UNIVERSITY OF **WATERLOO** | Senate

Senate

March 3, 2025

3:30 - 6:00 p.m.

Needles Hall

NH 3407

Waterloo Campus

Think Differently | Act with Purpose | Work Together

UNIVERSITY OF WATERLOO | Senate

Meeting Book - 2025 03 03 Senate Meeting

AGENDA

OPEN SESSION

3:30 p.m.	1. Territorial Acknowledgement		
3:35 p.m.	2. Approval of the Agenda and Minutes		
	2.1 Conflict of Interest	Declaration	
	2.2 Approval of the Agenda, and Approval of the Consent Agenda	Decision	
	2.3 Minutes of the January 27, 2025 Meeting - open and confidential	Decision	
	2.4 Business Arising from the Minutes	Information	
	Memo, item 2.1-2.4		5
	Minutes of the January 27, 2025 Meeting		6
3:40 p.m.	3. Report of the President	Information	
4:00 p.m.	4. Annual Report - Co-operative and Experiential Education [Norah McRae]	Information	
	4.1 CEE 2024 Annual Report	Information	10
4:15 p.m.	5. Association Annual Updates - Report of the Presidents of FAUW, WUSA, GSA	Information	
4:45 p.m.	6. Report - Senate Graduate & Research Council		
	6.1 Senate Graduate and Research Council: Faculty of Engineering – New graduate program proposals	Decision	33
	6.2 Senate Graduate and Research Council: Faculty of Environment – Major Modifications	Decision	124
	6.3 Senate Graduate and Research Council: Faculty of Health – Major Modifications	Decision	160
	6.4 Senate Graduate and Research Council: Faculty of Science – Major Modifications	Decision	181
4:55 p.m.	7. Report - Senate Undergraduate Council		
	7.1 Senate Undergraduate Council: Faculty of Arts – Major Modifications	Decision	185
	7.2 Senate Undergraduate Council: Faculty of Engineering – Major Modifications	Decision	290
	7.3 Senate Undergraduate Council: Faculty of Environment – Major Modifications	Decision	352
	7.4 Senate Undergraduate Council: Faculty of Mathematics –	Decision	363

Non-senators interested in attending a Senate meeting can find meeting dates, registration details, and guidelines for visitors through the link

UNIVERSITY OF WATERLOO | Senate

For Information   **Open Session**

To:	**Senate**
From:	Gen Gauthier-Chalifour University Secretary
Agenda Item:	**2. Approval of the Agenda and Minutes**

2.1 Conflict of Interest

Senators are invited to declare any conflicts related to the open session agenda at this time. Should a conflict of interest arise during discussion, senators are asked to declare a conflict of interest as it arises.

The Secretariat can provide guidance regarding potential conflicts of interest in advance of or during the Senate meeting.

2.2 Approval of the Agenda, and Approval of the Consent Agenda

Motion: To approve the agenda as presented/amended, and to approve or receive for information the items on the consent agenda, listed as items 10.1-10.7 of the Senate agenda.

Senators wishing to have an item removed from consent to the regular agenda are asked to contact the University Secretary in advance of the meeting. Senators may also request to have items moved to the regular agenda immediately prior to the approval of the agenda.

2.3 Minutes of the January 27, 2025 Meeting – open and confidential

Motion: To approve the minutes of the January 27, 2025 meeting (open session), and to approve the minutes of the January 27, 2025 meeting (confidential session), as distributed/amended.

Documentation Provided:

- Minutes of the January 27, 2025 Meeting – Open Session
- Minutes of the January 27, 2025 Meeting – Confidential Session (see item 13.1 of the confidential agenda)

2.4   Business Arising from the Minutes

- Re: item 8.1, the recommended amendments to Policy 33, Ethical Behaviour, were approved by the Board of Governors *(for information)*
- Re: item 16.1, the Board of Governors approved the reappointment of Mary Wells as Dean of Engineering for an additional three-year term, from July 1, 2025 to June 30, 2028 *(for information)*

University of Waterloo
Senate
Minutes of the January 27, 2025 meeting
[in agenda order]

Present: John Abraham, Nasser Abukhdeir, Bilal Ahmed, Avery Akkerman, Marc Aucoin, Veronica Austen, Aubrey Basdeo, Jordan Bauman, Jean Becker, Judy Castaneda, Martin Cooke, Cecilia Cotton, Hans De Sterck, Laura Deakin, Charmaine Dean, David DeVidi, Catherine Dong, Paul Fieguth, Teresa Fortney, Bruce Frayne, Genevieve Gauthier-Chalifour (Secretary), Mark Giesbrecht, Vivek Goel (Chair), Rob Gorbet, Mike Grivicic (Associate Secretary), Vikas Gupta, David Ha, Peter Hall, Kevin Hare, Neela Hassan, Chris Houser, Natalie Hutchings, Marc Jerry, Acey Kaspar, Veronica Kitchen, Scott Kline, Sachin Kotecha, Christiane Lemieux, Ondrej Lhotak, Lili Liu, Brad Lushman, Jennifer Lynes, Stephanie Maaz, Ellen MacEachen, Carol Ann MacGregor, Blake Madill, Colleen Maxwell, Peter Meehan, Kristiina Montero, Kirsten Muller, Richard Myers, Cathy Newell Kelly, Christopher Nielsen, James Nugent, Troy Osborne, Nicholas Pellegrino, Nicholas Pfeifle, David Porreca, Neil Randall, Jacinda Reitsma, Mary Robinson, James Rush, John Saabas, Beth Sandore Namachchivaya, Rida Sayed, Mark Seasons, Marcus Shantz, Sivabal Sivaloganathan, Siva Sivoththaman, James Skidmore, Christopher Taylor, Alexie Tcheuyap, Katie Traynor, Sharon Tucker, Diana Vangelisti, Johanna Wandel, Mary Wells, Stanley Woo, Clarence Woudsma, Changbao Wu, En-Hui Yang

Guests: Graham Brown, Rebecca Butler, Aldo Caputo, Ashley Day, Bernard Duncker, Donna Ellis, Becky Elming, Melanie Figueiredo, Jenny Flagler-George, Anne Galang, Jennifer Gillies, Diane Johnston, Andrea Kelman, Jennifer Kieffer, Nick Manning, Cameron McCordic, Norah McRae, Christine McWebb, Ian Milligan, Bessma Momani, Fayaz Noormohamed, Chris Read, Karl Schuett, Nadia Singh, Kathy Smidt, Allan Starr, Kerry Stryker, Brandon Sweet, Caitlin Vaux, Tim Weber-Kraljevski, Sarah Willey-Thomas, Katy Wong-Francq

Regrets: Jagdeep Singh Bachher, Andrew Chang, Kim Cuddington, Mark Ferro, Murray Gamble, Nadine Ibrahim, Achim Kempf, Shana MacDonald, Asher Scaini

OPEN SESSION

The chair welcomed members to the meeting. The chair acknowledged that senators Narveen Jandu and Everett Patterson have stepped down from Senate since the last meeting and thanked them for their service. It was noted that nominations for elections to Senate have opened. The Chair advised that following the disruption that occurred during the November Senate meeting, feedback was received by the Secretariat from several senators and was brought to the Senate Executive Committee for discussion.

1. Territorial Acknowledgement
Jennifer Lynes provided a territorial acknowledgement and a reflection.

2. Approval of the Agenda and Minutes

2.1 Conflict of Interest.
No conflicts of interest were declared.

2.2 Approval of the Agenda, and Approval of the Consent Agenda.
A motion was heard to approve the agenda as presented, and to approve or receive for information the items on the consent agenda, listed as items 11.1-11.7 of the Senate agenda. Myers and Porreca. Carried.

2.3 Minutes of the November 25, 2024 Meeting – open and confidential.
A motion was heard to approve the minutes of the November 25, 2024 meeting (open session), and to approve the minutes of the November 25, 2024 meeting (confidential session), as distributed. Skidmore and Robinson. Carried.

2.4 Business Arising from the Minutes.
There were no items of business arising.

3. Report of the President
President and Vice-Chancellor Vivek Goel opened by offering a sincere thank you to all those who assisted in the relocation of students from the student residence, UW Place, following the failure of the boilers and to those that worked on making the temporary repairs. Appreciation was expressed for the patience demonstrated by the students who were disrupted by this event. Note was made that the

University has hired its ombudsperson and welcomed Whitney Barrett to the role earlier in January, and that an announcement to the UW community would follow.

The President noted pending elections at both the provincial and federal levels, and that postsecondary education was not anticipated to be a major theme of either election. The sector has work ahead of it to raise its profile and engage with the public. The President also advised the University had received its allocation of provincial attestation letters in the past week and will not be severely inhibited in comparison to the previous year, and that in general universities have retained more of this allocation than the college sector. It was noted that the many recent rules changes and haphazard communications from the government have caused confusion amongst prospective international students considering Canada for their studies.

The President closed by noting the University continues to prepare for financial sustainability challenges, and while decisions related to international student permits represent a future risk the most significant impact to the current situation has been provincial policy decisions to freeze tuition and grant funding. Note was made of the recent Senate and Board of Governors joint education session pertaining to the operating budget, and that a second joint budget session will be held in March ahead of consideration of the 2025-26 operating budget.

Questions were invited.

A senator noted that the University has engaged a consultant to investigate operational efficiencies for three academic support units, and asked what the defined scope of the consultant's work is and why they were unable to obtain a copy of the agreement between the consultant and the University. Vice-President Academic and Provost James Rush noted a general communication to the community on related work was issued earlier in the day and a website has been set up to continue these communications, and that recommendations from the engagement in question are anticipated in March 2025. It was noted that the contract is not a public document, and that provisions for freedom of information have exclusions which apply in this case and the vendor's consent to share the contract would be required.

Another senator noted that the same consultant has had significant engagements at other universities, with resulting reforms to academic programming and to governance. The President highlighted that the engagement at Waterloo is for three administrative functional reviews, and that any academic reviews would be led by academic colleagues and with the normal engagement of deans, Senate, etc., and that the consultant in question has not been engaged for such reviews.

4. Report of the Vice President, Research and International
Vice-President Research and International Charmaine Dean provided a presentation and highlighted major points from the report provided in the meeting material. Dean noted the opening of the Innovation Arena in November 2024, support for startup ecosystems, and trends in research funding including funding sources, and ongoing competitiveness and success of Waterloo for Tri-Agency funding. Dean noted activity to diversify research partnerships and significant activity in research security mitigations.

Dean went on to highlight key priorities for 2025-26 including change management with respect to impending elections, safeguarding research, and consultations for the Research Strategic Plan for the 2025-30 period. Within an environment of fiscal restraint, Faculties and AFIWs will be engaged to review service needs and devote attention and support efficiently. Dean thanked senators who attended the luncheon sessions and affirmed that those discussions were formative and insightful.

Senators discussed the report. The uptick in student startups follows from a strategic change in 2023 to focus on student entrepreneurship. Tracking of venture capital successes is done ascertaining which ventures secure external funding, though the University is examining other potential metrics.

5. Report - Senate Graduate & Research Council

5.1 Senate Graduate and Research Council: Faculty of Engineering – Major Modifications
Acting Co-Associate Vice-President Graduate Studies and Postdoctoral Affairs, Clarence Woudsma, provided an overview of the report and recommendation. A question was posed on whether the emergence of several new plans related to quantum might cause confusion. Dean of Engineering Mary Wells noted that it would be useful to look at that concern broadly. For the quantum plan under consideration, this would be reflected as a specialization on the student's transcript.

A motion was heard to that Senate approve the following major modifications for plans in civil engineering, electrical and computer engineering, and mechanical and mechatronics engineering, as presented and effective May 1, 2025. Woudsma and Wells. Carried.

5.2 Senate Graduate and Research Council: Faculty of Environment – Major Modifications

Woudsma provided an overview of the report and recommendation. A question arose as to how the plan could be reduced by four courses with the same learning outcomes. Cameron McCordic, academic director of the MDP program, indicated that electives are being restructured to allow specializations and to capture the learning outcomes from the old core courses.

A motion was heard that Senate approve the major modifications to the Master of Development Practice Plan, effective May 1,2025, as presented. Woudsma and Frayne. Carried.

6. Report - Senate Undergraduate Council

Associate Vice-President Academic David DeVidi provided an overview of the report. A student senator observed that the prospective changes have been well-received by students in the department, with kudos for student engagement in developing this recommendation.

A motion was heard that Senate approve the major modification for a new specialization plan in applied mathematics, effective 1 September 2025, as presented. DeVidi and Giesbrecht. Carried.

7. Report - Senate Executive Committee

7.1 Proposed Amendment to Senate Bylaws - Governance Year

The chair provided a short overview of the report, which proposed to adjust the Senate governance year to begin annually on September 1. University Secretary Gen Gauthier-Chalifour observed that the report includes amendments to Senate bylaws 2 and 3 for housekeeping and alignment with the proposed amendment. It was noted that graduating students can serve out the remainder of the Senate year, according to the *University of Waterloo Act*.

Questions were invited. Senators expressed general support and one senator expressed concern that it would be inappropriate for the current Senate to effectively extend its own term by four months.

A motion was heard that Senate give first reading to the amendments to Senate Bylaws 1, 2, and 3 as presented in the report. Lynes and Porreca. Carried.

8. Update on Government Legislation and Policy Requirements

8.1 Reporting on Government Directives – Bill 166: Anti-Racism/Anti-Hate Directive – Amendment to Policy 33, Ethical Behaviour

Associate Vice-President Faculty Planning and Policy Christine McWebb spoke to the report. It was noted the directives were issued, and deadlines set unilaterally by, the province and that a working group to address the directives was struck. The report aims to meet provincial compliance requirements with a focused amendment to Policy 33 to ensure compliance with the directive. Ongoing broader work for that policy that was previously underway will continue. McWebb noted that consultation and engagement with key stakeholders was undertaken on the policy amendments in a short time, to meet the compliance deadline.

Members discussed the report and clarified matters of concern, around provisions for anonymous complaints, and consultation process. It was noted anonymous complaints can be made in the current processes, and a minimum of information needs to be provided for the decision maker to determine whether to proceed with further investigation. Complaints may be filed in a variety of venues on campus and thereon triage of the compliant occurs and a decision is made to forward to the appropriate decision-maker as appropriate. Senators expressed concern that frivolous complaints could be weaponized. A preliminary assessment is the first step to evaluate whether there could be a violation of policy. The consultations that were undertaken occurred under time pressure due to the deadline for compliance. The time pressures associated with these amendments and the threat of non-compliance makes it difficult for Senate to have thoughtful consideration of this issue, and this represents an intrusion on institutional autonomy.

A motion was heard that Senate approve the amendments to Policy 33 – Ethical Behaviour, as presented in the attached report, for recommendation to the Board of Governors for approval. Gupta and Deakin. Carried.

The chair indicated that a broader update on policy work will be brought to the next Senate meeting in March.

8.2 Bill 166 and Bill 185 - Report on Compliance Activity
This report was received for information.

9. Faculty Constitutions

9.1 Proposed amendments to the Constitution and By Laws of the Science Faculty Council and Assembly

Dean of the Faculty of Science, Chris Houser, provided a short overview of the report and recommendation, and acknowledged student senator Jordan Bauman for raising the issues addressed through the proposed changes. Bauman commended the changes, noting the increased support for student engagement in the Faculty.

A motion was heard that Senate approve the amendment to the Constitution and By Laws of the Science Faculty Council and Assembly, as presented. Houser and Bauman. Carried.

10. Report - Vice President Academic and Provost

10.1 Undergraduate and Graduate Admissions Update – Briefing Note

This report was received for information.

CONSENT AGENDA

The following items were received for approved / received for information.

> **11.1 Senate Work Plan**
>
> **11.2 Report - Senate Graduate and Research Council**
>
>> **11.2.1 Senate Graduate and Research Council: Graduate Studies Academic**
>>
>> **Calendar Changes**
>>
>> That Senate approve the following Graduate Studies Academic Calendar changes, effective 1 January 2025, as presented.
>>
>> **11.2.2 Senate Graduate & Research Council**
>
> **11.3 Senate Undergraduate Council**
>
> **11.4 Senate Long Range Planning Committee**
>
> **11.5 Report - Vice President, Research and International**
>
>> **11.5.1 Awards, Distinctions, Grants, Waterloo International Engagements**
>
> **11.6 Report - Vice President, Academic and Provost**
>
>> **11.6.1 Report of the Provost - Faculty Appointments, Leaves**
>
> **11.7 Committee Appointments – Teaching Awards**
>
> To approve the committee appointments for the Distinguished Teacher Awards and for the Amit & Meena Chakma Award for Exceptional Teaching by a Student, as presented in this report.

12. Items Removed from the Consent Agenda

No items removed from the consent agenda.

13. Other Business

There was no other business.

With no other business, the committee convened in confidential session.

February 3, 2025   Mike Grivicic
                                                                     Associate University Secretary

For Information   **Open Session**

To: **Senate**

Sponsor/Presenter: Norah McRae
Contact Information: Associate Provost Co-operative and Experiential Education

Date of Meeting: **March 3, 2025**

Agenda Item   **4.1 CEE 2024 Annual Report**
Identification:

Summary:

Presenting the Co-operative and Experiential Education (CEE) 2024 Annual Report to Senate. This report to Senate highlights key accomplishments, research and outcomes related to co-operative education and work-integrated learning in 2024 as well as key priorities for 2025.

Documentation Provided:

- Co-operative and Experiential Education 2024 Annual Report

Senate   **1**

ANNUAL REPORT
2024

CO-OPERATIVE AND EXPERIENTIAL EDUCATION (CEE)

UNIVERSITY OF
WATERLOO | **Co-operative and Experiential Education**

CONTENTS

Our vision

Connecting imagination with impact for a better world through global leadership in co-operative and career education, experiential and work-integrated learning.

Our mission

By developing talent for a complex future, advancing research and strengthening Waterloo's sustainable and diverse communities, we will equip and empower learners for the future of work and lifelong learning.

Our portfolio

› Advancement

› Brand, Strategic Partnerships and Initiatives

› Centre for Career Development

› Centre for Work-Integrated Learning

› Co-operative Education

› International Strategic Initiatives

› Office of the Associate Provost

› Strategic Enablement

› Work-Learn Institute

FUTURE-READY INNOVATION ENGINE
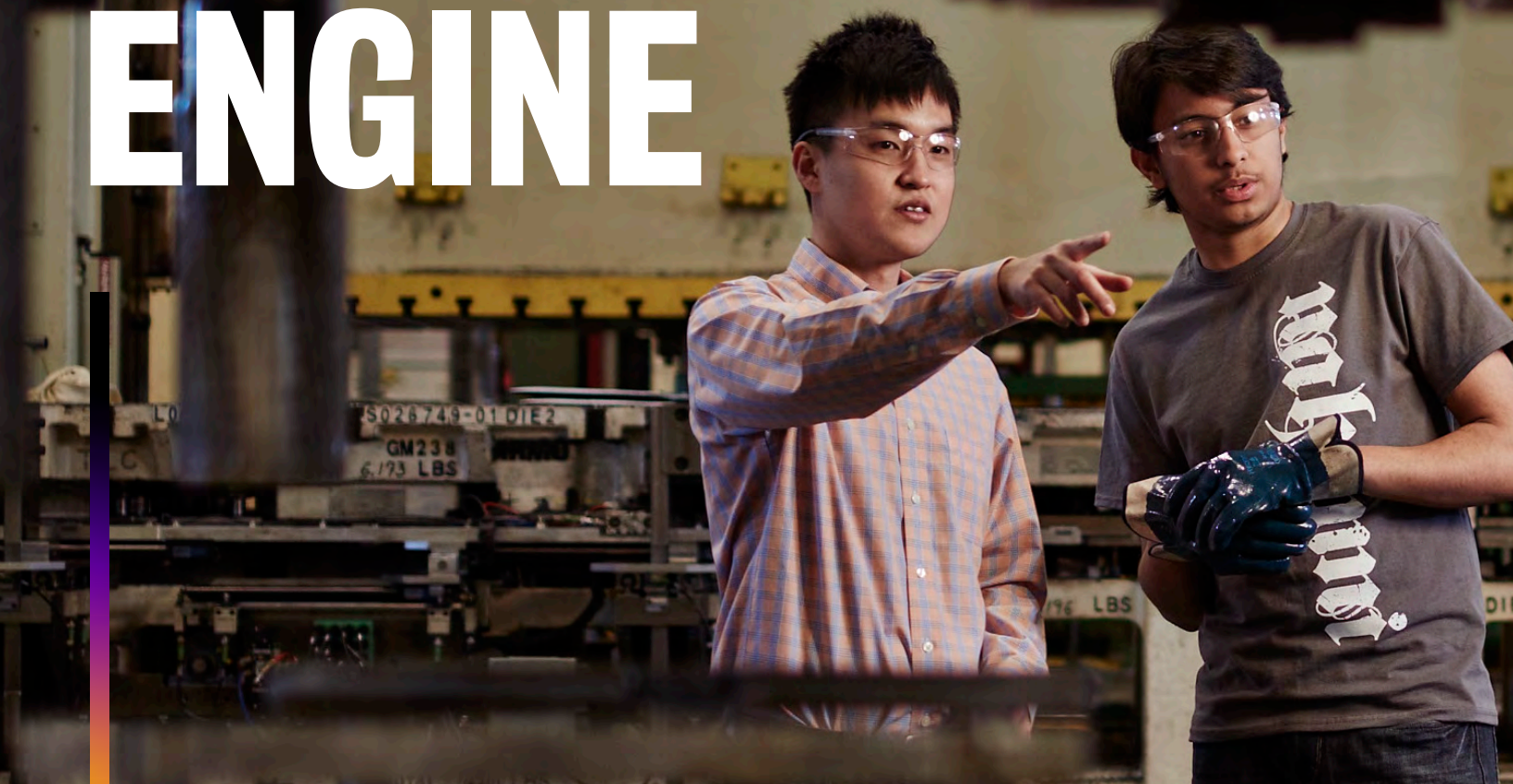
At Waterloo, innovation is in our DNA. Co-operative education continues to grow and adapt as we lead the way in transforming work-integrated learning (WIL). For more than 65 years, we've partnered with industry to be the co-op trailblazer and Canadian leader in WIL. Together, we're developing a future-proven workforce that makes real-world changes by tackling the world's most pressing challenges. In 2024, Co-operative and Experiential Education (CEE) received the QS Reimagine Education award for the Power of Partnerships. The award acknowledges the breadth, depth, quality and economic benefits of our employer relationships worldwide.

