis
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Instructor
Course Description:

This course provides an introduction to modern spectroscopic methods with emphasis on pharmaceutical analysis. First few lectures will cover the theory and application of UV-Vis and IR spectroscopy. A review of NMR spectroscopy will focus on commonly used techniques such as 1H NMR and 13C NMR and their application. The student will get a practical experience in spectroscopic methods for structural elucidation by using UVS-VIS, IR and NMR spectrometers. In addition, a section will address the theory and application of mass spectrometry. Examples of drug molecules/pharmaceuticals and their spectroscopic characteristics will be discussed. In addition, learning activities and assignments include problem sets and structural elucidation of an unknown organic molecule.

New course description (for revision only):

n/a

Meet Type(s): Lecture
Primary Meet Type: Lecture
Antirequisite(s) Corequisite(s) Prerequisite(s):

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request: Adding instructor consent allows instructor to ensure students have suitable knowledge and background to take this course.

Prepared by: Melinda Recchia, Administrative Coordinator Graduate Studies and Research, School of Pharmacy Date: 3-May-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes: Consent; description
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 601
Course Title (max. 100 characters incl. spaces): MSc Thesis Proposal
Course Short Title (max. 30 characters incl. spaces): MSc Thesis Proposal
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:

New course description (for revision only):

The objective of Pharm 601 is to encourage graduate students in the MSc in Pharmacy program to best prepare and present their research objectives in written and oral form. In addition to the writing and defence of the Thesis Proposal, each student will be required to: a. Attend and complete a scientific writing workshop (90 min class time) that will provide background on literature searching, citation and proper management of references as part of preparation of the Thesis Proposal, and participate in a one-on-one appointment with the Pharmacy Liaison Librarian to discuss research strategies and reinforce academic integrity. The workshop and appointments will be offered each term by the Pharmacy Liaison Librarian. b. Attend two Thesis Proposal defences by other students, prior to the students own oral defence. This course is only available for the first Thesis Proposal taken within the Pharmacy program. If a student is required to fulfill a second Thesis Proposal (for example, if being reassessed for transfer to the PhD) no additional course credit is available. The Thesis Proposal component involves the preparation of a written research proposal and oral defence of the proposal. The intent is to learn how to use the literature to stimulate in-depth thinking about the basis of their thesis research project and to encourage development of their scientific oral presentation skills. The thesis proposal should outline the reasons for undertaking the project, concisely survey the relevant literature, present a detailed description of the methodology to be used and outline any preliminary results acquired at the time of the proposal. The written proposal will be considered by an examination committee that will normally comprise of the students Advisory Committee plus an independent Chair who will assume that role for all Thesis Proposals within one academic term. The full Examination Committee will independently grade the written proposal and separately assign a grade to the oral defence. The simple average of those scores (two per committee member) will be the students grade for the course.

Meet Type(s): Tutorial

Primary Meet Type: Seminar

Antirequisite(s) Corequisite(s) Prerequisite(s):

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request: Adding department consent will prevent students from signing up for this course in more than one term and will also ensure they sign up in the term in which they submit the thesis proposal for examination. A slight revision to the description is included, to address typos.

Prepared by: Melinda Recchia, Administrative Coordinator Graduate Studies and Research, School of Pharmacy Date: 8-May-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 619
Course Title (max. 100 characters incl. spaces): Drug Discovery
Course Short Title (max. 30 characters incl. spaces): Drug Discovery
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Instructor

Course Description: This course provides an opportunity for students to design experiments and carry out independent research projects in the area of neurodegenerative disorders. Student projects are aimed to study the pathophysiology of Alzheimer's disease and related neurodegenerative disorders by various techniques such as designing novel small molecules and peptides by computational chemistry. Furthermore, the interactions between small molecules/peptides with misfolded proteins/peptides will be evaluated by biochemical and biophysical techniques with emphasis on fluorescence spectroscopy and ligand-protein kinetic studies. Microscopy techniques including transmission electron microscopy (TEM) analysis will be studied. Students will be trained in using the computational chemistry software Discovery Studio Structure-Based-Design. Individual student projects may include compound characterization by nuclear magnetic resonance spectroscopy (NMR), high performance-liquid chromatography (HPLC) and liquid chromatography mass spectrometry (LC-MS) techniques. Students are expected to spend between 10-11 weeks in the research lab working on their assigned projects. Course re-requisite include completion and proof of safety training including WHMIS, workplace violence training and safety orientation.

New course description (for revision only):

Meet Type(s): Lecture
Primary Meet Type: Lab
Antirequisite(s) Corequisite(s) Prerequisite(s):
Antirequisite: PHARM 608A Topic 8 Drug Discovery

SCHOOL OF PHARMACY
Report to Science Faculty Council
September 2019

The School of Pharmacy submits the following items for approval, as approved at Pharmacy Council on September 19, 2019.