By working together, we form a powerful innovation engine committed to student success in shaping the future of work. Our powerful CEE portfolio acts with purpose to help students make a positive impact through hands-on experiences. We think differently about how to innovate our programs, initiatives and partnerships. Our research-based frameworks serve as the building blocks for our work to prepare students for the ever-changing world of work.

WATCH OUR POWER OF PARTNERSHIPS VIDEO

HIGHLIGHTS IN 2024

#1
co-op program in Canada

CourseCompare 2024

LARGEST
CO-OP PROGRAM
of its kind in the world

8,000+
employers in 70+ countries around the world

MOST INNOVATIVE UNIVERSITY
in Canada for 30 of the last 32 years

92%
of students feel prepared to use their skills in the workplace after completing a Professional Development (PD) course

9,000+
students available to hire each term

773
students enrolled in EDGE

847
students completed Waterloo Experience (WE) Accelerate

18,000+
student appointments and workshop or event attendees with the Centre for Career Development (CCD)

STRATEGIC PRIORITIES

Demonstrate global leadership

We lead the world in co-operative and career education and experiential work-integrated learning (WIL) with future-ready graduates to support communities and organizations.

Advance research for global impact

We evolve and innovate our programming to address the future world of work by researching co-op and WIL and applying research-based insights. We lead the way in sharing WIL research through consulting, speaking engagements and published articles.

Future-proof students

We equip and empower our learners to successfully navigate the ever-changing and complex world of work by focusing on the innovative and intentional integration of academic learning with valuable work experiences.

Future-proof employers

We help industry, community and government partners to maximize the benefits of the innovative ideas, skills, knowledge and fresh perspectives Waterloo students bring to the workplace. We engage with employers and industry partners to create quality student learning experiences.

Future-proof ourselves

We foster a connected, supportive and inclusive community that inspires staff to identify and achieve their personal, academic and professional goals while feeling valued and effectively contributing to our mission and vision.

![Strategic Priority icon]

STRATEGIC PRIORITY

Demonstrate global leadership

Our internationally recognized leadership in co-operative education and work-integrated learning (WIL) through our innovative programming, research and advancements, demonstrates our innovation in experiential education. In 2024, we secured funding to develop custom and personalized quality student support tools using Microsoft Artificial Intelligence (AI) tools. Our goal is to provide cutting-edge employment solutions in a challenging economic landscape and increase staff efficiencies.

This innovative work will help put more job opportunities in front of our students. It includes strategic partnerships with industry associations, government organizations and key stakeholders both on campus and beyond. The first-of-its-kind AI tool will roll out to students throughout 2025 and we'll continue to gather student feedback and enhance the tool to meet student needs.

The Centre for Career Development co-hosted the Canadian Association of Career Educators and Employer (CACEE) National Career Leaders Symposium at the University. Higher education career leaders from across Canada attended to examine strategic leadership priorities supporting the accessibility and impact of career development learning.

CEE partners with Enserva to bring Waterloo co-op talent to the energy sector

Waterloo became the first university to be an ambassador with Enserva's Working Energy program. Enserva members from across the energy sector post jobs on the Working Energy program central website. As an ambassador, CEE can utilize the Working Energy platform to identify suitable co-op and WIL experiences for students.

"Our partnership with Enserva offers a tremendous opportunity for our students to make significant contributions to Canada's vital energy sector," says Dr. Norah McRae, associate provost of CEE.

READ MORE ABOUT

CEE'S PARTERSHIP WITH

ENSERVA

Shabnam Ivković wins inaugural Sustainable Development Leadership Award

The award, from the Canadian Bureau for International Education (CBIE), recognizes Ivković's dedication to building awareness of and making an impact in advancing the UN Sustainable Development Goals (SDGs).

A leader in the space, Ivković developed the Sustainability Impact Framework to build awareness for students in WIL and increase their literacy and engagement in sustainability actions. She also created the award-winning SDGs at Work activity for students on a work term to do along with their co-op supervisor.

"Our ongoing commitment to actioning sustainability is essential as students gain skills for the future of work," says Ivković.

READ MORE ABOUT OUR

SUSTAINABILITY IMPACT

FRAMEWORK

Offering innovative skills training with new offerings in Waterloo Experience (WE) Accelerate program

Waterloo's award-winning program for first-work term students continued to evolve in 2024 with new offerings that give students more variety in skills development. The new options provide students with skills that focus on accessibility and sustainability to address global challenges.

READ MORE ABOUT

WE ACCELERATE

KEY PERFORMANCE INDICATORS

$1.25M
in funding received to develop AI tools to support co-op students

96
global speaking engagements

60
media stories featuring CEE research and expertise

62%
of employer respondents reported co-op students' work impacted at least one UN SDG

employer and student respondents reported highest student impact on UN SDG 9 – Industry, Innovation and Infrastructure

Advance research for global impact

Across our portfolio, Co-operative and Experiential Education (CEE) utilizes research to drive innovation. We present our award-winning research to the academic community and industry through publications and events including webinars, speaking engagements and keynote addresses. We evaluate our offerings using proven research methods to measure their success and impact. Our work-integrated learning (WIL) research and insights are often recognized with top research and industry awards as well as invitations to present at events and academic conferences. The global impact CEE is making in research, education and consulting services from the Work-Learn Institute, as well as key research insights, are outlined in the following pages.

LEARN MORE ABOUT THE WORK-LEARN INSTITUTE

Equipping clients with the knowledge and expertise to effectively develop, evaluate, implement and innovate WIL programs.

With a focus on driving tangible outcomes and fostering sustainable growth, CEE's Work-Learn Institute (WxL) offers consulting services for clients to benefit from its research insights and WIL expertise. WxL consultants offer personalized, just-in-time support, expertise and advice tailored to each organization's unique needs and aspirations. Services include WIL assessment and strategy development, customized solution design, advising and ongoing support. In 2024, WxL continued its partnership with Abdulla Al-Ghurair and provided insights to support the development of their outcome paper about WIL readiness in the United Arab Emirates.

READ MORE ABOUT

THE OUTCOME PAPER

"That student perspective is so valuable, and often we don't take time or have the time to really talk to our class.

But, to have that extra person edit, look at, and have access to, bounce ideas off, or even create something that the students could connect directly with… I find that really valuable."

PROFESSOR

(FROM STUDY INTERVIEW)

Amplifying the student voice: Research highlights the barriers students from equity-deserving groups face in co-op

WxL researchers aimed to identify the major barriers experienced by WIL students from equity-deserving groups (EDGs) on a co-op education journey. The study found that co-op students from EDGs face structural and non-structural barriers in WIL that affect the quality of their co-op experiences.

Outcomes included the following recommendations for co-op student employers:

› training and education

› industry partnerships to develop recruitment and retention resources

› commitment to equity and inclusion and providing resources

WxL presented the research findings at three Future-Ready Workforce Series events in 2024.

READ MORE ABOUT THE RESEARCH STUDY

Study highlights co-op students' role in enhancing teaching and learning

As post-secondary institutions consider new ways to enhance course design and engage students, co-op students can help to advance teaching practices and understanding of student needs. Between 2020 and 2022, the University of Waterloo hired and trained more than 1,000 undergraduate co-op students as Online Learning Assistants (OLAs) to support faculty transitioning to online teaching. We interviewed faculty members involved, and used a constructivist grounded theory approach to analyze the program. Our key findings:

› Co-op students' unique perspectives and academic skills enhanced student-faculty partnerships and positively impacted education.

› The full-time, paid co-op model played a critical role in the success of these partnerships within the OLA program as it fostered meaningful collaboration.

READ MORE ABOUT STUDENT-FACULTY PARTNERSHIPS

"Our findings suggest that full-time, paid co-op student positions offer a valuable program structure for the development of student-faculty partnerships in higher education.

These partnerships are mutually beneficial: students have the opportunity to learn more about 'the other side' of their post-secondary learning experience, and faculty have the opportunity to learn from the student's on-the-ground perspective."

ANNE-MARIE FANNON

DIRECTOR, WXL

CEE's researchers recognized with top awards

The Co-operative Education and Internship Association (CEIA) honoured Dr. Judene Pretti, CEE's director of strategic enablement, with the Ralph W. Tyler Award. Pretti received the award for her work as an editor of the Routledge International Handbook of Work-Integrated Learning (3rd ed). The Handbook also won the Inaugural WIL New Zealand Research Excellence Award.

Co-operative Education and Work-Integrated Learning (CEWIL) Canada awarded Dr. David Drewery, associate director of WxL, the Dr. Graham Branton Research Award. The national award recognizes researchers for significantly pushing the boundaries of WIL knowledge and issues of equity, diversity, inclusion, access and accessibility.

WxL director, Anne-Marie Fannon was one of the CEWIL Volunteer Impact Award (Group) recipients for her pivotal role in establishing CEWIL as a national authority in WIL.

READ MORE ABOUT CEE AWARDS AND ACCOLADES

Work-Learn Institute (WxL) earned the Best Paper Award at the 2024 WACE International Research Symposium

Research associate Idris Ademuyiwa, research assistant Calahndra Brake and associate director Dr. David Drewery earned the Best Paper Award at the 2024 WACE International Research Symposium.

A thematic analysis of the International Journal of WIL from 2018 to 2023, the paper summarizes themes from 222 articles to identify opportunities for the community to explore as it works to create sustainable knowledge societies.

The paper outlines eight key themes to help WIL practitioners as they make strategic long-term decisions.

"We're elated that our paper was chosen. Our work identifies key directions for the future of WIL research," says Drewery.

READ MORE ABOUT THE AWARD-WINNING PAPER

KEY PERFORMANCE INDICATORS

$10,000
from CEWIL Canada to study WIL and international students' labour market transition and retention in Canada

83%
of instructors interviewed discussed how OLAs provide a unique perspective on teaching and learning

475+
WxL research citations

621
attendees at Future-Ready Workforce Series events in 2024

Future-proof students

Students are central to Co-operative and Experiential Education's (CEE) innovation engine. We act with purpose to equip and empower learners for the future of work and lifelong learning. Our new student support model provides each student with a consistent co-op advisor, aligned with their faculty of study, to support them throughout their co-operative education journey. Students also have access to career advisors, in the Centre for Career Development, who help to integrate career education into both the classroom and student experience. By working together with students, we've continued to evolve by launching a new Employer-Student Direct job board and developing a new AI-powered tool to get more jobs in front of students. In 2024, we've added new student-focused staff roles to help remove barriers and empower all learners for the future of work. Other initiatives included working together with campus partners to launch more graduate WIL opportunities and courses. We've

launched an AI policy and module to help students leverage AI in their Professional Development (PD) courses. Our award-winning WE Accelerate program now offers new program streams to give students more career skills training options that align with our Future-ready talent framework.

In a time of rapid change, from programming to funding, we're helping students prepare for a complex future of work.

"[Co-op advisors] were able to help me with my co-op job search and find roles that aligned with my program. They are with you every step of the way..."

ALEX, CO-OP STUDENT, FACULTY OF HEALTH

No jobs left behind - working together to innovate

In a challenging job market, CEE prioritized putting more and relevant co-op jobs in front of students. In 2024, CEE launched a new Employer-Student Direct job board on WaterlooWorks. The board offers a new way for co-op employers to access talent and results in more pre-approved jobs for students. For example, employers can post jobs for future work terms that may not align with the timing for the co-op rank match process. Students can apply directly to employers and plan for future work terms.

CEE also partnered with Microsoft and industry partners to develop a new AI-based tool for students. The tool aggregates potential co-op jobs from external sources and helps to answer students' questions about co-op. Students will begin using the prototype in early 2025.

READ MORE ABOUT WATERLOOWORKS JOB BOARDS

Meeting students where they are with connections for housing support

With the current housing crunch, the complexity of finding short-term housing can be challenging for co-op students working in a new location. The Co-op Connection Discord server offers a way for students to connect to find potential roommates or housing resources. The server, hosted by CEE's co-op student experience team, has more than 5,300 users and includes regional channels that span across the globe. Co-op student staff help to manage the community on Discord and plan local events for students working nearby to connect during their work terms.

An accompanying co-op housing web page aggregates housing resources and tips to help students find a place to live during their co-op work terms.

READ MORE ABOUT HOUSING SUPPORT
FOR CO-OP STUDENTS

"Co-op connection has connected me to other Waterloo students on a work term in the same area..

I have used it to find housing, hang out with other people working near me and understand where co-op can take me around the world."

LAUREN, CO-OP STUDENT, FACULTY OF ARTS

Prioritizing inclusion through equity, accessibility and Indigenous student supports

Three co-op student experience staff members with expertise in accessibility, Indigenous relations and equity, diversity, inclusion and anti-Racism (EDI-R) are available to support students through programming and appointments. The specialized co-op student experience managers aim to remove barriers for students and build more inclusive student experiences in our work-integrated learning (WIL) programming, including co-op, WE Accelerate and EDGE.

MEET THE CO-OP STUDENT
EXPERIENCE INCLUSION TEAM

Updated CareerHub tool launches to give students easy, self-serve access to career resources

The Centre for Career Development (CCD) is transforming how students, alumni and staff access career resources. The new CareerHub platform centralizes and tailors tools for every career stage, from exploring career paths to workplace success. Built on the accessible Confluence platform, the updated CareerHub aligns with current trends in career education to better serve Waterloo's diverse learner population. As a tool, CareerHub empowers users to take control of their career development and reflects CCD's commitment to providing dynamic, high-quality support for lifelong professional growth.

CHECK OUT CAREERHUB

Graduate students benefit from new work-integrated learning and co-op model

Students participating in the GradWIL pilot saw a significant boost in confidence after taking part in WIL offerings. The pilot includes graduate co-op programs, internships and WIL courses. They combine academic knowledge with practical work experience, helping students develop crucial skills like communication, teamwork and problem-solving. Students highlighted how the program improved their ability to navigate workplace challenges, build professional relationships and adapt to new environments. The experience ultimately made students feel more confident in their career identity and prospects and better prepared for the future of work.

READ MORE ABOUT GRADWIL

EDGE: Expanding access to work-integrated learning

Waterloo's EDGE certificate helps non-co-op students gain career-relevant experience by breaking down barriers to work-integrated learning (WIL). EDGE advisors provide personalized support to guide students through hands-on opportunities that align with their goals. Daniela Bredin, a Global Business and Digital Arts student, embraced EDGE's flexibility to try out different work experiences to shape a unique career path. Jessica Idahosa, an Honours Science student, leveraged EDGE to refine her collaboration skills. By taking initiative at her job at the W Store, it qualified as an accomplishment towards her EDGE experiences. EDGE creates accessible pathways for students of all backgrounds to gain valuable in-demand skills, ensuring they graduate future-ready.

READ MORE ABOUT DANIELA'S EXPERIENCE

"I would totally recommend EDGE. It made me reflect on my skills and my future. I will graduate with work experience on my résumé, and I have learned how to market myself in this competitive job market. I'm proud of myself and can't wait to get my EDGE certificate when I graduate."

JESSICA, EDGE PROGRAM PARTICIPANT

READ MORE ABOUT JESSICA'S EXPERIENCE

Great Law of Peace: Indigenous mural unveiled at the Tatham Centre

Waterloo alum and supporters, Mary-Ellen Cullen and Steve Menich, generously funded an Indigenous mural project in the Tatham Centre. Cullen and Menich are passionate about creating community and a valuable student experience. The project supports the University's Indigenous strategic plan and CEE's commitment to truth and reconciliation. The artist, Kyle Joedicke was inspired by the hub of activity in the Tatham Centre and the story of the Great Law of Peace. "This story mirrors the commitment that students at Waterloo undertake to maintain a healthy and peaceful on-campus community," said Kyle Joedicke.

READ MORE ABOUT THE MURAL

"Having had so many experiences in different workplaces has made me confident in my next steps.

I'm actually applying to research positions in the intersection of physics and computer science."

JESSICA BOHM

FACULTY OF MATHEMATICS

CO-OP STUDENT OF THE YEAR

2024

Steele Family Foundation Changemakers in Co-op funds co-op student roles to support sustainability

The Changemakers in Co-op program has been instrumental in enabling students to gain international experience. It provides $10,000 to fund four-month co-op work terms at charitable organizations. Engineering student Arun Ramji was able to contribute to conservation efforts while working for the Intercultural Outreach Initiative in the Galapagos Islands thanks to the funding. The Intercultural Outreach Initiative works on projects including sustainable farming and agriculture, tortoise conservation and community education that contribute towards the United Nations Sustainable Development Goals. "When I started my program, I was focused on pursuing a software or coding job. But now, I realize I want more human interaction in my daily life, both at work and outside. This experience has been a great reminder to keep exploring the world and trying new things," says Ramji.

READ MORE ABOUT CHANGEMAKERS IN CO-OP

New financial awards give more students access to work-integrated learning experiences

CEE launched the WIL awards program to offer financial awards for undergraduate and graduate students participating in unpaid work-integrated learning (WIL). These WIL experiences are valuable opportunities for students to gain work experience and build future-ready skills that complement their academic studies. Students who received the awards completed WIL experiences through practicums, internships, community/industry research projects and more. With funding from CEWIL Canada's Innovation Hub and donors like Enbridge and Doris Dixon Charitable Foundation, the Centre for WIL provided financial awards, up to $1,775 per student each term, to make unpaid WIL experiences more accessible to students.

READ MORE ABOUT THE FINANCIAL AWARDS

The future of healthcare: Waterloo co-op students are leading innovation

From working on medical research to developing solutions that enhance patient management, students are helping to transform the future of health care.

Rahul Desai, a Health student, worked at Sunnybrook's Odette Cancer Centre.

"We're looking at all the research available and with partners to find the best ways to treat biliary tract cancer," said Desai.

READ MORE ABOUT CO-OP STUDENTS IN HEALTH CARE

KEY PERFORMANCE INDICATORS

#1

co-op program in Canada

CourseCompare 2024

#1

in Canada for hands-on experiential learning

Maclean's Student Voices Survey

1,195

jobs posted on the Employer-Student Direct job board resulting in 218 employed students

8.4/10

average co-op student work term satisfaction rating

24,000+

co-op work terms (employed students)

$842K

in funding to 503 students to support unpaid WIL experiences

3,000+

international work terms in 2024

120+

co-op programs

64%

of student respondents reported their co-op work term impacted at least one UN SDG

242

fully-funded work terms in the charitable sector to date thanks to donors

Future-proof employers

We help employers find the talent they need. Together with our industry and community partners, we create rich, quality work-integrated learning experiences. Co-operative and Experiential Education (CEE) is committed to helping our extensive network of employers build resilient and innovative organizations by meeting their employment needs. Our collaboration with employers includes hosting our annual Employer Impact Conference, offering on-campus opportunities for employers to engage with students, partnering to identify in-demand skills and working together to build innovative programs to prepare students for the future of work. In 2024, we offered new WaterlooWorks job boards, flexible hiring options and resources to help more employers benefit from hiring Waterloo co-op talent.

We honoured six outstanding employers with CEE Employer Impact Awards:

ATS	**ATS Corporation** Impact in Innovation
NTNU Norwegian University of Science and Technology	**Norwegian University of Science and Technology** Impact in International Excellence
UHN Canada's #1 Hospital	**University Health Network** Impact in Research
ONTARIO TEACHERS' PENSION PLAN Investing to make a mark	**Ontario Teachers' Pension Plan** Impact in Sustainability
Region of Waterloo	**Region of Waterloo Waste Management** Impact on Student Experience
Canadian Tire	**Canadian Tire Corporation** Impact in Equity, Diversity and Inclusion

READ MORE ABOUT THE
EMPLOYER IMPACT AWARD RECIPIENTS

Innovation, Science and Economic Development (ISED) benefits from CEE innovation engine

ISED, a branch of the Canadian federal government, hires Waterloo co-op students for their dynamic skill set and productive Artificial Intelligence (AI) work. Here are three ways ISED utilizes students to innovate:

› Using AI to extract and organize data to improve efficiency

› Leveraging machine learning for data analysis and clustering models

› Developing AI-driven tools for self-service data verification

In 2024, the University and ISED co-hosted a virtual student showcase to highlight the co-op student experiences working on various AI projects for ISED.

READ MORE ABOUT THE EVENT AND HOW ISED BENEFITS FROM HIRING CO-OP STUDENTS

"Alex's (a Waterloo co-op student) contributions..showcased ISED's ability to enhance efficiency through LLMs.

By leveraging AI, Alex significantly improved the automation of document categorization and analysis."

KIMLEE SANTOS, DATA ANALYST, ISED

New employer onboarding sessions

As part of our CEE innovation engine, co-op services launched two new employer sessions in 2024 to assist new employers and new hiring contacts. *Navigating Hiring Co-op Talent from UWaterloo* is an interactive webinar that assists new employers with understanding the co-op hiring process. Two days before each match, employers can attend a *Ranking Ask Me Anything (AMA)* to get answers to any questions about the rank/match process and learn about tips for success.

"I find the Waterloo co-op students very curious and dependable. I think these are very important attributes in the research field."

KAREN NG

LAB MANAGER, NOTTA LAB

UNIVERSITY HEALTH NETWORK

Award-winning Employer Impact Conference continues to provide value to co-op employers

CEE's inaugural Employer Impact Conference earned bronze in the Best Community Outreach Initiative category from the Council for Advancement of Education. In 2024, the second annual conference for current and prospective employers focused on the theme of *Talent For A Better Future*. The conference surpassed its goals with more than 900 registrations. Most attendees rated the session as excellent or good (87%) and 92% gave the speakers top marks. "Topics were excellent and relevant. Knowledgable speakers!" said a co-op employer who attended the conference.

READ MORE ABOUT THE EMPLOYER IMPACT CONFERENCE

Students help employers implement innovative AI solutions in the workplace

By hiring co-op students, employers are embracing the potential of Artificial Intelligence (AI) and staying ahead of their competition. Rocket Innovation Studio, a customized IT solution provider, has benefited from hiring co-op students to help with both user experience and software development. "Students are working on a lot of AI-related projects, for example, and different cloud technologies. My goal as we get bigger and grow, is to bring in more students," says Agostino DiPietro, director of software development at Rocket Innovation Studio.

READ MORE TIPS FOR HOW STUDENTS CAN HELP EMPLOYERS ADOPT AI

KEY PERFORMANCE INDICATORS

94%
of employers rate Waterloo students from very good to outstanding on their work term

8,000+
co-op employers (2024)

374
registrations for co-op fundamentals info sessions

3,764
subscribers to CEE email and LinkedIn newsletters for employment trends and tips

530
attendees at the 2024 Employer Impact Conference

339
attendees at the 2024 Black History Month employer panel

STRATEGIC PRIORITY

Future-proof ourselves

Recognizing the power of our portfolio in driving the innovation engine, Co-operative and Experiential Education (CEE) is committed to fostering a connected, supported and inclusive community that embraces diversity and equity. Our CEE staff and campus partners are key to driving the innovation engine. By inspiring and supporting our people to achieve their personal, academic and professional goals, together we can help students and other key stakeholders prepare for the future of work.

To be sustainable and effective, we must leverage our resources to engage, develop and build our capacity. In 2024, we launched new research-based frameworks to continue to guide our work in sustainability and purposeful work. We continued to develop key relationships with our faculty partners in our research

and program enhancements. Our CEE staff demonstrated a commitment to sustainability in their Green Office committee achievements. We've enhanced our training and professional development offerings to support our staff in maintaining our global leadership in the delivery of WIL programming. Together, we are not just preparing for the future of work, we are actively shaping it.

Indigenous artist, Kyle Joedicke, created a new mural in the lobby of the Tatham Centre to represent unity and community.

Professional development through intentional information sharing across CEE units

Each week, CEE staff gather virtually for CEE Info Share, a unique learning opportunity across the department. In 2024, more than 40 unique hosts from across the portfolio hosted Info Share sessions, which are managed by the Strategic Enablement Team. Typically, over 100 staff members attend each Info Share. In post-event surveys, staff consistently rate the sessions as highly valuable and effective. CEE also hosted two half-day all-staff virtual business meetings to bring staff together for collaboration and professional development. Staff members, leadership and campus partners shared their expertise and led discussions to advance our strategic priorities.

Wellness committee offers resources and events for staff

The CEE wellness committee, driven by staff and for staff, is dedicated to promoting a well-rounded approach to well-being and supporting a healthy work-life balance. In 2024, the committee hosted 18 wellness events for staff. Events included online trivia competitions and an adventurous *Walk Across Canada* challenge where staff tracked their movement to collaboratively travel the equivalent of across the country. The committee was invited to present at the Co-operative Education and Internship Association (CEIA) conference to inspire other co-op and WIL practitioners to prioritize staff health and wellness.

Preparing and training staff for a new student support model

CEE staff formed sub-groups to equip co-operative education advisors and career advisors with the faculty and program-specific knowledge to best support students in the new faculty-aligned student support model. The knowledge sharing across the unit included creating resources like self-guided program sheets with key information about each program and pre-first work term support materials. A new learning and development dashboard has co-op employment patterns, job descriptions and skillsets organized by program and faculty to enhance opportunities for early connections. As co-operative education advisors transition to the new student support model, we continue to provide workshops, training sessions and software, like MS Bookings tool, to help advisors best support their students. Early feedback about the power of faculty-integrated career and co-op programming is enthusiastic and positive.

CEE has three active Green Office teams to support sustainability in the workplace. The Centre for WIL and Centre for Career Development have achieved platinum status, and the Strategic Enablement Team has achieved gold.

KEY PERFORMANCE INDICATORS

18
wellness-focused events for staff in 2024

40
unique presenters at Info Share sessions supporting interdepartmental communications and professional development in 2024

KEY PRIORITIES IN 2025

Demonstrate global leadership: showcase the power of a future-ready innovation engine

› **Artificial Intelligence (AI) solutions:** Test, iterate and launch AI solutions to improve the co-op student experience, identify additional co-op job opportunities and improve staff efficiencies.

› **Consulting and speaking engagements:** Pursue opportunities to share CEE's thought leadership with local, national and international audiences.

Advance research for global impact: explore and mobilize WIL outcomes research

› **Research projects:** Conduct further research to explore WIL outcomes for students, external partners and academic institutions.

› **Research insights:** Mobilize relevant research insights regarding WIL recruitment, supervision and retention.

Future-proof students: continued focus on students at the centre

› **Co-op jobs:** Focus on securing more high-quality co-op jobs to improve student satisfaction with their work term experiences.

› **Support model:** Evolve support models to enable international student success in co-op.

› **AI-enhanced career planning:** Enhance the career exploration and planning skills of students and staff using AI and labour market insights.

› **WIL/PD courses:** Reimagine WIL/PD course offerings and pilot a new reflection process.

Future-proof employers: be the first choice for early career talent

› **Capture insights:** Develop new ways of collecting and examining employer feedback to reflect expectations and the evolving labour market.

› **Support models:** Evolve support models, including an onboarding program for new employers, to align service with the needs of the wide range of employers we support.

› **Engagement:** Share talent trends and best practices with employers to add value to their relationship with us and support their desire to build their campus brand.

Future-proof ourselves: strengthen connections, experiment and improve efficiencies

› **Strengthen connections:** Collaborate with faculty on WIL research and ways to support course-level WIL.

› **Experiment:** Trial new business development tools to attract more high-quality jobs for students.

› **Streamline processes:** Test AI tools for application to our work.

UNIVERSITY OF WATERLOO

WATERLOO

**Co-operative and
Experiential Education**

For Approval   **Open Session**

To:	Senate
From:	Senate Graduate and Research Council
Presenter(s):	Charmaine Dean Vice-President, Research & International
	Clarence Woudsma Interim Co-Associate Vice-President, Graduate Studies and Postdoctoral Affairs
Date of Meeting:	March 3, 2025
Agenda Item:	**6.1** **Senate Graduate and Research Council: Faculty of Engineering – New graduate program proposals**

Recommendation/Motion

Motion: That Senate approve the proposed new graduate academic programs of MEng in Chemical Engineering - Health Technologies (Co-op); MEng in Mechanical and Mechatronics Engineering - Health Technologies (Co-op); MMSc - Health Technologies (Co-op) as presented; and, that the effective date be either May 1, 2025 or September 1, 2025.

Summary

Senate Graduate and Research Council met on January 27, 2025 and agreed to forward the following items to Senate for approval as part of the regular agenda.

   a. Master of Engineering (MEng) in Chemical Engineering - Health Technologies - Co-operative Program
   b. Master of Engineering (MEng) in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program
   c. Master of Management Science (MMSc) - Health Technologies - Co-operative Program

Jurisdictional Information

This item is being submitted to Senate in accordance with Senate Bylaw 2, section 4.03: "Consider, study and review all proposals for new graduate programs, the deletion of graduate programs, major changes to existing graduate programs, arrange for internal appraisals as the council shall see fit, and make recommendations to Senate thereon."

Governance Path

Senate Graduate and Research Council: 01/27/2025

Documentation Provided

Appendix: Graduate Proposal - Master of Engineering (MEng) in Chemical Engineering - Health Technologies - Co-operative Program

Appendix: Graduate Proposal - Master of Engineering (MEng) in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program

Appendix: Graduate Proposal - Master of Management Science (MMSc) - Health Technologies - Co-operative Program

UNIVERSITY OF WATERLOO

GRADUATE PROPOSAL

COLLABORATIVE HEALTH TECHNOLOGIES PROGRAM

MASTER OF ENGINEERING IN CHEMICAL ENGINEERING – HEALTH TECHNOLOGIES (CO-OP)

For submission to the
Ontario Universities Council on Quality Assurance

VOLUME I - PROPOSED BRIEF

NOVEMBER 2024

*The Quality Council will normally require only an Expedited Approval process where:
a) there is a proposal for a **new Collaborative Program** at the graduate level; or
b) there is a proposal for **a new for-credit graduate diploma**.

NOTE: This template **must** be used for submission of a new program proposal.
Please consult the University of Waterloo Institutional Quality Assurance Process and the
Quality Assurance Framework (QAF) for details or the Quality Assurance Office.
**Volumes I, II must be reviewed and approved by the Quality Assurance Office, GSPA and IAP prior
to submission to your Faculty Council**

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1. **Introduction**

Brief Listing of the Program

The Collaborative Health Technologies Program offers students professional Master of Engineering (MEng) degree with mandatory co-op, as preparation to enter the broad and rapidly evolving field of *Health Technology*. Not only is co-op highly beneficial to students while completing this program, it also offers an important opportunity to those students who *never* had co-op experience during their undergraduate degree. The program is centered around a collaborative and interdisciplinary suite of courses offered by six departments in Engineering and supported by the Faculties of Arts and Health. In addition to coursework, the mandatory co-op program serves to enrich the learning of students with practical experience in industrial settings. This is a full-time, on-campus program, with an expected duration of 4-6 terms, based on the co-op and study sequence selected by particular students. Program tuition follows the existing UW graduate home program tuition structure.

To enroll in the Collaborative Health Technologies Program, students must meet the admission requirements of, and register in, the department of Chemical Engineering (CHE). Students must complete the Collaborative Health Technologies Program requirements that are structured as a combination CHE department's MEng degree requirement, and the additional Collaborative Health Technologies Program requirements (i.e., the completion of sufficient courses from specified pools, and successful co-op work terms/reports).

The degree conferred will be that of the participating program (i.e. Chemical Engineering), with the completion of the Collaborative Health Technologies Program indicated by a transcript notation to the degree and adjunct qualification to the degree (i.e. Master of Engineering in Chemical Engineering – Health Technologies). The proposed collaborative program also offers a platform to allow future participation of other Faculties.

Method Used for Preparation of the Brief

The Collaborative Health Technologies Program was conceptualized by the Dean of Engineering and the Associate Dean Graduate Studies – Engineering. In April 2023, the initiative to develop the program received support from the New Interdisciplinary Networks, Programs, and Initiatives Fund from the University. The proposal was developed following consultations by the Associate Dean with Graduate Associate Chairs of the departments of Chemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Management Science and Engineering, Mechanical and Mechatronics Engineering, and Systems Design Engineering. The Associate Dean also had discussions with counterparts in other Faculties (e.g., Arts, Health, and Science). The general proposal was presented to the departments in Engineering for consideration within the unit. Following approval, this departmental proposal brief to participate in the collaborative program evolved, incorporating the specific requirements of the home unit.

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2.   Objectives of the Program (QAF 2.1.2.1))

The Collaborative Health Technologies Program is timely and justified not only based on the critical need for skilled professionals at the intersection of healthcare and technology, but also by the University of Waterloo's own goals, e.g. Waterloo at 100, Global Futures. The following are some of the compelling reasons that justify the establishment of a Collaborative Health Technologies Program:

1. **Rapid Technological Advancements in Healthcare**: The healthcare industry is experiencing an unprecedented transformation due to rapid advancements in technology. Innovations such as artificial intelligence, telemedicine, wearable devices, and data analytics are reshaping healthcare delivery, diagnosis, treatment, and patient care. A dedicated program will equip future professionals with leading-edge skills needed to leverage and drive innovations in this field.

2. **Increasing Demand for Health Technology Experts**: There is a growing demand for professionals who possess a deep understanding of both healthcare and technology. This demand arises from the need to bridge the gap between traditionally siloed fields and create holistic solutions that address complex healthcare challenges. Graduates of a Collaborative Health Technology Program will fill this talent gap and drive innovation in healthcare settings.

3. **Addressing Healthcare Challenges**: The global healthcare landscape faces numerous challenges, including rising costs, an aging population, chronic diseases, disparities in healthcare access, and pandemics. A Collaborative Health Technologies Program will empower students to develop innovative solutions to address these challenges, improve healthcare access, and enhance patient outcomes.

4. **Opportunity for Interdisciplinary Collaboration**: A program that combines healthcare and technology will foster interdisciplinary collaboration. Students will learn to collaborate with healthcare professionals, engineers, data scientists, ethicists, and policymakers, fostering a diverse and comprehensive approach to problem-solving.

5. **Industry-Relevant Skill Development**: Employers in the healthcare and technology sectors seek professionals with specialized skills in areas such as health data analytics, digital health, telemedicine, medical device development, regulatory compliance, and AI applications in healthcare. Both the course-based components and the mandatory co-op of this Collaborative Health Technologies Program combine to ensure that graduates are well-prepared with these in-demand skills.

6. **Economic and Innovation Impact**: Investing in a Collaborative Health Technologies Program aligns with the current market demand and presents an opportunity to contribute to economic growth and innovation. Graduates equipped with the skills to develop and implement Health Technology solutions can drive entrepreneurship, create job opportunities, and contribute to the expansion of healthcare technology sectors.

7. **Addressing Future Healthcare Needs**: With the evolving landscape of healthcare and technology, preparing future professionals to navigate and lead in this dynamic environment is essential. Establishing a Collaborative Health Technologies Program now ensures that the workforce is ready to address the future needs and challenges of the healthcare industry.

Program Learning Outcomes and Graduate Degree Level Expectations (GDLE):

1. **Depth and Breadth of Knowledge**
    a. Understand the principles, concepts, terminology and tools of health technology
    b. Demonstrate awareness of key elements of both the ethical considerations and impacts of health technologies
    c. Interpret, understand, and critically assess state-of-the-art methods, theories, and advances in health technology

2. **Research & Scholarship**
    a. Integrate complex engineering concepts related to the breadth of health technology, and the underlying and associated sciences.

3. **Level of Application of Knowledge**
    a. Interpret, critically assess and apply state-of-the-art methods, theories, and advances in health technology
    b. Understand current issues faced by the health technology industry

4. **Professional Capacity / Autonomy**
    a. Independently recognize, define, and solve complex real-world health technology needs and associated challenges
    b. Engage in self-directed professional development and life-long learning
    c. Develop an ability to recognize, appreciate, consider and apply appropriate ethics, law, regulations, and accountability to the field of health technologies
    d. Understand the value of engaging in inter-disciplinary collaboration in health technology as well as the complexity of knowledge & limitations of different fields
    e. Adopt a mindset for collaboration (work effectively in interdisciplinary teams including healthcare professionals, engineers, designers, business developers, etc.)

5. **Level of Communication Skills**
    a. Effectively communicate complex concepts in health technology to a wide audience ranging from general public to experts in the field. Concepts may include health technology needs and associated challenges (includes GDLE 6 Awareness of Limits of Knowledge)
    b. The ability to communicate ideas, issues and conclusions clearly.

6. **Awareness of Limits of Knowledge**
    a. Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.
    b. Understand the value of inter-disciplinarity in the field of health technologies.

How does this Program align with the University of Waterloo Strategic Plan and Strategic Mandate Agreement?

The Collaborative Health Technologies Program aligns well with the University of Waterloo's strategic plan in several ways:

1. **Interdisciplinary Collaboration:** The program's collaboration between the departments in Engineering as well as the support by Arts and Health, demonstrate a commitment to interdisciplinary collaboration, a key focus area of the strategic plan. This collaboration

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brings together diverse perspectives and expertise, fostering innovation in health technology by integrating engineering skills with insights from health, social sciences, and humanities.

2. **Work-integrated Learning through Co-op:** The mandatory co-op component of the program aligns with the strategic plan's emphasis on experiential learning. This practical work experience allows students to apply their knowledge in real-world settings, contributing to their professional development while addressing real challenges in health technology.

3. **Benefits of Innovation and Research:** The program's focus on Health Technologies aligns with the strategic plan's emphasis on fostering innovation. Even though this is a course-based program, it does enable students to connect with faculty from various departments to engage with cutting-edge technologies and understand solutions to real-world problems.

4. **Community Partnerships:** Collaboration between different departments within Engineering, along with the support, through course offering, by Faculties of Arts and Health, opens opportunities for partnership with external organizations, hospitals, and industry players. This engagement aligns with the strategic plan's focus on strengthening community partnerships. Co-op placements also will play a key role in this aspect.

5. **Technology and Global Challenges:** By addressing healthcare challenges through technology and innovation, the program contributes to addressing global challenges, which is in line with the University's strategic goal of leveraging technology for positive societal impact.

6. **Commitment to Excellence and Diversity:** The collaborative nature of the program reflects the University's commitment to excellence in education and research. Furthermore, by integrating diverse perspectives from multiple departments and faculties, the program contributes to promoting diversity and inclusion, a priority area in the strategic plan.

Overall, the Collaborative Health Technologies Program embodies many key pillars of the University of Waterloo's Strategic Plan by promoting interdisciplinary collaboration, experiential learning, innovation, community engagement, and a commitment to excellence and diversity.

3. **Admission Requirements (QAF 2.1.2.5)**

Admission into the Collaborative Health Technologies Program is through direct application to the program offered through the home administrative unit, i.e. CHE. Admission requirements for the program will be the same as those existing for the Master of Engineering degree in CHE.

The minimum academic requirements – including admissions requirements, minimum overall averages, and timelines for any milestones – in the program will be consistent with the requirements of the primary existing master's program for each participating department.

In detail, the admission requirements for MEng in the department of Chemical Engineering are:
* A 75% overall standing in the last two years, or equivalent, in a four-year Honours Bachelor's degree or equivalent.

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- A Supplementary Information Form (SIF), which contains questions specific to the program about why applicants want to enroll and their experience in the field, must be completed.
- Required application materials include, Resume, SIF, Academic Transcript(s); Proof of English Language Proficiency (if applicable); and two reference letters with at least one academic.

  Minimum English Language Proficiency requirement: TOEFL 80 (writing 22, speaking 20, reading 20, listening 18), or IELTS 6.5 (writing 6.0, speaking 6.0).

These admission requirements are appropriate given the precedent of existing co-op Master's programs in the Faculty of Engineering. The level of required academic performance is indicative of what will be required of students during their studies within this proposed program and serves to select only students who will be capable of meeting course expectations and overall program learning outcomes. Furthermore, the Supplementary Information Form, resume, and reference letters will allow for recognition of the prior work, experience, aspirations, and career trajectory of applicants.