1. **Removal of the PhD Thesis Proposal Milestone**

   Background: The PhD Thesis Proposal Milestone is a requirement for MSc to PhD transfer students, only, who are not eligible to take PHARM 616-PhD Thesis Proposal for course credit (after having taken PHARM 601-MSc Thesis Proposal for course credit). The GSRC would like to replace the milestone with a not-for-credit version of PHARM 616. Changing the milestone to a non-graded course does not change anything for the student, but will make administering the requirement much more efficient. The Academic Officer was consulted prior to beginning the approval process.

   MOTION: To approve revision of PHARM 616 Thesis proposal course, as presented

   MOTION: To approve the new course PHARM 616B (the non-graded PhD Thesis Proposal course), as presented

   MOTION: To approve inactivation of the PhD Thesis Proposal Milestone, as presented, as presented

   MOTION: To approve the revision of the academic calendar, as presented

/mr

Dave Edwards
Hallman Director, School of Pharmacy

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science

Effective term: Term/Year Fall 2020

Course ☐ New ☐ Revision ☐ Inactivation ☐

Milestone ☒ New ☐ Revision ☐ Inactivation ☒

New milestone title: **PhD Thesis Proposal**

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: Course number:

Course Title (max. 100 characters incl. spaces):

Course Short Title (max. 30 characters incl. spaces):

Grading Basis:

Course Credit Weight:

Course Consent Required: ☐

Course Description:

New course description (for revision only):

Meet Type(s):

Primary Meet Type:

Requisites:

Special topics course: Yes ☐ No ☐

Cross-listed: Yes ☐ No ☐

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request:

The PhD Thesis Proposal Milestone is required only by those PhD in Pharmacy students who are ineligible to take PHARM 616 due to previous completion of PHARM 601. The Pharmacy Graduate Studies and Research Committee approved the motion, on July 9, 2019, to replace the milestone by creating a non-graded version of PHARM 616, "PHARM 616B". PHARM 616 will simultaneously be renamed PHARM616A to differentiate the existing graded course from the ungraded version. Any student who has an incomplete PhD Thesis Proposal Milestone on their record when the change is implemented will have the milestone removed and will instead sign up for PHARM 616B. Any student who has a completed PhD Thesis Proposal Milestone on their record will not be affected. The change will bring consistency across records of students in the PhD in Pharmacy program.

This milestone should be removed from the following program:

Doctor of Philosophy (PhD) in Pharmacy

Prepared by: Melinda Recchia Date: 2-Aug-19

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐
New milestone title:

For course revisions, indicate the type(s) of changes: Course number, consent; description; antirequisite
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 616A
Course Title (max. 100 characters incl. spaces): PhD Thesis Proposal
Course Short Title (max. 30 characters incl. spaces): PhD Thesis Proposal
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:

New course description (for revision only):

The objectives of Pharm 616 are to encourage graduate students in the PhD Pharmacy program to best prepare and present their research objectives in written and oral form. In addition to the writing and defence of the Thesis proposal, each student will be required to: a. Attend and complete a scientific writing workshop (90 min class time) that will provide background on literature searching, citation and proper management of references as part of preparation of the Thesis Proposal, and participate in a one-on-one appointment with the Pharmacy liaison librarian to discuss research strategies and reinforce academic integrity. The workshop and appointments will be offered each term by the Pharmacy liaison librarian. b. Attend two Thesis Proposal defences by other students, prior to the student's own oral defence. This course is only available for the first Thesis Proposal taken within the Pharmacy Program. If a student is required to fulfill a second Thesis Proposal (for example, if being assessed for internal transfer from the MSc to PhD program) no additional course credit is available. The Thesis Proposal component involves the preparation of a written research proposal and oral defence of the proposal. The intent is to learn how to use the literature to stimulate in-depth thinking about the basis of their thesis research project and to encourage development of their scientific oral presentation skills. The thesis proposal should outline the reasons for undertaking the project, concisely survey the relevant literature, present a detailed description of the methodology to be used and outline any preliminary results acquired at the time of the proposal. The written proposal will be considered by an examination committee that will normally comprise the student's Advisory Committee plus an independent Chair who will assume that role for all thesis proposals within one academic term. The full Examination Committee will independently

grade the written proposal, and separately assign a grade to the oral defence. The simple average of those scores (two per committee member) will be the student's grade for the course.