4. **Structure (QAF 2.1.2.2)**

The Collaborative Health Technologies Program is a co-op only, course-based program. Completion of 9 courses, a compulsory PD course, and the Engineering Work-term Experience Report will be required to meet the coursework requirement of the program. Selection of courses will be as follows:

1 compulsory PD course:
- CHE 600: Engineering and Research Methods, Ethics, Practice, and Law (0.25 credit weight)

1 CHE core course:
- CHE 601: Theory and Application of Transport Phenomena, or
- CHE 602: Chemical Reactor Analysis

2 courses from the following University-level courses (ARTS, ENG):
- PHIL 626: Bioethics and Technology
- ECON 643: Health Economics
- MSE 619: Healthcare Analytics

1 course from the following Faculty-level courses (5 other ENG depts):
- BME 600: Design of Biomedical Technologies
- BME 602: Foundations in Biomechanical Engineering
- ENVE 585: Air Quality Engineering and Impacts
- ECE 608: Quantitative Methods in Biomedical Engineering
- MSE 630: Human-Computer Interaction

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2 HLTH courses from the following list, and 3 from 500 and 600 level CHE courses:

- HLTH 612: Introduction to Health Information and Data Standards
- HLTH 633: Digital Health
- HLTH 605B: Quantitative Methods and Analysis
- HLTH 650A / 650B: Application of Artificial Intelligence in Health (0.25) / Machine Learning Techniques in Health (0.25)
- HLTH 606B: Principles of Epidemiology for Public Health
- HLTH 615: Requirements Specifications and Analysis in Health Systems

CHE 650: Engineering Work-term Reference Report (0.25 credit weight)

Of the 9 courses, no more than 2 may be at the 500 level.
Of the 9 courses, no more than one may be a reading course.

The program study / co-op sequence is illustrated below. Having co-op during the program both allows students to apply what they have learned in school to their co-op employment, but also the reverse: apply what has been learned during co-op terms to their in-school experiences. This model allows for bidirectional inspiration and gives students an important *context* for what they are learning.

Term-1	Term-2	Term-3	Term-4	Term-5	Term-6
study	study	study	Co-op	Co-op	(study)
study	study	study	Co-op	(study)	

Rationale and Justification

The structure and regulations of the Collaborative Health Technologies Program align with the program learning outcomes and Degree-Level Expectations. More detail is given below.

Alignment with Program Learning Outcomes:

1. **Diversity of Course Offerings:** The coursework structure ensures a breadth of courses from various levels (University, Faculty, Department) covering different aspects of health technologies, such as ethics, analytics, biomedical engineering, rehabilitation engineering, human-computer interaction, health-care systems, epidemiology, systems theory etc. The proposed program is designed in such a way that potential future participation of additional Faculties with their own master's program model is both possible and would further enrich the program content.
2. **Integration of Practical Experience:** The mandatory incorporation of co-op allows students to apply theoretical knowledge gained in the classroom to real-world scenarios, and vice versa. This aligns with the objective of the program to foster practical application and real-world learning.

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Meeting Degree Level Expectations:

1. **Depth and Breadth of Knowledge:** The variety of courses spanning different Departments and Faculties suggests a comprehensive coverage of topics relevant to health technologies, meeting the depth and breadth of knowledge expected at the master's level.
2. **Professional Skills Development:** The incorporation of co-op experiences facilitates the development of professional skills, preparing students for practical challenges in the field.

Rationale for Program Length:

The proposed program length is reasonable for several reasons:

1. **Course Load and Requirements:** 9 courses within the program, structured across different units and levels, can be reasonably completed within three to four study terms.
2. **Integration of Co-op Experience:** The inclusion of co-op necessitates a program duration that allows students to engage in these practical experiences without significantly extending the program length.
3. **Balancing Academic and Practical Learning:** The program aims to balance academic learning with real-world application. A structured timeframe enables students to attain both theoretical knowledge and practical skills within a manageable period.

5. Program Content ([QAF 2.1.2.3](#))

Health Technologies represent the dynamic intersection of healthcare and cutting-edge technology, encompassing a diverse array of innovations designed to revolutionize patient care, improve healthcare accessibility, and enhance overall well-being. Embracing a multidisciplinary approach, Health Technologies integrate advancements in artificial intelligence, data analytics, telemedicine, medical imaging, ethics, and more, to drive transformative changes in the diagnosis, treatment, and management of health conditions. The Collaborative Health Technologies Program is a muti-disciplinary course-based program in the Faculty of Engineering with mandatory co-op, integrated within the timeline of the program. Its multi-disciplinarity is derived on the basis of the participation, through course offerings, of the Faculties of Arts and Health. Additionally, the enrolled students will also take appropriate courses across several departments within Engineering. All courses taken are at the graduate level. An overview of the program's course structure was given in Section 4. Here, additional information on the courses is given.

A brief description of the University-level courses, from which a student would be required to take two courses, is given below:

- **PHIL 626: Bioethics and Technology** (Arts)
  Students will grapple with a sample of ethical issues related to advanced and emerging medical technologies and/or biotechnologies. The primary goals of doing so are: (1) To gain familiarity with key ethical concepts and values, which may include patient autonomy, beneficence, justice, care, anti-ableism, inclusion, and others; and (2) to enhance core critical thinking skills needed for ethics, which will help improve each student's self-understanding (of not only what they think is right and wrong, but, more importantly, why) and their capacity to engage with different perspectives on the "whats" and "whys" of ethics in a spirit

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of open-mindedness, mutual respect, and constructive cooperation. Frequent in-class discussion is typically an important element of student learning in this course.

- **ECON 643: Health Economics** (Arts)
  This course introduces students to the role of economics in health care and health policy. It is meant to be a survey of major topics in health economics and an introduction to the ongoing debate over health care policy. Topics include the economic determinants of health and health policy, the market for medical care, the market for health insurance, and the role of the government in health care, and health care reform.

- **MSE 619: Healthcare Analytics** (Engineering)
  This course provides an introductory course on health analytics including such topics as data acquisition, modelling, and predictive analytics. The course focuses on the practical application of the concepts to improve the quality of the analyses often found in the health sector. Application areas will be concentrated on topics found in health systems and may include topics such as planning and scheduling, disease diagnosis, and treatment planning. The learning outcomes include the ability to identify and apply appropriate analytical methods and models for healthcare.

A brief description of the Faculty-level courses offered by other engineering departments is given below, and the student would be required to one course from this list:

- **BME 600: Design of Biomedical technologies** (SYDE)
  Systems theory and formulation of system dynamics problems. Design and research methods for biomedical technologies. Problem formulation and definition, stakeholder engagement, needs analysis, generation of alternative solutions, feasibility analysis, optimization, selection, and solution implementation.

- **BME602: Foundations in Biomechanical Engineering** (MME)
  This course focuses on equipping students with foundational knowledge in the biomechanics of human physiology, pathology and treatment. The overarching aim of this course is to develop students' literacy in applying biomechanics principles and modern tools towards understanding the human body. The course will build on existing knowledge in mathematics and physics to develop new expertise and hands-on experience in the biomechanical modeling and analysis of physiological systems.

- **ENVE 585: Air Quality Engineering and Impacts** (CEE)
  This course introduces air quality design of engineering solutions and associated health and economic impacts. It includes topics focused on the indoor environment, the outdoor environment, or both, such as: air pollution sources, emission estimation, control strategies, measurement, modeling methods, health impact assessment, cost-benefit analysis, technical policy analysis, and co-impacts with climate change.

- **ECE 608: Quantitative Methods in Biomedical Engineering** (ECE)
  This course focuses on topics related to the use of quantitative tools in biomedical engineering research studies. Educational emphasis will be placed on developing students'

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core competence in biostatistics and biomedical computing, so as to prepare them to pursue biomedical engineering investigations that are backed by quantitative reasoning and numerical insights.

- **MSE 630: Human Computer Interaction** (MSE)
  This course concentrates on the theoretical and practical issues related to the design of the human-computer interfaces. Aspects of human perception, cognition and various models of task analysis are discussed.

A brief description of the Faculty of Health courses from which the student would be required to take 2 courses, is given below:

- **HLTH 612: Introduction to Health Information and Data Standards**
  This course focuses on health data as a key component of all health informatics systems. Topics include ontologies and other classification taxonomies found in health systems, data standards (with a focus on Canadian implementations of international standards), privacy and security of health data, client/patient assessment tools, and ethical considerations.

- **HLTH 633: Digital Health**
  The wide adoption of mobile technology presents a new opportunity. Leveraging this existing technology, healthcare systems can deliver remote care and collect real-time data on patients outside of health centres, minimizing unnecessary visits to hospitals and providing healthcare access to remote populations. In this course, we will explore how digital health technology has been designed, evaluated, and deployed in different countries. Case studies will be used to demonstrate how institutional and governmental constraints have a strong impact on the success of the deployment. The course will address the different digital health technologies in the market, such as Telehealth, remote patient monitoring, tele radiology, consumer health informatics, and mHealth. Important aspects of technology development like patient confidentiality, privacy, standards, communication and security protocols, regulatory requirements, among others, will be discussed when presenting the development of each digital health solution. By the end of this course, students will be prepared to design, evaluate, and deploy a digital health intervention and will have a solid understanding of the barriers and requirements for deploying digital health technology.

- **HLTH 605B: Quantitative Methods and Analysis**
  This course is a rigorous introduction to biostatistics for those planning a career in public health. Students will learn various biostatistical techniques, how to apply those techniques in the analysis of data from health studies, and how to interpret the results from those analyses. After a brief review of material from a basic statistics course, topics covered will include simple and multiple linear regression, analysis of categorical data, simple and multiple logistic regression, and survival analysis. Emphasis will be on (i) conceptual understanding of topics, including literacy necessary for understanding scientific papers in public health, as well as (ii) carrying out various data analysis applications.

- **HLTH 650A / 650B: Application of Artificial Intelligence in Health (0.25) / Machine Learning Techniques in Health (0.25)**

HLTH 650A focuses on the application of machine learning (ML) and artificial intelligence (AI) techniques in the field of healthcare and public health settings. Big data sources available for population health studies will be introduced to students and challenges related to AI in health data will also be discussed. The learning activities consist of lectures, student-led journal club discussions and a term paper to propose the application of ML techniques to solve population health or public health problems.

HLTH 650B focusses on the techniques of machine learning (ML) commonly used to solve healthcare and public health problems. Various analytics techniques, including data wrangling, visualization, unsurprised and supervised learning, will be introduced to students. Challenges and strategies related to missing data, imbalanced data and model selections will also be discussed. The learning activities consist of lectures, labs, and a final project to demonstrate the proficiency of ML techniques to solve population health or public health problems.

- **HLTH 606B: Principles of Epidemiology for Public Health**
  This course introduces the principles, methods, and uses of epidemiology in the practice of public health. After completion of this course, students will be able to critically read and interpret epidemiologic research and clearly communicate epidemiologic findings. They will be familiar with health status measurement, data sources, screening, surveillance, outbreak investigation, and methods to support program planning and evaluation. Students will have a sound understanding of basic epidemiologic concepts, including prevalence, incidence, study designs, measures of association, bias, confounding and causal inference.

- **HLTH 615: Requirements Specifications and Analysis in Health Systems**
  This course introduces students to the requirements of definition phase of software development. Models, notations, and processes for software requirements identification, representation, validation, and analysis are discussed, as are mechanisms to evaluate the efficacy and efficiency of health information systems.

6. Mode of Delivery (QAF 2.1.2.2)

Courses made available for students of the Collaborative Health Technologies Program use a wide variety of teaching and learning methodologies (e.g., lectures, case-studies, student presentations, in-class group discussion, etc.) designed to provide students with an engaging learning experience. Though not specific to this program, at the University of Waterloo, instructors from all faculties are encouraged to make use of the Center for Teaching Excellence, which offers many resources to aid instructors in improving their teaching, course design, and delivery, emphasising *Active Learning* techniques. Instructors of courses offered to Collaborative Health Technologies Program students will be reminded of these resources.

Following program approval and implementation, the faculty-level administrative staff will ensure the program is continually meeting both intended learning outcomes and degree-level expectations.

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7. **Assessment of Teaching and Learning (QAF 2.1.2.4)**

The performance of students will be assessed both on conventional and existing methods stipulated by the courses they will take, but also based on input from the co-operative education component of this program.

Assessment of teaching and learning will be conducted at the *student* and *program* levels. The program will be assessed at the program level by the Graduate Program Committee and program director. As part of this assessment, the Program Committee will review statistics, such as program performance versus learning objectives, student success rates and teaching evaluations – as provided through both student perception surveys and peer-assessment of teaching. The committee will identify opportunities to improve performance, such as enriching course content or teaching.

Performance indicators that will be considered by the Program Committee will include:
- Applications to and enrollment within the program;
- Student evaluations of courses;
- Student graduation rates;
- Surveys of alumni; and
- Surveys of employers/industry partners.

At the student level, there will be the following types of activities with assessments:

a) Coursework: Students will be assigned a grade based on typical assessment methods used in other graduate courses, such as papers, reports, tests, projects, and presentations.
b) Co-operative Education Work-Term Reports.

Refer to the table in Appendix A for more specific information on how assessments will be made, both for course-based and co-operative education components of this program.

8. **Resources for All Programs (QAF 2.1.2.6)**

For the anticipated enrolment numbers of the Collaborative Health Technologies Program, the additional students enrolling into pre-existing courses will not present a significant burden on the University's resources (i.e., students take courses from large pools and therefore, there will likely not be so many additional students per course that additional sections and having more instructors would be necessary – in fact, in some cases, the additional grad students enrolling may help improve the instructor utilization efficiency for courses that typically have too low of enrollment numbers). The program would not necessitate hiring any new faculty members and instead would rely on existing known-to-be qualified faculty members already teaching courses. In addition, students will have access to the University's facilities and spaces, including library resources, working spaces, access to existing resources for student well-being and counselling, as well as technology support from their home department. This program is not expected to impose additional student costs for use of resources.Program coordination can be handled by existing staff resources in the home

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departments with the Faculty of Engineering providing additional support as needed, as is the case for other existing collaborative programs.

9. Resources for Graduate Programs (QAF 2.1.2.7)

Given the course-based nature of the Collaborative Health Technologies Program, an assessment of the research-related and supervisory expertise of faculty is not required for this program to function. The breadth of courses available for students to take is immense and course instructors may change from term-to-term. Therefore, nearly *all* faculty from the participating units may serve this program through the teaching of courses in which Health Technology students may enroll. On a course-by-course /offering-to-offering basis, ensuring instructor competence is left to the discretion of the corresponding department. Following the precedent of existing professional master's programs in Engineering, no financial assistance will be provided to students. Ensuring the quality of incoming students, will be left to the discretion of the home departments and will be put into action through the standard program admission requirements, as are described in Section 3.

10. Quality and Other Indicators (QAF 2.1.2.8)

To ensure the quality of the program a Program Committee will be created to oversee and regularly evaluate the program, to ensure all program requirements and course related graduate-level degree requirements are met. This committee will consist of a Program Director, the Course Coordinator, a faculty member from each participating department, and a graduate student representative. Furthermore, the co-op office will principally oversee all co-op related activities and components of this program. Within each department of Engineering, Graduate Associate Chairs will monitor the progress of their constituent students from this program, as is already their responsibility for existing professional programs. Specifically, student progression through the program, grades, and successful completion of co-op terms will be tracked. Where needed, remedial action will be taken to ensure students remain on-track and able to maximally benefit from participation in this program.

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Appendix A - Summary of Learning Outcomes Mapped to Courses and Assessment Methods

Specific GDLEs and Associated Learning Outcomes	Courses									Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CIVE | ECE | MSE					Dept-level CHE | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific electives, and Department-specific courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
1. Depth and Breadth of Knowledge																				
Understand the principles, concepts, terminology, tools of health technology	A	A	A	C	A	A	A	A	AC	NA	NA	A	NA	A	A	A	A	A	A	NA
Demonstrate awareness of key elements of both the ethical considerations and impacts of health technologies	A	A	A	NA	C	NA	NA	C	AC	A	NA	A	NA	A	A	A	A	A	A	NA
Interpret, understand, and critically assess state-of-the-art methods, theories, and advances in health technology	C	C	A	NA	A	C	A	A	AC	NA	NA	C	NA	A	A	A	A	A	A	NA
2. Research & Scholarship																				
Integrate complex engineering concepts related to the breadth of health technology, and the underlying and associated sciences.	NA	NA	A	C	A	A	A	A	AC	C	NA	C	NA	A	A	A	A	A	A	NA

Specific GDLEs and Associated Learning Outcomes	Courses									Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CIVE | ECE | MSE					Dept-level CHE | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific electives, and Department-specific courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
3. Level of Application of Knowledge																				
Interpret, critically assess and apply state-of-the-art methods, theories, and advances in health technology	A	A	A	C	A	A	A	A	AC	NA	NA	A	NA	A	A	A	A	A	A	NA
Understand current issues faced by the health technology industry	A	A	C	C	A	NA	C	A	AC	A	C	A	NA	A	A	A	A	A	A	NA
4. Professional Capacity / Autonomy																				
Independently recognize, define, and solve complex real-world health technology needs and associated challenges	A	A	NA	C	C	C	C	C	AC	A	A	A	NA	AC	AC	AC	AC	C	AC	NA
Engage in self-directed professional development and life-long learning	NA	NA	NA	NA	NA	NA	NA	NA	NA	C	C	A	NA	NA	NA	NA	NA	A	NA	NA
Develop an ability to recognize, appreciate, consider and apply appropriate ethics, law, regulations, and accountability to the field of health technologies	A	A	C	C	C	NA	C	C	AC	A	C	A	NA	A	A	A	A	A	A	NA

Specific GDLEs and Associated Learning Outcomes	Courses									Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CIVE | ECE | MSE					Dept-level CHE | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific electives, and Department-specific courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
Understand the value of engaging in inter-disciplinary collaboration in health technology as well as the complexity of knowledge & limitations of different fields	C	C	C	C	NA	NA	NA	NA	AC	NA	NA	A	NA	NA	NA	C	NA	A	C	NA
Adopt a mindset for collaboration (work effectively in interdisciplinary teams including healthcare professionals, engineers, designers, business developers, etc.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	A	A	C	NA	NA	NA	NA	NA	C	NA	NA
5. Level of Communications Skills																				
Effectively communicate complex concepts in health technology to a wide audience ranging from general public to experts in the field. Concepts may include health technology needs and associated challenges (includes GDLE 6 Awareness of Limits of Knowledge)	C	C	C	NA	NA	NA	NA	NA	NA	C	C	C	NA	NA	NA	NA	NA	C	C	NA
The ability to communicate ideas, issues and conclusions clearly.	C	C	NA	NA	NA	NA	NA	NA	NA	C	C	A	NA	NA	NA	NA	NA	A	C	NA

Specific GDLEs and Associated Learning Outcomes	Courses									Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CIVE | ECE | MSE					Dept-level CHE | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific electives, and Department-specific courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
6. Awareness of Limits of Knowledge																				
Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.	A	A	C	C	C	C	C	C	AC	A	A	A	NA	C	NA	NA	NA	A	A	NA
Understand the value of inter-disciplinarity in the field of health technology.	C	C	C	C	C	C	C	C	AC	C	C	C	NA	C	NA	C	NA	C	C	NA

Table Legend:

Assessed (A) .... The outcome is addressed and is formally assessed.

Covered (C) .... The outcome is addressed but not assessed.

Assessed or Covered (AC)............ The outcome may be addressed and assessed but is at least covered (depending on selected courses).

Not addressed (NA) .... The outcome is not addressed

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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 Chemical Engineering - Health Technologies - Co-operative Program

Program contact name(s): Jeff Gostick, Siva Sivoththaman

Form completed by:

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

The Department of Chemical Engineering is joining the inaugural Collaborative Health Technologies Program and is thus adding a Master of Engineering (MEng) in Chemical Engineering - Health Technologies - Co-operative Program (direct entry).

Is this a major modification to the program? Yes

Rationale for change(s):

Please refer to the attached brief for full details.

Proposed effective date: Term: Spring   Year: 2025

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

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs?group=Chemical%20Engineering

Current primary program in the home unit: MEng in Chemical Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Chemical Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
Master of Engineering (MEng) in Chemical Engineering - Co-operative Program (direct entry)	**Master of Engineering (MEng) in Chemical Engineering - <u>Health Technologies</u> - Co-operative Program (direct entry)**
Admit term(s) • Fall • Winter • Spring	**Admit term(s)** • Fall • Winter • Spring
Delivery mode • On-campus	**Delivery mode** • On-campus

Current primary program in the home unit: MEng in Chemical Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Chemical Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
Registration option(s) • Full-time **Program type(s)** • Co-operative **Study option(s)** • Coursework **Length of program** • 5-6 terms (20-24 months) **Additional program information** • Important notice for MEng applicants: applicants to the MEng program are expected to be entirely self funded. No financial assistance will be provided from the Department of Chemical Engineering or the University of Waterloo. **Graduate specializations** • Biological Engineering • Entrepreneurship • Polymer Science and Engineering • Process Systems Engineering **Admission requirements: Minimum requirements** • A 75% overall standing in the last two years, or equivalent, in a four-year Honours Bachelor's degree or equivalent. • English language proficiency (ELP) (if applicable) **Admission requirements: Application materials** • Résumé • Supplementary information form • Transcript(s) **Admission requirements: References** • Number of references: 2 • Type of references: at least 1 academic **Degree requirements** • Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM). • The MEng in Chemical Engineering - Co-operative Program will enable students to combine graduate studies with work experience. The program includes completion	**Registration option(s)** • Full-time **Program type(s)** • Co-operative • Collaborative **Study option(s)** • Coursework **Length of program** • 5-6 terms (20-24 months) **Additional program information** • Important notice for MEng applicants: applicants to the MEng program are expected to be entirely self funded. No financial assistance will be provided from the Department of Chemical Engineering or the University of Waterloo. ~~**Graduate specializations**~~ • ~~Biological Engineering~~ • ~~Entrepreneurship~~ • ~~Polymer Science and Engineering~~ • ~~Process Systems Engineering~~ **Admission requirements: Minimum requirements** • A 75% overall standing in the last two years, or equivalent, in a four-year Honours Bachelor's degree or equivalent. • English language proficiency (ELP) (if applicable) **Admission requirements: Application materials** • Résumé • Supplementary information form • Transcript(s) **Admission requirements: References** • Number of references: 2 • Type of references: at least 1 academic **Degree requirements** • Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM). • The MEng in Chemical Engineering - Health Technologies - Co-operative Program will enable students to combine graduate studies

Current primary program in the home unit: MEng in Chemical Engineering - Co-operative Program Graduate Studies Academic Calendar content:	**Proposed MEng in Chemical Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content**:

of 1-2 required work terms. The work term(s) typically takes place in term 4 (or terms 4 and 5). The work term(s) must meet Co-operative and Experiential Education (CEE) standard work term requirements and Departmental requirements. Student's should apply to jobs related to their program of study. Note: the program must start and end on an academic term. Students in the program are encouraged to complete WIL 601 Career Foundations for Work-Integrated Learning in the academic term prior to the first work term.
 	
Coursework option: Course requirements
• Students must complete CHE 600 Engineering and Research Methods, Ethics, Practice, and Law (0.25 credit weight), CHE 650 Engineering Work-term Experience Report (0.25 credit weight, must be completed in term 5 or 6) and 8 graduate courses (0.50 unit weight per course) as follows:
  o Either CHE 601 Theory and Application of Transport Phenomena or CHE 602 Chemical Reactor Analysis
  o 7 graduate level electives of which 4 must be CHE courses
• No more than 2 may be 500 level courses.
• No more than 1 may be a reading course.
• Graduate courses offered by the Faculty of Engineering are numbered as 600 or 700 series courses and are assigned a unit weight of 0.50, which means that they are one-term courses as defined in the Graduate Studies Academic Calendar.
• Only courses taken within five years prior to the completion of the MEng degree may be counted for credit towards a degree, unless a request for revalidation is granted.
• Students must achieve a:
  o Minimum cumulative average of 70%.
  o Minimum grade of 65% in each individual course.
  o Note: Probationary students may have specific grade requirements, which will be specified in their admission letter.
• Each student is responsible for monitoring their own academic records and must immediately notify the Graduate Coordinator of any inadequate grade or average.
• Students in the MEng in Chemical Engineering program may choose to pursue one of the following Graduate Specializations:
	with work experience. The program includes completion of 1-2 required work terms. The work term(s) typically takes place in term 4 (or terms 4 and 5). The work term(s) must meet Co-operative and Experiential Education (CEE) standard work term requirements and Departmental requirements. Student's should apply to jobs related to their program of study. Note: the program must start and end on an academic term. Students in the program are encouraged to complete WIL 601 Career Foundations for Work-Integrated Learning in the academic term prior to the first work term.
	
	Coursework option: Course requirements
	• Students must complete CHE 600 Engineering and Research Methods, Ethics, Practice, and Law (0.25 credit weight), CHE 650 Engineering Work-term Experience Report (0.25 credit weight, must be completed in term 5 or 6) and 8 9 graduate courses (0.50 unit weight per course) as follows:
	  o Either CHE 601 Theory and Application of Transport Phenomena or CHE 602 Chemical Reactor Analysis
	  o 2 of the following Health Technologies core courses:
	    ▪ ECON 643 Health Economics
	    ▪ MSE 619 Healthcare Analytics
	    ▪ PHIL 626 Bioethics and Technology
	  o 1 of the following Faculty of Engineering Health Technologies elective courses:
	    ▪ BME 600 Design of Biomedical Technologies
	    ▪ BME 602 Foundations in Biomechanical Engineering
	    ▪ ECE 608 Quantitative Methods in Biomedical Engineering
	    ▪ ENVE 585 Air Quality Engineering and Impacts
	    ▪ MSE 630 Human-Computer Interaction
	  o 2 of the following Health Technologies elective courses:
	    ▪ HLTH 605B Quantitative Methods and Analysis
	    ▪ HLTH 606B Principles of Epidemiology for Public Health
	    ▪ HLTH 612 Introduction to Health Information and Data Standards

Current primary program in the home unit: MEng in Chemical Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Chemical Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:

1. Biological Engineering
2. Entrepreneurship
3. Polymer Science and Engineering
4. Process Systems Engineering
• 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 Chemical Engineering consist of a set of 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 each of the Graduate Specializations are described below. Note: Students are limited to one Graduate Specialization designation for their MEng in Chemical Engineering degree.
1. Graduate Specialization in Biological Engineering
• To receive the Graduate Specialization in Biological Engineering, students must successfully complete 3 compulsory courses and 1 elective course:
   o Compulsory courses:
      ▪ CHE 562 Advanced Bioprocess Engineering
      ▪ CHE 660 Principles of Biochemical Engineering
      ▪ CHE 663 Bioseparations
   o Elective courses (choose 1 from the following list):
      ▪ CHE 561 Biomaterials & Biomedical Design
      ▪ CHE 564 Food Process Engineering
2. Graduate Specialization in Entrepreneurship
• Students must obtain approval from the Chemical Engineering Graduate Officer in order to pursue the Graduate Specialization in Entrepreneurship. Interested students will be
	▪ <u>HLTH 615 Requirements Specifications and Analysis in Health Systems</u>
	      ▪ <u>HLTH 633 Digital Health</u>
	      ▪ <u>HLTH 650A Application of Artificial Intelligence in Health (0.25) and 650B Machine Learning Techniques in Health (0.25)</u>
	   o <u>3 CHE courses at the 500 and 600 level</u>
	   o ~~7 graduate level electives of which 4 must be CHE courses~~
	• No more than 2 may be 500 level courses.
	• No more than 1 may be a reading course.
	• Graduate courses offered by the Faculty of Engineering are numbered as 600 or 700 series courses and are assigned a unit weight of 0.50, which means that they are one-term courses as defined in the Graduate Studies Academic Calendar.
	• Only courses taken within five years prior to the completion of the MEng degree may be counted for credit towards a degree, unless a request for revalidation is granted.
	• Students must achieve a:
	   o Minimum cumulative average of 70%.
	   o Minimum grade of 65% in each individual course.
	   o Note: Probationary students may have specific grade requirements, which will be specified in their admission letter.
	• Each student is responsible for monitoring their own academic records and must immediately notify the Graduate Coordinator of any inadequate grade or average.
	• ~~Students in the MEng in Chemical Engineering program may choose to pursue one of the following Graduate Specializations:~~
	~~1. Biological Engineering~~
	~~2. Entrepreneurship~~
	~~3. Polymer Science and Engineering~~
	~~4. Process Systems Engineering~~
	• ~~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~~

Current primary program in the home unit: MEng in Chemical Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Chemical Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:

required to submit a short proposal following matriculation describing their entrepreneurship idea and suitability to pursue it.
 	
• To receive the Graduate Specialization in Entrepreneurship, students must successfully complete the following 4 compulsory courses:
   o Compulsory courses:
      ▪ BE 600 Management and Leadership
      ▪ BE 605 Project Management
      ▪ BE 606 Entrepreneurship and Innovation
      ▪ CHE 651 Technology Entrepreneurship Project
 	
3. Graduate Specialization in Polymer Science and Engineering
• To receive the Graduate Specialization in Polymer Science and Engineering, students must successfully complete 2 compulsory courses and 2 elective courses:
   o Compulsory courses:
      ▪ CHE 541 Introduction to Polymer Science and Properties
      ▪ CHE 621 Model Building and Response Surface Methodology
   o Elective courses (choose 2 from the following list):
      ▪ CHE 543 Polymer Production: Polymer Reaction Engineering
      ▪ CHE 640 Polymer Property Characterization
      ▪ CHE 641 Fundamentals of Polymer Processing Operations
 	
4. Graduate Specialization in Process Systems Engineering
• To receive the Graduate Specialization in Process Systems Engineering, students must successfully complete 2 compulsory courses and 2 elective courses:
   o Compulsory courses:
      ▪ CHE 620 Applied Engineering Mathematics
      ▪ CHE 621 Model Building and Response Surface Methodology
   o Elective courses (choose 2 from the following list):
      ▪ CHE 520 Process Flowsheet Analysis
      ▪ CHE 521 Process Optimization
      ▪ CHE 522 Advanced Process Dynamics and Control
	~~requirements associated with the MEng degree and the requirements associated with the Graduate Specialization.~~
	• ~~All MEng Graduate Specializations in Chemical Engineering consist of a set of 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 each of the Graduate Specializations are described below. Note: Students are limited to one Graduate Specialization designation for their MEng in Chemical Engineering degree.~~
	~~1. Graduate Specialization in Biological Engineering~~
	• ~~To receive the Graduate Specialization in Biological Engineering, students must successfully complete 3 compulsory courses and 1 elective course:~~
	   o ~~Compulsory courses:~~
	      ▪ ~~CHE 562 Advanced Bioprocess Engineering~~
	      ▪ ~~CHE 660 Principles of Biochemical Engineering~~
	      ▪ ~~CHE 663 Bioseparations~~
	   o ~~Elective courses (choose 1 from the following list):~~
	      ▪ ~~CHE 561 Biomaterials & Biomedical Design~~
	      ▪ ~~CHE 564 Food Process Engineering~~
	~~2. Graduate Specialization in Entrepreneurship~~
	• ~~Students must obtain approval from the Chemical Engineering Graduate Officer in order to pursue the Graduate Specialization in Entrepreneurship. Interested students will be required to submit a short proposal following matriculation describing their entrepreneurship idea and suitability to pursue it.~~
	• ~~To receive the Graduate Specialization in Entrepreneurship, students must successfully complete the following 4 compulsory courses:~~
	   o ~~Compulsory courses:~~
	      ▪ ~~BE 600 Management and Leadership~~
	      ▪ ~~BE 605 Project Management~~
	      ▪ ~~BE 606 Entrepreneurship and Innovation~~

Current primary program in the home unit: MEng in Chemical Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Chemical Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:

Coursework option: Milestone requirements
 	
Seminar Attendance
• Over the course of their degree program, all students must attend 12 seminars from departments and research institutions where Chemical Engineering faculty members have a membership. The Chemical Engineering seminars are documented in the Events section of the Chemical Engineering Department website.
• Note: At Chemical Engineering seminars, attendance is documented. At other approved seminars, students must complete an attendance form and get it signed by the seminar organizer. Full instructions are available on the Department website.
 	
Graduate Studies Work Report
• Students must complete one or two work-term experience(s). A work report must be submitted to the Department for review and credit by the end of each work term.
• Students are responsible for following the roles and responsibilities of Co-operative and Experiential Education (CEE).
	• ~~CHE 651 Technology Entrepreneurship Project~~
	~~3. Graduate Specialization in Polymer Science and Engineering~~
	• ~~To receive the Graduate Specialization in Polymer Science and Engineering, students must successfully complete 2 compulsory courses and 2 elective courses:~~
	  ○ ~~Compulsory courses:~~
	    ▪ ~~CHE 541 Introduction to Polymer Science and Properties~~
	    ▪ ~~CHE 621 Model Building and Response Surface Methodology~~
	  ○ ~~Elective courses (choose 2 from the following list):~~
	    ▪ ~~CHE 543 Polymer Production: Polymer Reaction Engineering~~
	    ▪ ~~CHE 640 Polymer Property Characterization~~
	    ▪ ~~CHE 641 Fundamentals of Polymer Processing Operations~~
	~~4. Graduate Specialization in Process Systems Engineering~~
	• ~~To receive the Graduate Specialization in Process Systems Engineering, students must successfully complete 2 compulsory courses and 2 elective courses:~~
	  ○ ~~Compulsory courses:~~
	    ▪ ~~CHE 620 Applied Engineering Mathematics~~
	    ▪ ~~CHE 621 Model Building and Response Surface Methodology~~
	  ○ ~~Elective courses (choose 2 from the following list):~~
	    ▪ ~~CHE 520 Process Flowsheet Analysis~~
	    ▪ ~~CHE 521 Process Optimization~~
	    ▪ ~~CHE 522 Advanced Process Dynamics and Control~~
	
	Coursework option: Milestone requirements
	
	Seminar Attendance
	• Over the course of their degree program, all students must attend 12 seminars from departments and research institutions where Chemical Engineering faculty members have a membership. The Chemical Engineering seminars are documented in the Events section of the Chemical Engineering Department website.

Current primary program in the home unit: MEng in Chemical Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Chemical Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
	• Note: At Chemical Engineering seminars, attendance is documented. At other approved seminars, students must complete an attendance form and get it signed by the seminar organizer. Full instructions are available on the Department website. **Graduate Studies Work Report** • Students must complete one or two work-term experience(s). A work report must be submitted to the Department for review and credit by the end of each work term. • Students are responsible for following the roles and responsibilities of Co-operative and Experiential Education (CEE).

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

Current students will not be impacted. The program will be open to new students once it goes into effect.

Department/School approval date (mm/dd/yy):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 12/05/24
Faculty approval date (mm/dd/yy): 12/17/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

UNIVERSITY OF WATERLOO

GRADUATE PROPOSAL

COLLABORATIVE HEALTH TECHNOLOGIES PROGRAM

MASTER OF ENGINEERING IN MECHANICAL AND MECHATRONICS ENGINEERING – HEALTH TECHNOLOGIES (CO-OP)

**For submission to the
Ontario Universities Council on Quality Assurance**

VOLUME I - PROPOSED BRIEF

NOVEMBER 2024

TABLE OF CONTENTS

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1. **Introduction**

   Brief Listing of the Program

   The Collaborative Health Technologies Program offers students professional Master of Engineering (MEng) degree with mandatory co-op, as preparation to enter the broad and rapidly evolving field of *Health Technology*. Not only is co-op highly beneficial to students while completing this program, it also offers an important opportunity to those students who *never* had co-op experience during their undergraduate degree. The program is centered around a collaborative and interdisciplinary suite of courses offered by six departments in Engineering and supported by the Faculties of Arts and Health. In addition to coursework, the mandatory co--op program serves to enrich the learning of students with practical experience in industrial settings. This is a full-time, on-campus program, with an expected duration of 4-6 terms, based on the co-op and study sequence selected by particular students. Program tuition follows the existing UW graduate home program tuition structure.

   To enroll in the Collaborative Health Technologies Program, students must meet the admission requirements of, and register in, the department of Mechanical and Mechatronics Engineering (MME). Students must complete the Collaborative Health Technologies Program requirements that are structured as a combination MME department's MEng degree requirement, and the additional Collaborative Health Technologies Program requirements (i.e., the completion of sufficient courses from specified pools, and successful co-op work terms/reports).

   The degree conferred will be that of the participating program (i.e. Mechanical and Mechatronics Engineering), with the completion of the Collaborative Health Technologies Program indicated by a transcript notation to the degree and adjunct qualification to the degree (i.e. Master of Engineering in Mechanical and Mechatronics Engineering – Health Technologies). The proposed collaborative program also offers a platform to allow future participation of other Faculties.

   Method Used for Preparation of the Brief

   The Collaborative Health Technologies Program was conceptualized by the Dean of Engineering and the Associate Dean Graduate Studies – Engineering. In April 2023, the initiative to develop the program received support from the New Interdisciplinary Networks, Programs, and Initiatives Fund from the University. The proposal was developed following consultations by the Associate Dean with Graduate Associate Chairs of the departments of Chemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Management Science and Engineering, Mechanical and Mechatronics Engineering, and Systems Design Engineering. The Associate Dean also had discussions with counterparts in other Faculties (e.g., Arts, Health, and Science). The general proposal was presented to the departments in Engineering for consideration within the unit. Following approval, this departmental proposal brief to participate in the collaborative program evolved, incorporating the specific requirements of the home unit.

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2. Objectives of the Program ([QAF 2.1.2.1)](#))

The Collaborative Health Technologies Program is timely and justified not only based on the critical need for skilled professionals at the intersection of healthcare and technology, but also by the University of Waterloo's own goals, e.g. [Waterloo at 100, Global Futures](#). The following are some of the compelling reasons that justify the establishment of a Collaborative Health Technologies Program:

1. **Rapid Technological Advancements in Healthcare**: The healthcare industry is experiencing an unprecedented transformation due to rapid advancements in technology. Innovations such as artificial intelligence, telemedicine, wearable devices, and data analytics are reshaping healthcare delivery, diagnosis, treatment, and patient care. A dedicated program will equip future professionals with leading-edge skills needed to leverage and drive innovations in this field.

2. **Increasing Demand for Health Technology Experts**: There is a growing demand for professionals who possess a deep understanding of both healthcare and technology. This demand arises from the need to bridge the gap between traditionally siloed fields and create holistic solutions that address complex healthcare challenges. Graduates of a Collaborative Health Technology Program will fill this talent gap and drive innovation in healthcare settings.

3. **Addressing Healthcare Challenges**: The global healthcare landscape faces numerous challenges, including rising costs, an aging population, chronic diseases, disparities in healthcare access, and pandemics. A Collaborative Health Technologies Program will empower students to develop innovative solutions to address these challenges, improve healthcare access, and enhance patient outcomes.

4. **Opportunity for Interdisciplinary Collaboration**: A program that combines healthcare and technology will foster interdisciplinary collaboration. Students will learn to collaborate with healthcare professionals, engineers, data scientists, ethicists, and policymakers, fostering a diverse and comprehensive approach to problem-solving.

5. **Industry-Relevant Skill Development**: Employers in the healthcare and technology sectors seek professionals with specialized skills in areas such as health data analytics, digital health, telemedicine, medical device development, regulatory compliance, and AI applications in healthcare. Both the course-based components and the mandatory co-op of this Collaborative Health Technologies Program combine to ensure that graduates are well-prepared with these in-demand skills.

6. **Economic and Innovation Impact**: Investing in a Collaborative Health Technologies Program aligns with the current market demand and presents an opportunity to contribute to economic growth and innovation. Graduates equipped with the skills to develop and implement Health Technology solutions can drive entrepreneurship, create job opportunities, and contribute to the expansion of healthcare technology sectors.

7. **Addressing Future Healthcare Needs**: With the evolving landscape of healthcare and technology, preparing future professionals to navigate and lead in this dynamic environment is essential. Establishing a Collaborative Health Technologies Program now ensures that the workforce is ready to address the future needs and challenges of the healthcare industry.

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Program Learning Outcomes and Graduate Degree Level Expectations (GDLE):
1. **Depth and Breadth of Knowledge**
   a. Understand the principles, concepts, terminology and tools of health technology
   b. Demonstrate awareness of key elements of both the ethical considerations and impacts of health technologies
   c. Interpret, understand, and critically assess state-of-the-art methods, theories, and advances in health technology
2. **Research & Scholarship**
   a. Integrate complex engineering concepts related to the breadth of health technology, and the underlying and associated sciences.
3. **Level of Application of Knowledge**
   a. Interpret, critically assess and apply state-of-the-art methods, theories, and advances in health technology
   b. Understand current issues faced by the health technology industry
4. **Professional Capacity / Autonomy**
   a. Independently recognize, define, and solve complex real-world health technology needs and associated challenges
   b. Engage in self-directed professional development and life-long learning
   c. Develop an ability to recognize, appreciate, consider and apply appropriate ethics, law, regulations, and accountability to the field of health technologies
   d. Understand the value of engaging in inter-disciplinary collaboration in health technology as well as the complexity of knowledge & limitations of different fields
   e. Adopt a mindset for collaboration (work effectively in interdisciplinary teams including healthcare professionals, engineers, designers, business developers, etc.)
5. **Level of Communication Skills**
   a. Effectively communicate complex concepts in health technology to a wide audience ranging from general public to experts in the field. Concepts may include health technology needs and associated challenges (includes GDLE 6 Awareness of Limits of Knowledge)
   b. The ability to communicate ideas, issues and conclusions clearly.
6. **Awareness of Limits of Knowledge**
   a. Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.
   b. Understand the value of inter-disciplinarity in the field of health technologies.

How does this Program align with the University of Waterloo Strategic Plan and Strategic Mandate Agreement?

The Collaborative Health Technologies Program aligns well with the University of Waterloo's strategic plan in several ways:
1. **Interdisciplinary Collaboration:** The program's collaboration between the departments in Engineering as well as the support by Arts and Health, demonstrate a commitment to interdisciplinary collaboration, a key focus area of the strategic plan. This collaboration

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brings together diverse perspectives and expertise, fostering innovation in health technology by integrating engineering skills with insights from health, social sciences, and humanities.

2. **Work-integrated Learning through Co-op:** The mandatory co-op component of the program aligns with the strategic plan's emphasis on experiential learning. This practical work experience allows students to apply their knowledge in real-world settings, contributing to their professional development while addressing real challenges in health technology.

3. **Benefits of Innovation and Research:** The program's focus on Health Technologies aligns with the strategic plan's emphasis on fostering innovation. Even though this is a course-based program, it does enable students to connect with faculty from various departments to engage with cutting-edge technologies and understand solutions to real-world problems.