Meet Type(s): Seminar Tutorial
Primary Meet Type: Seminar
Anti-requisite: PHARM 601

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith:

Rationale for request:

Adding department consent will prevent students from signing up for this course in more than one term and will also ensure they sign up in the term in which they submit the thesis proposal for examination. Students who have previously taken PHARM 601 are not eligible to take PHARM 616A for course credit, and should not be able to sign up for this course. A slight revision to the description is included, to address typos.
The Pharmacy Graduate Studies and Research Committee approved the motion, on July 9, 2019, to eliminate the PhD Thesis Proposal Milestone. In it's place, a non-graded version of the PHARM 616 PhD Thesis Proposal is proposed: PHARM 616B PhD Thesis Proposal. The existing course, PHARM 616 PhD Thesis proposal is to simultaneously be renamed PHARM 616A PhD Thesis Proposal, to differentiate the existing graded course from the non-graded version. Any student who has an incomplete PhD Thesis Proposal Milestone on their record when the change is implemented will have the milestone removed from their record, and will instead sign up for PHARM 616B PhD Thesis Proposal. Any student who has a completed PhD Thesis Proposal Milestone on their record will not be affected. The change will bring consistency across records of students in the PhD in Pharmacy program. The workshop is now 3 hours with a break mid-session so the description should be updated.

Prepared by: Date:

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.

Faculty: Science

Program: Doctor of Philosophy (PhD) in Pharmacy

Program contact name(s): Andrea Edginton, Praveen Nekkar, Melinda Recchia

Form completed by: Melinda Recchia

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).

Updating the PhD Thesis Proposal requirements.

Is this a major modification to the program? No

Rationale for change(s):

To update the program requirements to reflect approved changes to the PhD Thesis Proposal Milestone/PHARM 616 PhD Thesis Proposal Course. The PhD Thesis Proposal Milestone is required only by those PhD in Pharmacy students who are ineligible to take PHARM 616 due to previous completion of PHARM 601. The Pharmacy Graduate Studies and Research Committee approved the motion, on July 9, 2019, to replace the milestone by creating a non-graded version of PHARM 616, "PHARM 616B". PHARM 616 will simultaneously be renamed PHARM 616A to differentiate the existing graded course from the non-graded version. Any student who has an incomplete PhD Thesis Proposal Milestone on their record when the change is implemented will have the milestone removed and will instead sign up for PHARM 616B. Any student who has a completed PhD Thesis Proposal Milestone on their record will not be affected. The change will bring consistency across records of students in the PhD in Pharmacy 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):

https://uwaterloo.ca/graduate-studies-academic-calendar/science/school-pharmacy/doctor-philosophy-phd-pharmacy

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Admission requirements **Minimum requirements** o A 78% overall standing in a two-year Master of Science (MSc) or equivalent degree, in a relevant field.	**Admission requirements** **Minimum requirements** o A 78% overall standing in a two-year Master of Science (MSc) or equivalent degree, in a relevant field.

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
o We expect that most students entering our program will have previously graduated from a thesis based MSc degree. There is a possibility to be admitted to the PhD program in the absence of a thesis based MSc and equivalency will be established on a case-by-case basis. The Admissions Committee however, will require evidence that the student has fulfilled the expected MSc outcomes even in the absence of the MSc degree. o Students in the MSc in Pharmacy program at the University of Waterloo may apply to transfer to the PhD in Pharmacy program after their first year in the MSc program but not later than the end of the second year. To be eligible to transfer, the following conditions must be met: ▪ The student must have completed at least 2 courses (a total of 1.00 credit units) at the graduate level and have achieved a score of at least 75% in each course. ▪ The student must be in good academic standing, including not being on probation or carrying incomplete grades. ▪ The student must demonstrate good progress in a research project that the Advisory Committee considers could be expanded to a PhD project. ▪ The student must demonstrate superior academic, research and scientific writing and oral presentation skills such that the experience of conducting research, collecting and analyzing data and preparing and defending a thesis at the MSc level could be bypassed. Implicit in this is that the student must demonstrate the necessary potential for research skills and knowledge to successfully complete a PhD. o ~~Students must successfully pass PHARM 601 before being recommended for transfer. This course is only available for the first Thesis Proposal taken within the Pharmacy program. If a student has completed PHARM 601 as an MSc Pharmacy student, then credit for PHARM 616 cannot be granted.~~ o Enrolment in the PhD program for transfer students will be counted from the date of initial registration in the MSc in Pharmacy program. The student may begin work on the PhD only after the transfer is approved. **Degree requirements**	o We expect that most students entering our program will have previously graduated from a thesis based MSc degree. There is a possibility to be admitted to the PhD program in the absence of a thesis based MSc and equivalency will be established on a case-by-case basis. The Admissions Committee however, will require evidence that the student has fulfilled the expected MSc outcomes even in the absence of the MSc degree. o Students in the MSc in Pharmacy program at the University of Waterloo may apply to transfer to the PhD in Pharmacy program after their first year in the MSc program but not later than the end of the second year. To be eligible to transfer, the following conditions must be met: ▪ The student must have completed at least 2 courses (a total of 1.00 credit units) at the graduate level, <u>including PHARM 601</u>, and have achieved a score of at least 75% in each course. ▪ The student must be in good academic standing, including not being on probation or carrying incomplete grades. ▪ The student must demonstrate good progress in a research project that the Advisory Committee considers could be expanded to a PhD project. ▪ The student must demonstrate superior academic, research and scientific writing and oral presentation skills such that the experience of conducting research, collecting and analyzing data and preparing and defending a thesis at the MSc level could be bypassed. Implicit in this is that the student must demonstrate the necessary potential for research skills and knowledge to successfully complete a PhD. o Enrolment in the PhD program for transfer students will be counted from the date of initial registration in the MSc in Pharmacy program. The student may begin work on the PhD only after the transfer is approved. **Degree requirements** **□ Courses** o Students must complete 3 to 5 one-term graduate-level courses (0.50 unit weight), depending on route of entry into the program.

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Courses o Students must complete 3 to 5 one-term graduate-level courses (0.50 unit weight), depending on route of entry into the program. o Students can only take 1 'Special Topics' course for credit toward their graduate degree program requirements (e.g. PHARM 608 or PHARM 611). o Students admitted after completing the University of Waterloo MSc in Pharmacy degree must complete the following: ▪ ~~3~~ one-term graduate elective courses (0.50 credit weight). Students who completed PHARM 610 Topics in Drug Development in their MSc program cannot take the course again for credit in the PhD program. Another 0.50 credit weight graduate course from the School of Pharmacy graduate curriculum must be taken instead. ▪ Completed by a maximum of 12 terms (four years). o Students admitted with an MSc degree from a program other than the University of Waterloo MSc in Pharmacy (or admitted with an equivalent degree to an MSc degree) must complete the following: ▪ PHARM 616 PhD Thesis Proposal. ▪ PHARM 610 Topics in Drug Development. ▪ 1 additional one-term graduate elective course (0.50 unit weight). ▪ Completed by a maximum of 12 terms (four years). o Students who transferred into the PhD in Pharmacy program from the University of Waterloo MSc in Pharmacy program ~~or who are admitted directly from a BSc degree~~ must complete the following: ▪ PHARM 616 PhD Thesis Proposal ~~(BSc direct admitted students only, MSc transfer students will complete a PhD Thesis Proposal milestone).~~ ▪ PHARM 610 Topics in Drug Development. ▪ 3 one-term graduate elective courses (0.50 unit weight). ▪ Completed by a maximum of 18 terms (six years – students should note that the term count continues when they change their program from MSc to PhD so this time period includes any terms	o Students can only take 1 'Special Topics' course for credit toward their graduate degree program requirements (e.g. PHARM 608<u>A</u> or PHARM 611). o Students admitted after completing the University of Waterloo MSc in Pharmacy degree must complete the following: ▪ <u>PHARM 616A PhD Thesis Proposal (numerical), within the first year.</u> ▪ <u>2 additional</u> one-term graduate elective courses (0.50 credit weight), ▪ Students who completed PHARM 610 Topics in Drug Development in their MSc program cannot take the course again for credit in the PhD program. Another 0.50 credit weight graduate course from the School of Pharmacy graduate curriculum must be taken instead. ▪ Completed by a maximum of 12 terms (four years). o Students admitted with an MSc degree from a program other than the University of Waterloo MSc in Pharmacy (or admitted with an equivalent degree to an MSc degree) must complete the following: ▪ PHARM 616<u>A</u> PhD Thesis Proposal <u>(numerical), within the first year</u> ▪ PHARM 610 Topics in Drug Development. ▪ 1 additional one-term graduate elective course (0.50 unit weight). ▪ Completed by a maximum of 12 terms (four years). o Students who transferred into the PhD in Pharmacy program from the University of Waterloo MSc in Pharmacy program <u>after successfully completing PHARM 601 MSc Thesis Proposal</u> must complete the following: ▪ PHARM 616<u>B</u> PhD Thesis Proposal (<u>credit</u>/<u>no credit granted</u>) ▪ PHARM 610 Topics in Drug Development ▪ 3 <u>additional</u> one-term graduate elective courses (0.50 unit weight). o Completed by a maximum of 18 terms (six years – students should note that the term count continues when they change their program from MSc to PhD so this time period includes any terms completed in the University of Waterloo MSc program).<u>Students who are admitted directly from a BSc degree must complete the following:</u> ▪ <u>PHARM 616A PhD Thesis Proposal (numerical), within the first year</u>