4. **Community Partnerships:** Collaboration between different departments within Engineering, along with the support, through course offering, by Faculties of Arts and Health, opens opportunities for partnership with external organizations, hospitals, and industry players. This engagement aligns with the strategic plan's focus on strengthening community partnerships. Co-op placements also will play a key role in this aspect.

5. **Technology and Global Challenges:** By addressing healthcare challenges through technology and innovation, the program contributes to addressing global challenges, which is in line with the University's strategic goal of leveraging technology for positive societal impact.

6. **Commitment to Excellence and Diversity:** The collaborative nature of the program reflects the University's commitment to excellence in education and research. Furthermore, by integrating diverse perspectives from multiple departments and faculties, the program contributes to promoting diversity and inclusion, a priority area in the strategic plan.

Overall, the Collaborative Health Technologies Program embodies many key pillars of the University of Waterloo's Strategic Plan by promoting interdisciplinary collaboration, experiential learning, innovation, community engagement, and a commitment to excellence and diversity.

3. **Admission Requirements (QAF 2.1.2.5)**

Admission into the Collaborative Health Technologies Program is through direct application to the program offered through the home administrative unit, i.e. MME. Admission requirements for the program will be the same as those existing for the Master of Engineering degree in MME.

The minimum academic requirements – including admissions requirements, minimum overall averages, and timelines for any milestones – in the program will be consistent with the requirements of the primary existing master's program for each participating department.

In detail, the admission requirements for MEng in the department of Mechanical and Mechatronics Engineering are:
- 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..

- 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).
- A Supplementary Information Form (SIF), which contains questions specific to the program about why applicants want to enroll and their experience in the field, must be completed.
- Required application materials include, Resume, SIF, Academic Transcript(s); Proof of English language Proficiency (if applicable); and two academic references.
  Minimum English Language Proficiency requirement: TOEFL 80 (writing 22, speaking 20, reading 20, listening 18), or IELTS 6.5 (writing 6.0, speaking 6.0).

These admission requirements are appropriate given the precedent of existing co-op Master's programs in the Faculty of Engineering. The level of required academic performance is indicative of what will be required of students during their studies within this proposed program and serves to select only students who will be capable of meeting course expectations and overall program learning outcomes. Furthermore, the Supplementary Information Form, resume, and reference letters will allow for recognition of the prior work, experience, aspirations, and career trajectory of applicants.

4. Structure (QAF 2.1.2.2)

The Collaborative Health Technologies Program is a co-op only, course-based program. Completion of 9 courses and a compulsory PD course will be required to meet the coursework requirement of the program. Selection of courses will be as follows:

1 compulsory PD course (0.25 unit weight)
- ME 600: Engineering Practice, Research Methods, Ethics & Professional Development for MME Graduate students

2 courses from the following University-level courses (ARTS, ENG):
- PHIL 626: Bioethics and Technology
- ECON 643: Health Economics
- MSE 619: Healthcare Analytics

2 courses from the following Faculty-level courses (6 ENG depts):
- BME 600: Design of Biomedical Technologies
- BME 602: Foundations in Biomechanical Engineering
- CHE 621: Model Building and Response Surface Methodology

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- ENVE 585: Air Quality Engineering and Impacts
- ECE 608: Quantitative Methods in Biomedical Engineering
- MSE 630: Human-Computer Interaction

1 HLTH course from the following Faculty of Health courses:
- HLTH 612: Introduction to Health Information and Data Standards
- HLTH 633: Digital Health
- HLTH 605B: Quantitative Methods and Analysis
- HLTH 650A / 650B: Application of Artificial Intelligence in Health (0.25) / Machine Learning Techniques in Health (0.25)
- HLTH 606B: Principles of Epidemiology for Public Health
- HLTH 615: Requirements Specifications and Analysis in Health Systems

4 additional graduate courses from Engineering.

Of the 9 courses (not counting ME 600), at least 3 must be MME courses of which at least 2 must be at the 600-level. (BME 602 may count towards 600-level MME courses).
Of the 9 courses (not counting ME 600), a maximum of 2 courses may be at the 500 level.
Students must attend at least 4 MME research seminars.

The program study / co-op sequence is illustrated below. Having co-op during the program both allows students to apply what they have learned in school to their co-op employment, but also the reverse: apply what has been learned during co-op terms to their in-school experiences. This model allows for bidirectional inspiration and gives students an important *context* for what they are learning.

Term-1	Term-2	Term-3	Term-4	Term-5	Term-6
study	study	Co-op	Co-op	study	(study)
study	study	Co-op	study	(study)	

Rationale and Justification

The structure and regulations of the Collaborative Health Technologies Program align with the program learning outcomes and Degree-Level Expectations. More detail is given below.

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Alignment with Program Learning Outcomes:

1. **Diversity of Course Offerings:** The coursework structure ensures a breadth of courses from various levels (University, Faculty, Department) covering different aspects of health technologies, such as ethics, analytics, biomedical engineering, rehabilitation engineering, human-computer interaction, health-care systems, epidemiology, systems theory etc. The proposed program is designed in such a way that potential future participation of additional Faculties with their own master's program model is both possible and would further enrich the program content.

2. **Integration of Practical Experience:** The mandatory incorporation of co-op allows students to apply theoretical knowledge gained in the classroom to real-world scenarios, and vice versa. This aligns with the objective of the program to foster practical application and real-world learning.

Meeting Degree Level Expectations:

1. **Depth and Breadth of Knowledge:** The variety of courses spanning different Departments and Faculties suggests a comprehensive coverage of topics relevant to health technologies, meeting the depth and breadth of knowledge expected at the master's level.

2. **Professional Skills Development:** The incorporation of co-op experiences facilitates the development of professional skills, preparing students for practical challenges in the field.

Rationale for Program Length:

The proposed program length is reasonable for several reasons:

1. **Course Load and Requirements:** 9 courses within the program, structured across different units and levels, can be reasonably completed within three to four study terms.

2. **Integration of Co-op Experience:** The inclusion of co-op necessitates a program duration that allows students to engage in these practical experiences without significantly extending the program length.

3. **Balancing Academic and Practical Learning:** The program aims to balance academic learning with real-world application. A structured timeframe enables students to attain both theoretical knowledge and practical skills within a manageable period.

5. Program Content ([QAF 2.1.2.3](#))

Health Technologies represent the dynamic intersection of healthcare and cutting-edge technology, encompassing a diverse array of innovations designed to revolutionize patient care, improve healthcare accessibility, and enhance overall well-being. Embracing a multidisciplinary approach, Health Technologies integrate advancements in artificial intelligence, data analytics, telemedicine, medical imaging, ethics, and more, to drive transformative changes in the diagnosis, treatment, and management of health conditions. The Collaborative Health Technologies Program is a muti-disciplinary course-based program in the Faculty of Engineering with mandatory co-op, integrated within the timeline of the program. Its multi-disciplinarity is derived on the basis of the participation, through course offerings, of the Faculties of Arts and Health. Additionally, the enrolled students will also take appropriate courses across several departments within Engineering. All courses taken are at the graduate level. An overview of the program's course structure was given in Section 4. Here, additional information on the courses is given.

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A brief description of the University-level courses, from which a student would be required to take two courses, is given below:

- **PHIL 626: Bioethics and Technology** (Arts)
  Students will grapple with a sample of ethical issues related to advanced and emerging medical technologies and/or biotechnologies. The primary goals of doing so are: (1) To gain familiarity with key ethical concepts and values, which may include patient autonomy, beneficence, justice, care, anti-ableism, inclusion, and others; and (2) to enhance core critical thinking skills needed for ethics, which will help improve each student's self-understanding (of not only what they think is right and wrong, but, more importantly, why) and their capacity to engage with different perspectives on the "whats" and "whys" of ethics in a spirit of open-mindedness, mutual respect, and constructive cooperation. Frequent in-class discussion is typically an important element of student learning in this course.

- **ECON 643: Health Economics** (Arts)
  This course introduces students to the role of economics in health care and health policy. It is meant to be a survey of major topics in health economics and an introduction to the ongoing debate over health care policy. Topics include the economic determinants of health and health policy, the market for medical care, the market for health insurance, and the role of the government in health care, and health care reform.

- **MSE 619: Healthcare Analytics** (Engineering)
  This course provides an introductory course on health analytics including such topics as data acquisition, modelling, and predictive analytics. The course focuses on the practical application of the concepts to improve the quality of the analyses often found in the health sector. Application areas will be concentrated on topics found in health systems and may include topics such as planning and scheduling, disease diagnosis, and treatment planning. The learning outcomes include the ability to identify and apply appropriate analytical methods and models for healthcare.

A brief description of the Faculty-level courses, from which a student would be required to take two courses, is given below:

- **BME 600: Design of Biomedical technologies** (SYDE)
  Systems theory and formulation of system dynamics problems. Design and research methods for biomedical technologies. Problem formulation and definition, stakeholder engagement, needs analysis, generation of alternative solutions, feasibility analysis, optimization, selection, and solution implementation.

- **BME602: Foundations in Biomechanical Engineering** (MME)
  This course focuses on equipping students with foundational knowledge in the biomechanics of human physiology, pathology and treatment. The overarching aim of this course is to develop students' literacy in applying biomechanics principles and modern tools towards understanding the human body. The course will build on existing knowledge in mathematics

and physics to develop new expertise and hands-on experience in the biomechanical modeling and analysis of physiological systems.

- **CHE 621: Model Building and Response Surface Methodology** (CHE)
  This course teaches process / product optimization based on design of experiments, empirical modelling, and non-linear mechanistic models. These methodologies aid in refining healthcare processes and products, ensuring they meet stringent standards of efficiency, safety, and effectiveness.

- **ENVE 585: Air Quality Engineering and Impacts** (CEE)
  This course introduces air quality design of engineering solutions and associated health and economic impacts. It includes topics focused on the indoor environment, the outdoor environment, or both, such as: air pollution sources, emission estimation, control strategies, measurement, modeling methods, health impact assessment, cost-benefit analysis, technical policy analysis, and co-impacts with climate change.

- **ECE 608: Quantitative Methods in Biomedical Engineering** (ECE)
  This course focuses on topics related to the use of quantitative tools in biomedical engineering research studies. Educational emphasis will be placed on developing students' core competence in biostatistics and biomedical computing, so as to prepare them to pursue biomedical engineering investigations that are backed by quantitative reasoning and numerical insights.

- **MSE 630: Human Computer Interaction** (MSE)
  This course concentrates on the theoretical and practical issues related to the design of the human-computer interfaces. Aspects of human perception, cognition and various models of task analysis are discussed.

A brief description of the Faculty of Health courses that are part of the department-specific and health-specific list of electives is given below:

- **HLTH 612: Introduction to Health Information and Data Standards**
  This course focuses on health data as a key component of all health informatics systems. Topics include ontologies and other classification taxonomies found in health systems, data standards (with a focus on Canadian implementations of international standards), privacy and security of health data, client/patient assessment tools, and ethical considerations.

- **HLTH 633: Digital Health**
  The wide adoption of mobile technology presents a new opportunity. Leveraging this existing technology, healthcare systems can deliver remote care and collect real-time data on patients outside of health centres, minimizing unnecessary visits to hospitals and providing healthcare access to remote populations. In this course, we will explore how digital health technology has been designed, evaluated, and deployed in different countries. Case studies will be used to demonstrate how institutional and governmental constraints have a strong impact on the success of the deployment. The course will address the different digital health technologies in the market, such as Telehealth, remote patient monitoring, tele radiology, consumer health informatics, and mHealth. Important aspects of technology development like patient confidentiality, privacy, standards, communication and security protocols,

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regulatory requirements, among others, will be discussed when presenting the development of each digital health solution. By the end of this course, students will be prepared to design, evaluate, and deploy a digital health intervention and will have a solid understanding of the barriers and requirements for deploying digital health technology.

- **HLTH 605B: Quantitative Methods and Analysis**
  This course is a rigorous introduction to biostatistics for those planning a career in public health. Students will learn various biostatistical techniques, how to apply those techniques in the analysis of data from health studies, and how to interpret the results from those analyses. After a brief review of material from a basic statistics course, topics covered will include simple and multiple linear regression, analysis of categorical data, simple and multiple logistic regression, and survival analysis. Emphasis will be on (i) conceptual understanding of topics, including literacy necessary for understanding scientific papers in public health, as well as (ii) carrying out various data analysis applications.

- **HLTH 650A / 650B: Application of Artificial Intelligence in Health (0.25) / Machine Learning Techniques in Health (0.25)**
  HLTH 650A focuses on the application of machine learning (ML) and artificial intelligence (AI) techniques in the field of healthcare and public health settings. Big data sources available for population health studies will be introduced to students and challenges related to AI in health data will also be discussed. The learning activities consist of lectures, student-led journal club discussions and a term paper to propose the application of ML techniques to solve population health or public health problems.
  HLTH 650B focusses on the techniques of machine learning (ML) commonly used to solve healthcare and public health problems. Various analytics techniques, including data wrangling, visualization, unsurprised and supervised learning, will be introduced to students. Challenges and strategies related to missing data, imbalanced data and model selections will also be discussed. The learning activities consist of lectures, labs, and a final project to demonstrate the proficiency of ML techniques to solve population health or public health problems.

- **HLTH 606B: Principles of Epidemiology for Public Health**
  This course introduces the principles, methods, and uses of epidemiology in the practice of public health. After completion of this course, students will be able to critically read and interpret epidemiologic research and clearly communicate epidemiologic findings. They will be familiar with health status measurement, data sources, screening, surveillance, outbreak investigation, and methods to support program planning and evaluation. Students will have a sound understanding of basic epidemiologic concepts, including prevalence, incidence, study designs, measures of association, bias, confounding and causal inference.

- **HLTH 615: Requirements Specifications and Analysis in Health Systems**
  This course introduces students to the requirements of definition phase of software development. Models, notations, and processes for software requirements identification, representation, validation, and analysis are discussed, as are mechanisms to evaluate the efficacy and efficiency of health information systems.

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6.   Mode of Delivery (QAF 2.1.2.2)

Courses made available for students of the Collaborative Health Technologies Program use a wide variety of teaching and learning methodologies (e.g., lectures, case-studies, student presentations, in-class group discussion, etc.) designed to provide students with an engaging learning experience. Though not specific to this program, at the University of Waterloo, instructors from all faculties are encouraged to make use of the Center for Teaching Excellence, which offers many resources to aid instructors in improving their teaching, course design, and delivery, emphasising *Active Learning* techniques. Instructors of courses offered to Collaborative Health Technologies Program students will be reminded of these resources.

Following program approval and implementation, the faculty-level administrative staff will ensure the program is continually meeting both intended learning outcomes and degree-level expectations.

7.   Assessment of Teaching and Learning (QAF 2.1.2.4)

The performance of students will be assessed both on conventional and existing methods stipulated by the courses they will take, but also based on input from the co-operative education component of this program.

Assessment of teaching and learning will be conducted at the *student* and *program* levels. The program will be assessed at the program level by the Graduate Program Committee and program director. As part of this assessment, the Program Committee will review statistics, such as program performance versus learning objectives, student success rates and teaching evaluations – as provided through both student perception surveys and peer-assessment of teaching. The committee will identify opportunities to improve performance, such as enriching course content or teaching.

Performance indicators that will be considered by the Program Committee will include:
- Applications to and enrollment within the program;
- Student evaluations of courses;
- Student graduation rates;
- Surveys of alumni; and
- Surveys of employers/industry partners.

At the student level, there will be the following types of activities with assessments:

a) Coursework: Students will be assigned a grade based on typical assessment methods used in other graduate courses, such as papers, reports, tests, projects, and presentations.
b) Co-operative Education Work-Term Reports.

Refer to the table in Appendix A for more specific information on how assessments will be made, both for course-based and co-operative education components of this program.

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8.   Resources for All Programs (QAF 2.1.2.6)

For the anticipated enrolment numbers of the Collaborative Health Technologies Program, the additional students enrolling into pre-existing courses will not present a significant burden on the University's resources (i.e., students take courses from large pools and therefore, there will likely not be so many additional students per course that additional sections and having more instructors would be necessary – in fact, in some cases, the additional grad students enrolling may help improve the instructor utilization efficiency for courses that typically have too low of enrollment numbers). The program would not necessitate hiring any new faculty members and instead would rely on existing known-to-be qualified faculty members already teaching courses. In addition, students will have access to the University's facilities and spaces, including library resources, working spaces, access to existing resources for student well-being and counselling, as well as technology support from their home department. This program is not expected to impose additional student costs for use of resources. Program coordination can be handled by existing staff resources in the home departments with the Faculty of Engineering providing additional support as needed, as is the case for other existing collaborative programs.

9.   Resources for Graduate Programs (QAF 2.1.2.7)

Given the course-based nature of the Collaborative Health Technologies Program, an assessment of the research-related and supervisory expertise of faculty is not required for this program to function. The breadth of courses available for students to take is immense and course instructors may change from term-to-term. Therefore, nearly *all* faculty from the participating units may serve this program through the teaching of courses in which Health Technology students may enroll. On a course-by-course /offering-to-offering basis, ensuring instructor competence is left to the discretion of the corresponding department. Following the precedent of existing professional master's programs in Engineering, no financial assistance will be provided to students. Ensuring the quality of incoming students, will be left to the discretion of the home departments and will be put into action through the standard program admission requirements, as are described in Section 3.

10.   Quality and Other Indicators (QAF 2.1.2.8)

To ensure the quality of the program a Program Committee will be created to oversee and regularly evaluate the program, to ensure all program requirements and course related graduate-level degree requirements are met. This committee will consist of a Program Director, the Course Coordinator, a faculty member from each participating department, and a graduate student representative. Furthermore, the co-op office will principally oversee all co-op related activities and components of this program. Within each department of Engineering, Graduate Associate Chairs will monitor the progress of their constituent students from this program, as is already their responsibility for existing professional programs. Specifically, student progression through the program, grades, and successful completion of co-op terms will be tracked. Where needed, remedial action will be taken to ensure students remain on-track and able to maximally benefit from participation in this program.

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Appendix A - Summary of Learning Outcomes Mapped to Courses and Assessment Methods

Specific GDLEs and Associated Learning Outcomes	Courses										Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CHE | CIVE | ECE | MSE						Dept-level MME | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific elective, and Dept-specific and Engineering courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
1. Depth and Breadth of Knowledge																					
Understand the principles, concepts, terminology, tools of health technology	A	A	A	C	A	A	A	A	A	AC	NA	NA	A	NA	A	A	A	A	A	A	NA
Demonstrate awareness of key elements of both the ethical considerations and impacts of health technologies	A	A	A	NA	C	NA	NA	NA	C	AC	A	NA	A	NA	A	A	A	A	A	A	NA
Interpret, understand, and critically assess state-of-the-art methods, theories, and advances in health technology	C	C	A	NA	A	C	C	A	A	AC	NA	NA	C	NA	A	A	A	A	A	A	NA
2. Research & Scholarship																					
Integrate complex engineering concepts related to the breadth of health technology, and the underlying and associated sciences.	NA	NA	A	C	A	A	A	A	A	AC	C	NA	C	NA	A	A	A	A	A	A	NA

Specific GDLEs and Associated Learning Outcomes	Courses										Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CHE | CIVE | ECE | MSE						Dept-level MME | HEALTH										
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific elective, and Dept-specific and Engineering courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
3. Level of Application of Knowledge																					
Interpret, critically assess and apply state-of-the-art methods, theories, and advances in health technology	A	A	A	C	A	A	A	A	A	AC	NA	NA	A	NA	A	A	A	A	A	A	NA
Understand current issues faced by the health technology industry	A	A	C	C	A	NA	NA	C	A	AC	A	C	A	NA	A	A	A	A	A	A	NA
4. Professional Capacity / Autonomy																					
Independently recognize, define, and solve complex real-world health technology needs and associated challenges	A	A	NA	C	C	C	C	C	C	AC	A	A	A	NA	AC	AC	AC	AC	C	AC	NA
Engage in self-directed professional development and life-long learning	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	C	C	A	NA	NA	NA	NA	NA	A	NA	NA
Develop an ability to recognize, appreciate, consider and apply appropriate ethics, law, regulations, and accountability to the field of health technologies	A	A	C	C	C	NA	NA	C	C	AC	A	C	A	NA	A	A	A	A	A	A	NA

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| Specific GDLEs and Associated Learning Outcomes | Courses | | | | | | | | | | Co-operative Education | | | Assessment method | | | | | | | |
| | University-level ARTS \| ENG | | | Faculty-level SYDE \| MME \| CHE \| CIVE \| ECE \| MSE | | | | | | Dept-level MME \| HEALTH | | | | | | | | | | |
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific elective , and Dept-specific and Engineering courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
Understand the value of engaging in inter-disciplinary collaboration in health technology as well as the complexity of knowledge & limitations of different fields	C	C	C	C	NA	NA	NA	NA	NA	AC	NA	NA	A	NA	NA	NA	C	NA	A	C	NA
Adopt a mindset for collaboration (work effectively in interdisciplinary teams including healthcare professionals, engineers, designers, business developers, etc.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	A	A	C	NA	NA	NA	NA	NA	C	NA	NA
5. Level of Communications Skills																					
Effectively communicate complex concepts in health technology to a wide audience ranging from general public to experts in the field. Concepts may include health technology needs and associated challenges (includes GDLE 6 Awareness of Limits of Knowledge)	C	C	C	NA	NA	NA	NA	NA	NA	NA	C	C	C	NA	NA	NA	NA	NA	C	C	NA
The ability to communicate ideas, issues and conclusions clearly.	C	C	NA	NA	NA	NA	NA	NA	NA	NA	C	C	A	NA	NA	NA	NA	NA	A	C	NA

Specific GDLEs and Associated Learning Outcomes	Courses										Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CHE | CIVE | ECE | MSE						Dept-level MME | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Health-specific elective , and Dept-specific and Engineering courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
6. Awareness of Limits of Knowledge																					
Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.	A	A	C	C	C	C	C	C	C	AC	A	A	A	NA	C	NA	NA	NA	A	A	NA
Understand the value of inter-disciplinarity in the field of health technology.	C	C	C	C	C	C	C	C	C	AC	C	C	C	NA	C	NA	C	NA	C	C	NA

Table Legend:

Assessed (A) .... The outcome is addressed and is formally assessed.