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
completed in the University of Waterloo MSc program). o Students must complete all graduate courses with a final mark of 70% or greater and an overall cumulative average of 75% or greater. o Among the 3 to 5 courses taken, graduate-level courses from outside the School of Pharmacy curriculum may be accepted toward these requirements if approved by the supervisor, Advisory Committee and the Graduate Officer. The main criterion for acceptance will be gaining knowledge in an area that is outside the background of the student but will benefit their research program. Graduate students and their Advisory Committee must ensure that the course selection reflects a graduate degree in Pharmacy. **□ Link(s) to courses** o Pharmacy (PHARM) courses o Graduate course search **□ Academic Integrity Workshop** ~~**□ PhD Thesis Proposal**~~ ~~o The objectives are to encourage PhD students to use the literature to stimulate in-depth thinking about the basis of their thesis research project and to encourage development of their scientific oral presentation skills. It involves the preparation of a written research proposal and oral defence of the proposal. The thesis proposal should outline the reasons for undertaking the project, concisely survey the relevant literature, present a detailed description of the methodology to be used and outline any preliminary results.~~ ~~o In their first year, these students will make a presentation of their thesis proposal to their Supervisory Committee and audience including any interested parties so they can receive valuable feedback on their work. The thesis proposal provides the student with an opportunity to demonstrate the breadth and depth of knowledge as well as demonstrate an understanding of how their research fits within their broader discipline.~~ ~~o Summary of the steps for completion: Step 1: Select examination committee (can be the same as the advisory committee) and set up date for oral thesis proposal defence. Step 2:~~	▪ PHARM 610 Topics in Drug Development ▪ 3 one-term graduate elective courses (0.50 unit weight). ▪ Completed by a maximum of 18 terms o Students must complete all graduate courses with a final mark of 70% or greater and an overall cumulative average of 75% or greater. o Among the 3 to 5 courses taken, graduate-level courses from outside the School of Pharmacy curriculum may be accepted toward these requirements if approved by the supervisor, Advisory Committee and the Graduate Officer. The main criterion for acceptance will be gaining knowledge in an area that is outside the background of the student but will benefit their research program. Graduate students and their Advisory Committee must ensure that the course selection reflects a graduate degree in Pharmacy. **□ Link(s) to courses** o Pharmacy (PHARM) courses o Graduate course search **□ Academic Integrity Workshop**

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
~~Prepare written thesis proposal and submit two weeks prior to oral defence to examination committee. Step 3: Orally defend thesis proposal.~~ o ~~Students who have taken PHARM 601 MSc Thesis Proposal during a previous MSc degree in Pharmacy cannot take the PHARM 616 PhD Thesis Proposal course for credit (and are not required to take the scientific writing module that is part of PHARM 616) but are required to present and successfully defend a PhD Thesis Proposal to their Graduate Advisory Committee and receive credit for the milestone before proceeding to the Graduate Studies Seminar, PhD Comprehensive Examination, and PhD Thesis milestones.~~	

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

Any student who has an incomplete PhD Thesis Proposal Milestone on their record when the change is implemented will have the milestone removed and will instead sign up for PHARM 616B. Any student who has a completed PhD Thesis Proposal Milestone on their record will not be affected.

Departmental approval date (mm/dd/yy):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 09/05/2019
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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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science

Effective term: Term/Year Fall 2020

Course ☐ New ☒ Revision ☐ Inactivation ☐

Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 616B

Course Title (max. 100 characters incl. spaces): PhD Thesis Proposal

Course Short Title (max. 30 characters incl. spaces): PhD Thesis Proposal

Grading Basis: CEDIT/NO CREDIT

Course Credit Weight: 0.00

Course Consent Required: ☒ Department

Course Description:

The objectives of Pharm 616 are to encourage graduate students in the PhD Pharmacy program to best prepare and present their research objectives in written and oral form. In addition to the writing and defence of the Thesis proposal, each student will be required to: a) Attend and complete a scientific writing workshop (90 min class time) that will provide background on literature searching, citation and proper management of references as part of preparation of the Thesis Proposal, and participate in a one-on-one appointment with the Pharmacy liaison librarian to discuss research strategies and reinforce academic integrity. The workshop and appointments will be offered each term by the Pharmacy liaison librarian. b) Attend two Thesis Proposal defences by other students, prior to the student's own oral defence. This course is only available for the first Thesis Proposal taken within the Pharmacy Program. If a student is required to fulfill a second Thesis Proposal (for example, if being assessed for internal transfer from the MSc to PhD program) no additional course credit is available. The Thesis Proposal component involves the preparation of a written research proposal and oral defence of the proposal. The intent is to learn how to use the literature to stimulate in-depth thinking about the basis of their thesis research project and to encourage development of their scientific oral presentation skills. The thesis proposal should outline the reasons for undertaking the project, concisely survey the relevant literature, present a detailed description of the methodology to be used and outline any preliminary results acquired at the time of the proposal. The written proposal will be considered by an examination committee that will normally comprise the student's Advisory Committee plus an independent Chair who will assume that role for all thesis proposals within one academic term. The full Examination Committee will independently grade the written proposal, and separately assign a grade to the oral defence. The simple average of those scores (two per committee member) will be the student's grade for the course.

New course description (for revision only):

Meet Type(s): Seminar Tutorial Choose an item. Choose an item.

Primary Meet Type: Seminar

Requisites: PHARM 601

Special topics course: Yes ☐ No ☒

Cross-listed: Yes ☐ No ☒

Course Subject(s) to be cross-listed with and approval status:

Sections combined/heldwith:

Rationale for request:

The Pharmacy Graduate Studies and Research Committee approved the motion, on July 9, 2019, eliminate the PhD Thesis Proposal Milestone. Instead, an uncredited version of the PHARM 616 PhD Thesis Proposal is proposed: PHARM 616B PhD Thesis Proposal. The existing course, PHARM 616 PhD Thesis proposal is to simultaneously be renamed PHARM 616A PhD Thesis Proposal, to differentiate the existing graded course from the not for credit version. Any student who has an incomplete PhD Thesis Proposal Milestone on their record when the change is implemented will have the milestone removed from their record, and will instead sign up for PHARM 616B PhD Thesis Proposal. Any student who has a completed PhD Thesis Proposal Milestone on their record will not be affected. The change will bring consistency across records of students in the PhD in Pharmacy program. This course is only available to students who have taken PHARM 601 and therefore cannot take PHARM 616A for credit.

Prepared by: Melinda Recchia Date: 2-Aug-19

ATTACHMENT 26

Pharmacy Graduate Studies and Research
Report to Science Faculty Council
March 2020

The School of Pharmacy submits the following items for approval, as approved at Pharmacy Council on January 23, 2019.

1. New Course: Pharm 656 Analysis of Quantitative Health Care Data

   Background: The MPharm program requires that students take a biostatistics or equivalent course toward fulfillment of degree. A new course is proposed to fill this need, as there are currently no courses in Pharmacy. The addition of this new course will also benefit our MSc and PhD program.

   MOTION: To approve PHARM 656 - Analysis of Quantitative Health Care Data as presented

/mr

David Edwards
Hallman Director, School of Pharmacy

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title:

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: PHARM Course number: 656
Course Title (max. 100 characters incl. spaces): Analysis of Quantitative Health Care Data
Course Short Title (max. 30 characters incl. spaces): Data analysis
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☒ Department
Course Description:

This course is designed to teach students the fundamentals of planning, conducting, and communicating the analysis of quantitative data within the context of applied health research. Students will learn quantitative data analysis through hands-on experience using different sources of data (e.g., clinical trial, cross-sectional survey, prospective cohort, etc.). Topics will include descriptive statistics, t-Test, ANOVA, linear regression, logistic regression, poisson regression, and proportional hazards regression. Several techniques to adjust for confounding will be covered. Students will learn to apply their analytic skills using SAS.

New course description (for revision only):

Meet Type(s): Lecture Lab Tutorial
Primary Meet Type: Lecture
Antirequisite(s) Corequisite(s) Prerequisite(s):
Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/held with:

Rationale for request: The ability to analyze quantitative health data is a critical research skill and will be developed in this course. There are currently no courses offered in the School of Pharmacy or Faculty of Science that teach the fundamentals of data analysis with an applied health focus. This course will be pragmatic in that students will learn how to plan and execute various types of statistical analysis using a set of teaching datasets that contain real-world data.

Prepared by: JM Gamble, Clinical Associate Professor, School of Pharmacy Date: 19-Oct-16

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☒ Revision ☐ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: CHEM Course number: 784
Course Title (max. 100 characters incl. spaces): Foundations of Literature Review
Course Short Title (max. 30 characters incl. spaces): Literature Review
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐
Course Description:

Students will prepare a written literature review. Incoming MSc students are strongly encouraged to take this required course within the first term of their program.

New course description (for revision only):

Meet Type(s): Lecture Reading Tutorial Choose an item.
Primary Meet Type: Reading
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith: CHEM 784 (Waterloo) will be held with CHEM 7840 (Guelph)

Rationale for request:

This request is in response to the reviewer recommendations of the Institutional Quality Assurance Process (IQAP) report submitted March 2017 for the Guelph Waterloo Centre for Graduate Work in Chemistry and Biochemistry (GWC2) joint graduate program. Specifically, CHEM 784 is a new course to respond to reviewer recommendations #5 and #4 that the Centre develop and offer graduate courses to provide training on scientific writing, professionalism, communication and other soft skills, including e-learning delivery mode, for students to develop expertise critical for successful degree progression and for beyond the time at the Centre,

especially in the work force. The course will also address reviewer recommendation #7 to facilitate academic and social integration of the students from both campuses by having the relatively large cohort of incoming students from both campuses take this course together.