Covered (C) .... The outcome is addressed but not assessed.

Assessed or Covered (AC)............ The outcome may be addressed and assessed but is at least covered (depending on selected courses).

Not addressed (NA) .... The outcome is not addressed.

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**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 - Health Technologies - Co-operative Program

Program contact name(s): Cecile Devaud, Siva Sivoththaman

Form completed by:

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

The Department of Mechanical and Mechatronics Engineering is joining the inaugural Collaborative Health Technologies Program and is thus adding a Master of Engineering (MEng) in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program (direct entry).

Is this a major modification to the program? Yes

Rationale for change(s):

Please refer to the attached brief for full details.

Proposed effective date: Term: Spring   Year: 2025

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

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs?group=Mechanical%20and%20Mechatronics%20Engineering

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	**Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:**
Master of Engineering (MEng) in Mechanical and Mechatronics Engineering - Co-operative Program (direct entry) **Admit term(s)** • Fall • Winter	**Master of Engineering (MEng) in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program (direct entry)** **Admit term(s)** • Fall • Winter

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
• Spring	• Spring
Delivery mode	**Delivery mode**
• On-campus	• On-campus
Registration option(s)	**Registration option(s)**
• Full-time	• Full-time
Program type(s)	**Program type(s)**
• Co-operative	• Co-operative
	• <u>Collaborative</u>
Study option(s)	**Study option(s)**
• Coursework	• Coursework
Length of program	**Length of program**
• 5-6 terms (20-24 months)	• 5-6 terms (20-24 months)
Additional program information	**Additional program information**
• 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.	• 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.
Graduate specializations	~~**Graduate specializations**~~
• Building Systems	• ~~Building Systems~~
• Materials and Advanced Manufacturing	• ~~Materials and Advanced Manufacturing~~
• Mechatronic Systems	• ~~Mechatronic Systems~~
• Sustainable Energy	• ~~Sustainable Energy~~
Admission requirements: Minimum requirements	**Admission requirements: Minimum requirements**
• 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.	• 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.
• 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).	• 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).

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:

- English language proficiency (ELP) (if applicable)

Admission requirements: Application materials
- Résumé
- Supplementary information form
- Transcript(s)

Admission requirements: References
- Number of references: 2
- Type of references: academic

Degree requirements
- Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
- The MEng in Mechanical and Mechatronics Engineering - Co-operative Program will enable students to combine graduate studies with work experience. The program includes completion of 1-2 required work terms. The work term(s) typically takes place in term 3 (or terms 3 and 4). The work term(s) must meet CEE standard work term requirements and Departmental requirements. Students should apply to jobs related to their program of study. Note: the program must start and end on an academic term. Students in the program are encouraged to complete WIL 601 Career Foundations for Work-Integrated Learning in the academic term prior to the first work term.

Coursework option: Course requirements
- Students must complete ME 600 Engineering Practice, Research Methods, Ethics & Professional Development for MME Graduate Students (0.25 unit weight) and 8 one-term (0.50 unit weight) graduate level courses (or courses acceptable for graduate credit).
- At least 2 out of the 8 (0.50 unit weight) required courses must be ME 600-level courses.
- A maximum of 2 500-level courses may be counted for credit.
- 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.

- English language proficiency (ELP) (if applicable)

Admission requirements: Application materials
- Résumé
- Supplementary information form
- Transcript(s)

Admission requirements: References
- Number of references: 2
- Type of references: academic

Degree requirements
- Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
- The MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program will enable students to combine graduate studies with work experience. The program includes completion of 1-2 required work terms. The work term(s) typically takes place in term 3 (or terms 3 and 4). The work term(s) must meet CEE standard work term requirements and Departmental requirements. Students should apply to jobs related to their program of study. Note: the program must start and end on an academic term. Students in the program are encouraged to complete WIL 601 Career Foundations for Work-Integrated Learning in the academic term prior to the first work term.

Coursework option: Course requirements
- Students must complete ME 600 Engineering Practice, Research Methods, Ethics & Professional Development for MME Graduate Students (0.25 unit weight) and 8 9 one-term (0.50 unit weight) graduate level courses (or courses acceptable for graduate credit) as follows:
  - 2 of the following Health Technologies core courses:
    - ECON 643 Health Economics
    - MSE 619 Healthcare Analytics
    - PHIL 626 Bioethics and Technology
  - 2 of the following Faculty of Engineering Health Technologies elective courses:

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
- The EMLS communication course can be waived at the discretion of the Department. - 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 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 and Mechatronics Engineering courses. - Students in the MEng in Mechanical and Mechatronics Engineering program may choose to pursue one of the following Graduate Specializations: 1. Building Systems 2. Materials and Advanced Manufacturing 3. Mechatronic Systems 4. Sustainable 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 Building Systems - To receive the Graduate Specialization in Building Systems, students must successfully complete 2 compulsory course and 2 elective	- BME 600 Design of Biomedical Technologies - BME 602 Foundations in Biomechanical Engineering - CHE 621 Model Building and Response Surface Methodology - ECE 608 Quantitative Methods in Biomedical Engineering - ENVE 585 Air Quality Engineering and Impacts - MSE 630 Human-Computer Interaction 1 of the following Health Technologies elective courses: - HLTH 605B Quantitative Methods and Analysis - HLTH 606B Principles of Epidemiology for Public Health - HLTH 612 Introduction to Health Information and Data Standards - HLTH 615 Requirements Specifications and Analysis in Health Systems - HLTH 633 Digital Health - HLTH 650A Application of Artificial Intelligence in Health (0.25) and 650B Machine Learning Techniques in Health (0.25) 4 Engineering graduate level courses - At least 2 3 out of the 8 9 (0.50 unit weight) required courses must be ME courses of which at least 2 must be 600-level courses (not counting ME 600). Note: BME 602 may count towards 600-level ME courses. - A maximum of 2 500-level courses may be counted for credit. - 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. - The EMLS communication course can be waived at the discretion of the Department. - 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

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
courses. Note: No more than 1 of the 4 courses may be 500-level. • Compulsory courses (choose 2 from the following list): o CIVE 507 Building Science and Technology or CIVE 707 Advanced Building Science o ME 567 Fire Safety Engineering o ME 654 Advanced Applied Thermal Engineering o ME 655 Advanced Building Energy Analysis o ME 656 Advanced HVAC Systems, Equipment, and Energy Efficiency • Elective courses (choose 2 from the following list): o CIVE 601 Engineering Risk and Reliability o ME 562 Experimental Methods in Fluids o ME 566 Computational Fluid Dynamics for Engineering Design o ME 651 Heat Conduction o ME 652 Convective Heat Transfer o ME 653 Radiation Heat Transfer o ME 662 Advanced Fluid Mechanics o ME 663 Computational Fluid Dynamics o ME 671 Fundamental Fire Dynamics o ME 672 Advanced Fire Dynamics o ME 673 Fire Modeling • 2. Graduate Specialization in Materials and Advanced Manufacturing • To receive the Graduate Specialization in Materials and Advanced Manufacturing, students must successfully complete 2 compulsory courses and 2 elective courses. Note: No more than 1 of the 4 courses may be 500-level. • Compulsory courses (choose 2 from the following list): o ME 531 Physical Metallurgy Applied to Manufacturing o ME 559 Finite Element Methods or ME 621 Advanced Finite Element Method o ME 620 Mechanics of Continua o ME 631 Mechanical Metallurgy o ME 632 Experimental Methods in Materials Engineering o ME 739 Manufacturing Processes Topics: Topic 15 Additive Manufacturing Design	grade of less than 65% in any course counts as a failure). o At least half of the courses used for credit must normally be Faculty of Engineering courses and the other half need to be Mechanical and Mechatronics Engineering courses. • ~~Students in the MEng in Mechanical and Mechatronics Engineering program may choose to pursue one of the following Graduate Specializations:~~ • ~~1. Building Systems~~ • ~~2. Materials and Advanced Manufacturing~~ • ~~3. Mechatronic Systems~~ • ~~4. Sustainable 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 Building Systems~~ • ~~To receive the Graduate Specialization in Building Systems, students must successfully complete 2 compulsory course and 2 elective courses. Note: No more than 1 of the 4 courses may be 500-level.~~ • ~~Compulsory courses (choose 2 from the following list):~~ o ~~CIVE 507 Building Science and Technology or CIVE 707 Advanced Building Science~~ o ~~ME 567 Fire Safety Engineering~~

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
- Elective courses (choose 2 from the following list): - ME 526 Fatigue and Fracture Analysis - ME 533 Non-Metallic and Composite Materials - ME 535 Welding Metallurgy - ME 538 Welding Design, Fabrication and Quality Control - ME 596 Special Topics in Mechanical Engineering: Topic 12 Manufacturing of Mechatronics Materials and Components - ME 627 Fatigue Analysis and Design - ME 628 Fracture Mechanics - ME 732 Thermodynamics and Phase Transformations - ME 734 Mechanics of Composite Materials - ME 735 Special Topics - Welding and Joining: Topic 2 Advanced Materials Joining - ME 739 Manufacturing Processes Topics: Topic 15 Additive Manufacturing - NANO 600 Introduction to Nanotechnology - NANO 603 Nanocomposites - NANO 605 Design of MEMS and NEMS - NANO 606 Advanced MicroElectroMechanical Systems: Physics, Design & Fabrication 3. Graduate Specialization in Mechatronic Systems - To receive the Graduate Specialization in Mechatronic Systems, students must successfully complete 2 compulsory courses and 2 elective courses. Note: No more than 1 of the 4 courses may be 500-level. - Compulsory courses (choose 2 from the following list): - ECE 602 Introduction to Optimization - ECE 650 Methods and Tools for Software Engineering - ME 547 Robotic Manipulators: Kinematics, Dynamics and Control - ME 640 Autonomous Mobile Robotics - ME 649 Control of Machines and Processes	~~ME 654 Advanced Applied Thermal Engineering~~ ~~ME 655 Advanced Building Energy Analysis~~ ~~ME 656 Advanced HVAC Systems, Equipment, and Energy Efficiency~~ ~~Elective courses (choose 2 from the following list):~~ ~~CIVE 601 Engineering Risk and Reliability~~ ~~ME 562 Experimental Methods in Fluids~~ ~~ME 566 Computational Fluid Dynamics for Engineering Design~~ ~~ME 651 Heat Conduction~~ ~~ME 652 Convective Heat Transfer~~ ~~ME 653 Radiation Heat Transfer~~ ~~ME 662 Advanced Fluid Mechanics~~ ~~ME 663 Computational Fluid Dynamics~~ ~~ME 671 Fundamental Fire Dynamics~~ ~~ME 672 Advanced Fire Dynamics~~ ~~ME 673 Fire Modeling~~ ~~2. Graduate Specialization in Materials and Advanced Manufacturing~~ ~~To receive the Graduate Specialization in Materials and Advanced Manufacturing, students must successfully complete 2 compulsory courses and 2 elective courses. Note: No more than 1 of the 4 courses may be 500-level.~~ ~~Compulsory courses (choose 2 from the following list):~~ ~~ME 531 Physical Metallurgy Applied to Manufacturing~~ ~~ME 559 Finite Element Methods or ME 621 Advanced Finite Element Method~~ ~~ME 620 Mechanics of Continua~~ ~~ME 631 Mechanical Metallurgy~~ ~~ME 632 Experimental Methods in Materials Engineering~~ ~~ME 739 Manufacturing Processes Topics: Topic 15 Additive Manufacturing Design~~ ~~Elective courses (choose 2 from the following list):~~ ~~ME 526 Fatigue and Fracture Analysis~~ ~~ME 533 Non-Metallic and Composite Materials~~ ~~ME 535 Welding Metallurgy~~ ~~ME 538 Welding Design, Fabrication and Quality Control~~

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
- o ME 780 Special Topics in Mechatronics: Topic 1 Precision Control Systems - o ME 780 Special Topics in Mechatronics: Topic 5 Computational Intelligence - Elective courses (choose 2 from the following list): - o ECE 682 Multivariable Control Systems - o ECE 780 Special Topics in Control: Topic 11 Model Predictive Control - o ME 540 Fundamentals in Neural and Rehabilitation Engineering - o ME 780 Special Topics in Mechatronics: Topic 17 Vehicle System Dynamics - o ME 780 Special Topics in Mechatronics: Topic 14 Electromagnetic Actuators - o ME 780 Special Topics in Mechatronics: Topic 10 Adaptive Control - o ME 780 Special Topics in Mechatronics: Topic 37 Human Movement Neuromechanics - o ME 780 Special Topics in Mechatronics: Topic 38 Design of a Mechatronic System - o MTE 546 Multi Sensor Data Fusion - o SYDE 575 Image Processing - o SYDE 652 Dynamics of Multibody Systems - o SYDE 655 Optimal and Learning-Based Control 4. Graduate Specialization in Sustainable Energy - To receive the Graduate Specialization in Sustainable Energy, students must successfully complete 1 compulsory course and 3 elective courses. Note: at least 3 courses total must be from the compulsory course list and the elective course list A. No more than 1 of the 4 courses may be 500-level. - Compulsory courses (choose at least 1 from the following list): - o ME 654 Advanced Applied Thermal Engineering - o ME 659 Energy and Environment - Elective course list A: - o ME 655 Advanced Building Energy Analysis	- o ~~ME 596 Special Topics in Mechanical Engineering: Topic 12 Manufacturing of Mechatronics Materials and Components~~ - o ~~ME 627 Fatigue Analysis and Design~~ - o ~~ME 628 Fracture Mechanics~~ - o ~~ME 732 Thermodynamics and Phase Transformations~~ - o ~~ME 734 Mechanics of Composite Materials~~ - o ~~ME 735 Special Topics - Welding and Joining: Topic 2 Advanced Materials Joining~~ - o ~~ME 739 Manufacturing Processes Topics: Topic 15 Additive Manufacturing~~ - o ~~NANO 600 Introduction to Nanotechnology~~ - o ~~NANO 603 Nanocomposites~~ - o ~~NANO 605 Design of MEMS and NEMS~~ - o ~~NANO 606 Advanced MicroElectroMechanical Systems: Physics, Design & Fabrication~~ ~~3. Graduate Specialization in Mechatronic Systems~~ ~~To receive the Graduate Specialization in Mechatronic Systems, students must successfully complete 2 compulsory courses and 2 elective courses. Note: No more than 1 of the 4 courses may be 500-level.~~ ~~Compulsory courses (choose 2 from the following list):~~ - o ~~ECE 602 Introduction to Optimization~~ - o ~~ECE 650 Methods and Tools for Software Engineering~~ - o ~~ME 547 Robotic Manipulators: Kinematics, Dynamics and Control~~ - o ~~ME 640 Autonomous Mobile Robotics~~ - o ~~ME 649 Control of Machines and Processes~~ - o ~~ME 780 Special Topics in Mechatronics: Topic 1 Precision Control Systems~~ - o ~~ME 780 Special Topics in Mechatronics: Topic 5 Computational Intelligence~~ ~~Elective courses (choose 2 from the following list):~~ - o ~~ECE 682 Multivariable Control Systems~~

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
- ME 751 Fuel Cell Technology - ME 753 Solar Energy - ME 760 Special Topics in Thermal Engineering: Energy Storage - ME 765 Special Topics in Fluid Mechanics: Topic 6 Wind Energy - Elective course list B: - ME 562 Experimental Methods in Fluids - ME 566 Computational Fluid Dynamics for Engineering Design - ME 651 Heat Conduction - ME 652 Convective Heat Transfer - ME 653 Radiation Heat Transfer - ME 662 Advanced Fluid Mechanics - ME 663 Computational Fluid Dynamics - ME 671 Fundamental Fire Dynamics - ME 750 Advanced Engineering Thermodynamics **Coursework option: Milestone requirements** **Seminar Attendance** - Students must attend at least 4 Mechanical and Mechatronics Engineering research seminars. **Graduate Studies Work Report** - Students must complete one or two work-term experiences. For each work experience, a work report must be submitted to the Department for review to earn credit for the work report. - Students are responsible for following the roles and responsibilities of Co-operative and Experiential Education (CEE).	~~ECE 780 Special Topics in Control: Topic 11 Model Predictive Control~~ ~~ME 540 Fundamentals in Neural and Rehabilitation Engineering~~ ~~ME 780 Special Topics in Mechatronics: Topic 17 Vehicle System Dynamics~~ ~~ME 780 Special Topics in Mechatronics: Topic 14 Electromagnetic Actuators~~ ~~ME 780 Special Topics in Mechatronics: Topic 10 Adaptive Control~~ ~~ME 780 Special Topics in Mechatronics: Topic 37 Human Movement Neuromechanics~~ ~~ME 780 Special Topics in Mechatronics: Topic 38 Design of a Mechatronic System~~ ~~MTE 546 Multi Sensor Data Fusion~~ ~~SYDE 575 Image Processing~~ ~~SYDE 652 Dynamics of Multibody Systems~~ ~~SYDE 655 Optimal and Learning-Based Control~~ ~~4. Graduate Specialization in Sustainable Energy~~ ~~To receive the Graduate Specialization in Sustainable Energy, students must successfully complete 1 compulsory course and 3 elective courses. Note: at least 3 courses total must be from the compulsory course list and the elective course list A. No more than 1 of the 4 courses may be 500-level.~~ ~~Compulsory courses (choose at least 1 from the following list):~~ ~~ME 654 Advanced Applied Thermal Engineering~~ ~~ME 659 Energy and Environment~~ ~~Elective course list A:~~ ~~ME 655 Advanced Building Energy Analysis~~ ~~ME 751 Fuel Cell Technology~~ ~~ME 753 Solar Energy~~ ~~ME 760 Special Topics in Thermal Engineering: Energy Storage~~ ~~ME 765 Special Topics in Fluid Mechanics: Topic 6 Wind Energy~~ ~~Elective course list B:~~ ~~ME 562 Experimental Methods in Fluids~~

Current primary program in the home unit: MEng in Mechanical and Mechatronics Engineering - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MEng in Mechanical and Mechatronics Engineering - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
	○ ~~ME 566 Computational Fluid Dynamics for Engineering Design~~ ○ ~~ME 651 Heat Conduction~~ ○ ~~ME 652 Convective Heat Transfer~~ ○ ~~ME 653 Radiation Heat Transfer~~ ○ ~~ME 662 Advanced Fluid Mechanics~~ ○ ~~ME 663 Computational Fluid Dynamics~~ ○ ~~ME 671 Fundamental Fire Dynamics~~ ○ ~~ME 750 Advanced Engineering Thermodynamics~~ **Coursework option: Milestone requirements** **Seminar Attendance** • Students must attend at least 4 Mechanical and Mechatronics Engineering research seminars. **Graduate Studies Work Report** • Students must complete one or two work-term experiences. For each work experience, a work report must be submitted to the Department for review to earn credit for the work report. • Students are responsible for following the [roles and responsibilities of Co-operative and Experiential Education (CEE)]().

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

Current students will not be impacted. The program will be open to new students once it goes into effect.

Department/School approval date (mm/dd/yy):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 12/05/24
Faculty approval date (mm/dd/yy): 12/17/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

GRADUATE PROPOSAL

COLLABORATIVE HEALTH TECHNOLOGIES PROGRAM
MASTER OF MANAGEMENT SCIENCE – HEALTH TECHNOLOGIES (CO-OP)

**For submission to the
Ontario Universities Council on Quality Assurance**

VOLUME I - PROPOSED BRIEF

NOVEMBER 2024

TABLE OF CONTENTS

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1. **Introduction**

Brief Listing of the Program

The Collaborative Health Technologies Program offers students professional Master of Management Science (MMSc) degree with mandatory co-op, as preparation to enter the broad and rapidly evolving field of *Health Technology*. Not only is co-op highly beneficial to students while completing this program, it also offers an important opportunity to those students who *never* had co-op experience during their undergraduate degree. The program is centered around a collaborative and interdisciplinary suite of courses offered by six departments in Engineering and supported by the Faculties of Arts and Health. In addition to coursework, the mandatory co--op program serves to enrich the learning of students with practical experience in industrial settings. This is a full-time, on-campus program, with an expected duration of 4-6 terms, based on the co-op and study sequence selected by particular students. Program tuition follows the existing UW graduate home program tuition structure.