CHEM 784 is a new course to provide a foundation in the tools and effective practice of graduate research in chemistry and biochemistry. Students will learn how to find, assess, synthesize, and communicate information from the research literature in chemistry and biochemistry. Course delivery will include initial lecture and workshop format, as well as peer review of writing. Student term-long reading and review of literature will be directed by their research supervisor in consultation with one other faculty member, normally a member of the student's advisory committee. Students will prepare a current, in-depth written review of research, using a journal format specified by the supervisor. The review will be graded by the supervisor and the consulting faculty member. CHEM 784 is distinct from and complementary to the CHEM 794 Master's Seminar course, and the PhD Seminar (CHEM 795(0) at Guelph), which involve the preparation, oral presentation and defence of a research proposal.

CHEM 784 is a required course for MSc students, to be taken within the first two terms of the student's program. CHEM 784 will replace 1 of the 3 elective courses currently required for MSc. Thus, MSc students will be required to take CHEM 784, CHEM 794, and 2 elective courses.

Prepared by: Elizabeth Meiering Date: 12-Feb-20

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Senate Graduate and Research Council – Course/Milestone – New/Revision/Inactivation form

Faculty: Science
Effective term: Term/Year Fall 2020

Course ☒ New ☐ Revision ☒ Inactivation ☐
Milestone ☐ New ☐ Revision ☐ Inactivation ☐

New milestone title: Choose an item.

For course revisions, indicate the type(s) of changes:
(e.g. consent, description, title, requisites)

Course Subject code: CHEM Course number: 794
Course Title (max. 100 characters incl. spaces): Master's Seminar
Course Short Title (max. 30 characters incl. spaces): Master's Seminar
Grading Basis: NUMERICAL
Course Credit Weight: 0.50
Course Consent Required: ☐
Course Description:

A written research proposal, and a public seminar and defence of this proposal, to be given by all MSc students within two terms of entering this program.

New course description (for revision only):

A public seminar and defence of a research proposal, to be given by all MSc students within two terms of entering this program.

Meet Type(s): Seminar Choose an item.
Primary Meet Type: Seminar
Requisites:

Special topics course: Yes ☐ No ☒
Cross-listed: Yes ☐ No ☒
Course Subject(s) to be cross-listed with and approval status:
Sections combined/heldwith: CHEM 794 (Waterloo) will be held with CHEM 7940 (Guelph)

Rationale for request:

This request is in response to reviewer recommendations of the Institutional Quality Assurance Process (IQAP) report submitted March 2017 for the Guelph Waterloo Centre for Graduate Work in Chemistry and Biochemistry (GWC2) joint graduate program. Revisions to CHEM 794 Master's Seminar are needed to accompany the new course CHEM 784 Foundations of Literature Review, required for MSc students (see accompanying CHEM 784 form). The focus of CHEM 784 is students developing advanced skills in written

communication of research in chemistry and biochemistry and the focus of CHEM 794 is students developing research proposals, including their oral presentation and defence. In CHEM 794, students develop their own proposals and participate in proposal defence presentations by their peers. The revised implementation of CHEM 794 Master's Seminar at the MSc level is analogous to the PhD Seminar (CHEM 795(0) at Guelph) requirement at the PhD level which is a milestone at Waterloo and a course at Guelph.

Prepared by: Elizabeth Meiering Date: 12-Feb-20

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: 1) Master of Science (MSc) in Chemistry

2) Master of Science (MSc) in Chemistry – Co-operative Program

Program contact name(s): Elizabeth Meiering

Form completed by: Elizabeth Meiering

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).

1) *Updating course requirements for the MSc in Chemistry and MSc in Chemistry – Co-operative programs to include CHEM 784 Foundations of Literature Review as a required course.*

2) *Correcting the number of required courses for the MRP study option from 8 to 7.*
Note: changes to the MRP study option are only applicable to the regular MSc in Chemistry program since the MRP study option is not available in the MSc in Chemistry – Co-operative Program.

Is this a major modification to the program? No

Rationale for change(s):

1) *This request is in response to the reviewer recommendations of the Institutional Quality Assurance Process (IQAP) report submitted March 2017 for the Guelph Waterloo Centre for Graduate Work in Chemistry and Biochemistry (GWC2) joint graduate program. Specifically, CHEM 784 is a new course to respond to reviewer recommendations #5 and #4 that the Centre develop and offer graduate courses to provide training on scientific writing, professionalism, communication and other soft skills, including e-learning delivery mode, for students to develop expertise critical for successful degree progression and for beyond the time at the Centre, especially in the work force. The course will also address reviewer recommendation #7 to facilitate academic and social integration of the students from both campuses by having the relatively large cohort of incoming students from both campuses take this course together.*

   CHEM 784 is a new course to provide a foundation in the tools and effective practice of graduate research in chemistry and biochemistry. Students will learn how to find, assess, synthesize, and communicate information from the research literature in chemistry and biochemistry. Course delivery will include initial lecture and workshop format, as well as peer review of writing. Student term-long reading and review of literature will be directed by their research supervisor in consultation with one other faculty member, normally a member of the student's advisory committee. Students will prepare a current, in-depth written review of research, using a journal format specified by the supervisor. The review will be graded by the supervisor and the consulting faculty member. CHEM 784 is distinct from and complementary to the CHEM 794 Master's Seminar course, and the PhD Seminar (CHEM 795(0) at Guelph), which involve the preparation, oral presentation and defence of a research proposal.

   CHEM 784 is a required course for MSc students, to be taken within the first two semesters of the student's program. CHEM 784 will replace one of the 3 elective courses currently required for MSc. Thus, MSc students will be required to take CHEM 784, CHEM 794, and 2 elective courses.

CHEM 794 description revisions complement CHEM 784.

2) *This correction reflects past and ongoing practice of the MRP being recognized as a milestone at Waterloo whereas it is designated as a course at Guelph. Thus, this correction is an editorial change. Accordingly we have also added a brief description to the MRP milestone.*

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/science/department-chemistry/master-science-msc-chemistry

https://uwaterloo.ca/graduate-studies-academic-calendar/science/department-chemistry/master-science-msc-chemistry-co-operative-program-direct-entry

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Degree requirements **Thesis option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must successfully complete at least 4 one-term graduate courses (0.50 unit weight), ~~1 of which must be~~ CHEM 794 Master's Seminar. ~~Half of the graduate courses must be taken within the Department of Chemistry.~~ 2 graduate courses may be taken through other departments within their registered University or students may request transfer credit for courses taken from another University to meet the course requirements. Students are advised to consult with their supervisor in the selection of courses. • **Link(s) to courses** o Chemistry (CHEM) courses o Graduate course search • **Academic Integrity Workshop** • **Master's Thesis** o Students must submit and defend an acceptable Master's thesis. **Master's Research Paper option:**	**Degree requirements** **Thesis option:** • **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must successfully complete at least 4 one-term graduate courses (0.50 unit weight), which must include CHEM 784 Foundations of Literature Review and CHEM 794 Master's Seminar. 2 graduate courses may be taken through other departments within their registered University or students may request transfer credit for courses taken from another University to meet the course requirements. Students are advised to consult with their supervisor in the selection of courses. • **Link(s) to courses** o Chemistry (CHEM) courses o Graduate course search • **Academic Integrity Workshop** • **Master's Thesis** o Students must submit and defend an acceptable Master's thesis. **Master's Research Paper option:**

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
• **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must successfully complete ~~8~~ one-term graduate courses (0.50 unit weight), ~~1 of which must be~~ CHEM 794 Master's Seminar. o Within the GWC^2 (Guelph-Waterloo Centre for Graduate Work in Chemistry and Biochemistry) program, part-time students can only take courses through the University of Guelph or the University of Waterloo, but 3 of the ~~6~~ graduate courses may be taken through other departments within their registered University. It is advisable that students take courses that are relevant to their area of specialization in chemistry, as this may be of help when students eventually seek a research advisor for their Master's Research Paper. • **Link(s) to courses** o Chemistry (CHEM) courses o Graduate course search • **Academic Integrity Workshop** • **Master's Research Paper**	• **Graduate Academic Integrity Module (Graduate AIM)** • **Courses** o Students must successfully complete 7 one-term graduate courses (0.50 unit weight), which must include CHEM 784 Foundations of Literature Review and CHEM 794 Master's Seminar. o Within the GWC^2 (Guelph-Waterloo Centre for Graduate Work in Chemistry and Biochemistry) program, part-time students can only take courses through the University of Guelph or the University of Waterloo, but 3 of the 5 graduate courses may be taken through other departments within their registered University. It is advisable that students take courses that are relevant to their area of specialization in chemistry, as this may be of help when students eventually seek a research advisor for their Master's Research Paper • **Link(s) to courses** o Chemistry (CHEM) courses o Graduate course search • **Academic Integrity Workshop** • **Master's Research Paper** o Students must submit and defend an acceptable Master's Research Paper.

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

Current students will not be impacted by these changes. Current students may take CHEM 784 as one of their elective courses. The changes will apply to the student cohorts starting from Fall 2020.

Department/School approval date (mm/dd/yy):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 02/13/2020
Faculty approval date (mm/dd/yy):
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

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

April 27, 2020

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

FROM: Heidi Mussar, Associate Director, Graduate Financial Aid & Awards

RE: Agenda items for Senate Graduate & Research Council – May 2020

Items for Information

a) Wendy Mitchinson Graduate Award in History – endowment

Previously approved at SG&RC in February 2018, a donor is making additional contributions to the expendable account to allow the annual scholarship to be increased by $1,000 until 2024.

The rest of the terms remain unchanged.