To enroll in the Collaborative Health Technologies Program, students must meet the admission requirements of, and register in, the department of Management Science and Engineering (MSE). Students must complete the Collaborative Health Technologies Program requirements that are structured as a combination MSE department's MMSc degree requirement, and the additional Collaborative Health Technologies Program requirements (i.e., the completion of sufficient courses from specified pools, and successful co-op work terms/reports).

The degree conferred will be that of the participating program (i.e. Management Science and Engineering), with the completion of the Collaborative Health Technologies Program indicated by a transcript notation to the degree and adjunct qualification to the degree (i.e. Master of Management Science – Health Technologies). The proposed collaborative program also offers a platform to allow future participation of other Faculties.

Method Used for Preparation of the Brief

The Collaborative Health Technologies Program was conceptualized by the Dean of Engineering and the Associate Dean Graduate Studies – Engineering. In April 2023, the initiative to develop the program received support from the New Interdisciplinary Networks, Programs, and Initiatives Fund from the University. The proposal was developed following consultations by the Associate Dean with Graduate Associate Chairs of the departments of Chemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Management Science and Engineering, Mechanical and Mechatronics Engineering, and Systems Design Engineering. The Associate Dean also had discussions with counterparts in other Faculties (e.g., Arts, Health, and Science). The general proposal was presented to the departments in Engineering for consideration within the unit. Following approval, this departmental proposal brief to participate in the collaborative program evolved, incorporating the specific requirements of the home unit.

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2. Objectives of the Program ([QAF 2.1.2.1\)](#))

The Collaborative Health Technologies Program is timely and justified not only based on the critical need for skilled professionals at the intersection of healthcare and technology, but also by the University of Waterloo's own goals, e.g. [Waterloo at 100, Global Futures](#). The following are some of the compelling reasons that justify the establishment of a Collaborative Health Technologies Program:

1. **Rapid Technological Advancements in Healthcare**: The healthcare industry is experiencing an unprecedented transformation due to rapid advancements in technology. Innovations such as artificial intelligence, telemedicine, wearable devices, and data analytics are reshaping healthcare delivery, diagnosis, treatment, and patient care. A dedicated program will equip future professionals with leading-edge skills needed to leverage and drive innovations in this field.

2. **Increasing Demand for Health Technology Experts**: There is a growing demand for professionals who possess a deep understanding of both healthcare and technology. This demand arises from the need to bridge the gap between traditionally siloed fields and create holistic solutions that address complex healthcare challenges. Graduates of a Collaborative Health Technology Program will fill this talent gap and drive innovation in healthcare settings.

3. **Addressing Healthcare Challenges**: The global healthcare landscape faces numerous challenges, including rising costs, an aging population, chronic diseases, disparities in healthcare access, and pandemics. A Collaborative Health Technologies Program will empower students to develop innovative solutions to address these challenges, improve healthcare access, and enhance patient outcomes.

4. **Opportunity for Interdisciplinary Collaboration**: A program that combines healthcare and technology will foster interdisciplinary collaboration. Students will learn to collaborate with healthcare professionals, engineers, data scientists, ethicists, and policymakers, fostering a diverse and comprehensive approach to problem-solving.

5. **Industry-Relevant Skill Development**: Employers in the healthcare and technology sectors seek professionals with specialized skills in areas such as health data analytics, digital health, telemedicine, medical device development, regulatory compliance, and AI applications in healthcare. Both the course-based components and the mandatory co-op of this Collaborative Health Technologies Program combine to ensure that graduates are well-prepared with these in-demand skills.

6. **Economic and Innovation Impact**: Investing in a Collaborative Health Technologies Program aligns with the current market demand and presents an opportunity to contribute to economic growth and innovation. Graduates equipped with the skills to develop and implement Health Technology solutions can drive entrepreneurship, create job opportunities, and contribute to the expansion of healthcare technology sectors.

7. **Addressing Future Healthcare Needs**: With the evolving landscape of healthcare and technology, preparing future professionals to navigate and lead in this dynamic environment is essential. Establishing a Collaborative Health Technologies Program now ensures that the workforce is ready to address the future needs and challenges of the healthcare industry.

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Program Learning Outcomes and Graduate Degree Level Expectations (GDLE):

1. **Depth and Breadth of Knowledge**
   a. Understand the principles, concepts, terminology and tools of health technology
   b. Demonstrate awareness of key elements of both the ethical considerations and impacts of health technologies
   c. Interpret, understand, and critically assess state-of-the-art methods, theories, and advances in health technology

2. **Research & Scholarship**
   a. Integrate complex engineering concepts related to the breadth of health technology, and the underlying and associated sciences.

3. **Level of Application of Knowledge**
   a. Interpret, critically assess and apply state-of-the-art methods, theories, and advances in health technology
   b. Understand current issues faced by the health technology industry

4. **Professional Capacity / Autonomy**
   a. Independently recognize, define, and solve complex real-world health technology needs and associated challenges
   b. Engage in self-directed professional development and life-long learning
   c. Develop an ability to recognize, appreciate, consider and apply appropriate ethics, law, regulations, and accountability to the field of health technologies
   d. Understand the value of engaging in inter-disciplinary collaboration in health technology as well as the complexity of knowledge & limitations of different fields
   e. Adopt a mindset for collaboration (work effectively in interdisciplinary teams including healthcare professionals, engineers, designers, business developers, etc.)

5. **Level of Communication Skills**
   a. Effectively communicate complex concepts in health technology to a wide audience ranging from general public to experts in the field. Concepts may include health technology needs and associated challenges (includes GDLE 6 Awareness of Limits of Knowledge)
   b. The ability to communicate ideas, issues and conclusions clearly.

6. **Awareness of Limits of Knowledge**
   a. Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.
   b. Understand the value of inter-disciplinarity in the field of health technologies.

How does this Program align with the University of Waterloo Strategic Plan and Strategic Mandate Agreement?

The Collaborative Health Technologies Program aligns well with the University of Waterloo's strategic plan in several ways:

1. **Interdisciplinary Collaboration:** The program's collaboration between the departments in Engineering as well as the support by Arts and Health, demonstrate a commitment to

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interdisciplinary collaboration, a key focus area of the strategic plan. This collaboration brings together diverse perspectives and expertise, fostering innovation in health technology by integrating engineering skills with insights from health, social sciences, and humanities.

2. **Work-integrated Learning through Co-op:** The mandatory co-op component of the program aligns with the strategic plan's emphasis on experiential learning. This practical work experience allows students to apply their knowledge in real-world settings, contributing to their professional development while addressing real challenges in health technology.

3. **Benefits of Innovation and Research:** The program's focus on Health Technologies aligns with the strategic plan's emphasis on fostering innovation. Even though this is a course-based program, it does enable students to connect with faculty from various departments to engage with cutting-edge technologies and understand solutions to real-world problems.

4. **Community Partnerships:** Collaboration between different departments within Engineering, along with the support, through course offering, by Faculties of Arts and Health, opens opportunities for partnership with external organizations, hospitals, and industry players. This engagement aligns with the strategic plan's focus on strengthening community partnerships. Co-op placements also will play a key role in this aspect.

5. **Technology and Global Challenges:** By addressing healthcare challenges through technology and innovation, the program contributes to addressing global challenges, which is in line with the University's strategic goal of leveraging technology for positive societal impact.

6. **Commitment to Excellence and Diversity:** The collaborative nature of the program reflects the University's commitment to excellence in education and research. Furthermore, by integrating diverse perspectives from multiple departments and faculties, the program contributes to promoting diversity and inclusion, a priority area in the strategic plan.

Overall, the Collaborative Health Technologies Program embodies many key pillars of the University of Waterloo's Strategic Plan by promoting interdisciplinary collaboration, experiential learning, innovation, community engagement, and a commitment to excellence and diversity.

3. **Admission Requirements (QAF 2.1.2.5)**

Admission into the Collaborative Health Technologies Program is through direct application to the program offered through the home administrative unit, i.e. MSE. Admission requirements for the program will be the same as those existing for the Master of Management Science (Co-op) degree in MSE.

The minimum academic requirements – including admissions requirements, minimum overall averages, and timelines for any milestones – in the program will be consistent with the requirements of the primary existing master's program for each participating department.

In detail, the admission requirements for MMSc in the department of Management Science and Engineering are:

- (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.
- Background in quantitative methods (e.g., Calculus, Linear Algebra, Probability and Statistics).
- All applicants must submit a "Statement of Purpose" - a one-page statement addressing their academic background and future goals.
- Applicants who fall slightly below the minimum academic requirements may be considered for admission as transitional or probationary students.
- Proof of English language proficiency (ELP): TOEFL 90 (writing 25 speaking 25), or IELTS 7.0 (writing 6.5, speaking 6.5)

Additionally, the required application materials will include a resume, Supplementary Information Form (SIF), which contains questions specific to the program about why applicants want to enroll and their experience in the field, transcripts, two reference letters, academic (preferred) of professional, and proof of English language proficiency (ELP): TOEFL minimum 90 (writing 25 speaking 25), or IELTS minimum 7.0 (writing 6.5, speaking 6.5).

These admission requirements are appropriate given the precedent of existing co-op Master's programs in the Faculty of Engineering. The level of required academic performance is indicative of what will be required of students during their studies within this proposed program and serves to select only students who will be capable of meeting course expectations and overall program learning outcomes. Furthermore, the Supplementary Information Form, resume, and reference letters will allow for recognition of the prior work, experience, aspirations, and career trajectory of applicants.

4.   **Structure (QAF 2.1.2.2)**

The Collaborative Health Technologies Program is a co-op only, course-based program. Completion of 9 courses will be required to meet the coursework requirement of the program. Selection of courses will be as follows:

2 courses, inclusive of MSE 619, from the following University-level courses (ARTS, ENG):
- PHIL 626: Bioethics and Technology
- ECON 643: Health Economics
- MSE 619: Healthcare Analytics

2 courses, inclusive of MSE 630, from the following Faculty-level courses (6 ENG depts):
- BME 600: Design of Biomedical Technologies

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- BME 602: Foundations in Biomechanical Engineering
- CHE 621:Model Building and Response Surface Methodology
- ENVE 585: Air Quality Engineering and Impacts
- ECE 608: Quantitative Methods in Biomedical Engineering
- MSE 630: Human-Computer Interaction

4 MSE General requirement courses:
- MSE 603: Principles of Operations Research
  (This course may be replaced with MSE 634: Deterministic Models in Operations Research, if a student has a strong Operations research background)
- MSE 605: Organizational Behavior
- MSE 607: Applied Economics for Management
- MSE 609: Quantitative Data Analysis for Management Sciences

1 course from the following Faculty of Health courses:
- HLTH 612: Introduction to Health Information and Data Standards
- HLTH 633: Digital Health
- HLTH 605B: Quantitative Methods and Analysis
- HLTH 650A/650B: Application of Artificial Intelligence in Health (0.25) / Machine Learning Techniques in Health (0.25)
- HLTH 606B: Principles of Epidemiology for Public Health
- HLTH 615: Requirements Specifications and Analysis in Health Systems

The program study / co-op sequence is illustrated below. Having co-op during the program both allows students to apply what they have learned in school to their co-op employment, but also the reverse: apply what has been learned during co-op terms to their in-school experiences. This model allows for bidirectional inspiration and gives students an important *context* for what they are learning.

Term-1	Term-2	Term-3	Term-4	Term-5	Term-6
study	study	Co-op	Co-op	study	(study)
study	study	Co-op	study	(study)	

Rationale and Justification

The structure and regulations of the Collaborative Health Technologies Program align with the program learning outcomes and Degree-Level Expectations. More detail is given below.

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Alignment with Program Learning Outcomes:

1. **Diversity of Course Offerings:** The coursework structure ensures a breadth of courses from various levels (University, Faculty, Department) covering different aspects of health technologies, such as ethics, analytics, biomedical engineering, rehabilitation engineering, human-computer interaction, health-care systems, epidemiology, systems theory etc. The proposed program is designed in such a way that potential future participation of additional Faculties with their own master's program model is both possible and would further enrich the program content.

2. **Integration of Practical Experience:** The mandatory incorporation of co-op allows students to apply theoretical knowledge gained in the classroom to real-world scenarios, and vice versa. This aligns with the objective of the program to foster practical application and real-world learning.

Meeting Degree Level Expectations:

1. **Depth and Breadth of Knowledge:** The variety of courses spanning different Departments and Faculties suggests a comprehensive coverage of topics relevant to health technologies, meeting the depth and breadth of knowledge expected at the master's level.

2. **Professional Skills Development:** The incorporation of co-op experiences facilitates the development of professional skills, preparing students for practical challenges in the field.

Rationale for Program Length:

The proposed program length is reasonable for several reasons:

1. **Course Load and Requirements:** 9 courses within the program, structured across different units and levels, can be reasonably completed within three to four study terms.

2. **Integration of Co-op Experience:** The inclusion of co-op necessitates a program duration that allows students to engage in these practical experiences without significantly extending the program length.

3. **Balancing Academic and Practical Learning:** The program aims to balance academic learning with real-world application. A structured timeframe enables students to attain both theoretical knowledge and practical skills within a manageable period.

5. Program Content ([QAF 2.1.2.3](#))

Health Technologies represent the dynamic intersection of healthcare and cutting-edge technology, encompassing a diverse array of innovations designed to revolutionize patient care, improve healthcare accessibility, and enhance overall well-being. Embracing a multidisciplinary approach, Health Technologies integrate advancements in artificial intelligence, data analytics, telemedicine, medical imaging, ethics, and more, to drive transformative changes in the diagnosis, treatment, and management of health conditions. The Collaborative Health Technologies Program is a muti-disciplinary course-based program in the Faculty of Engineering with mandatory co-op, integrated within the timeline of the program. Its multi-disciplinarity is derived on the basis of the participation, through course offerings, of the Faculties of Arts and Health. Additionally, the enrolled students will also take appropriate courses across several departments within Engineering. All courses taken are at the graduate level. An overview of the program's course structure was given in Section 4. Here, additional information on the courses is given.

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A brief description of the University-level courses, from which a student would be required to take one Arts course (PHIL 626 or ECON 643) and MSE 619, is given below:

- **PHIL 626: Bioethics and Technology** (Arts)
  Students will grapple with a sample of ethical issues related to advanced and emerging medical technologies and/or biotechnologies. The primary goals of doing so are: (1) To gain familiarity with key ethical concepts and values, which may include patient autonomy, beneficence, justice, care, anti-ableism, inclusion, and others; and (2) to enhance core critical thinking skills needed for ethics, which will help improve each student's self-understanding (of not only what they think is right and wrong, but, more importantly, why) and their capacity to engage with different perspectives on the "whats" and "whys" of ethics in a spirit of open-mindedness, mutual respect, and constructive cooperation. Frequent in-class discussion is typically an important element of student learning in this course.

- **ECON 643: Health Economics** (Arts)
  This course introduces students to the role of economics in health care and health policy. It is meant to be a survey of major topics in health economics and an introduction to the ongoing debate over health care policy. Topics include the economic determinants of health and health policy, the market for medical care, the market for health insurance, and the role of the government in health care, and health care reform.

- **MSE 619: Healthcare Analytics** (Engineering)
  This course provides an introductory course on health analytics including such topics as data acquisition, modelling, and predictive analytics. The course focuses on the practical application of the concepts to improve the quality of the analyses often found in the health sector. Application areas will be concentrated on topics found in health systems and may include topics such as planning and scheduling, disease diagnosis, and treatment planning. The learning outcomes include the ability to identify and apply appropriate analytical methods and models for healthcare.

A brief description of the Faculty-level courses, from which a student would be required to take MSE 630 and one other course, is given below:

- **BME 600: Design of Biomedical technologies** (SYDE)
  Systems theory and formulation of system dynamics problems. Design and research methods for biomedical technologies. Problem formulation and definition, stakeholder engagement, needs analysis, generation of alternative solutions, feasibility analysis, optimization, selection, and solution implementation.

- **BME602: Foundations in Biomechanical Engineering** (MME)
  This course focuses on equipping students with foundational knowledge in the biomechanics of human physiology, pathology and treatment. The overarching aim of this course is to develop students' literacy in applying biomechanics principles and modern tools towards understanding the human body. The course will build on existing knowledge in mathematics

and physics to develop new expertise and hands-on experience in the biomechanical modeling and analysis of physiological systems.

- **CHE 621: Model Building and Response Surface Methodology** (CHE)

  This course teaches process / product optimization based on design of experiments, empirical modelling, and non-linear mechanistic models. These methodologies aid in refining healthcare processes and products, ensuring they meet stringent standards of efficiency, safety, and effectiveness.

- **ENVE 585: Air Quality Engineering and Impacts** (CEE)

  This course introduces air quality design of engineering solutions and associated health and economic impacts. It includes topics focused on the indoor environment, the outdoor environment, or both, such as: air pollution sources, emission estimation, control strategies, measurement, modeling methods, health impact assessment, cost-benefit analysis, technical policy analysis, and co-impacts with climate change.

- **ECE 608: Quantitative Methods in Biomedical Engineering** (ECE)

  This course focuses on topics related to the use of quantitative tools in biomedical engineering research studies. Educational emphasis will be placed on developing students' core competence in biostatistics and biomedical computing, so as to prepare them to pursue biomedical engineering investigations that are backed by quantitative reasoning and numerical insights.

- **MSE 630: Human Computer Interaction** (MSE)

  This course concentrates on the theoretical and practical issues related to the design of the human-computer interfaces. Aspects of human perception, cognition and various models of task analysis are discussed.

A brief description of the Faculty of Health courses that are part of the department-specific and health-specific list of electives is given below:

- **HLTH 612: Introduction to Health Information and Data Standards**

  This course focuses on health data as a key component of all health informatics systems. Topics include ontologies and other classification taxonomies found in health systems, data standards (with a focus on Canadian implementations of international standards), privacy and security of health data, client/patient assessment tools, and ethical considerations.

- **HLTH 633: Digital Health**

  The wide adoption of mobile technology presents a new opportunity. Leveraging this existing technology, healthcare systems can deliver remote care and collect real-time data on patients outside of health centres, minimizing unnecessary visits to hospitals and providing healthcare access to remote populations. In this course, we will explore how digital health technology has been designed, evaluated, and deployed in different countries. Case studies will be used to demonstrate how institutional and governmental constraints have a strong impact on the success of the deployment. The course will address the different digital health technologies in the market, such as Telehealth, remote patient monitoring, tele radiology, consumer health informatics, and mHealth. Important aspects of technology development like patient confidentiality, privacy, standards, communication and security protocols,

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regulatory requirements, among others, will be discussed when presenting the development of each digital health solution. By the end of this course, students will be prepared to design, evaluate, and deploy a digital health intervention and will have a solid understanding of the barriers and requirements for deploying digital health technology.

- **HLTH 605B: Quantitative Methods and Analysis**
  This course is a rigorous introduction to biostatistics for those planning a career in public health. Students will learn various biostatistical techniques, how to apply those techniques in the analysis of data from health studies, and how to interpret the results from those analyses. After a brief review of material from a basic statistics course, topics covered will include simple and multiple linear regression, analysis of categorical data, simple and multiple logistic regression, and survival analysis. Emphasis will be on (i) conceptual understanding of topics, including literacy necessary for understanding scientific papers in public health, as well as (ii) carrying out various data analysis applications.

- **HLTH 650A / 650B: Application of Artificial Intelligence in Health (0.25) / Machine Learning Techniques in Health (0.25)**
  HLTH 650A focuses on the application of machine learning (ML) and artificial intelligence (AI) techniques in the field of healthcare and public health settings. Big data sources available for population health studies will be introduced to students and challenges related to AI in health data will also be discussed. The learning activities consist of lectures, student-led journal club discussions and a term paper to propose the application of ML techniques to solve population health or public health problems.
  HLTH 650B focusses on the techniques of machine learning (ML) commonly used to solve healthcare and public health problems. Various analytics techniques, including data wrangling, visualization, unsurprised and supervised learning, will be introduced to students. Challenges and strategies related to missing data, imbalanced data and model selections will also be discussed. The learning activities consist of lectures, labs, and a final project to demonstrate the proficiency of ML techniques to solve population health or public health problems.

- **HLTH 606B: Principles of Epidemiology for Public Health**
  This course introduces the principles, methods, and uses of epidemiology in the practice of public health. After completion of this course, students will be able to critically read and interpret epidemiologic research and clearly communicate epidemiologic findings. They will be familiar with health status measurement, data sources, screening, surveillance, outbreak investigation, and methods to support program planning and evaluation. Students will have a sound understanding of basic epidemiologic concepts, including prevalence, incidence, study designs, measures of association, bias, confounding and causal inference.

- **HLTH 615: Requirements Specifications and Analysis in Health Systems**
  This course introduces students to the requirements of definition phase of software development. Models, notations, and processes for software requirements identification, representation, validation, and analysis are discussed, as are mechanisms to evaluate the efficacy and efficiency of health information systems.

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6.   Mode of Delivery (QAF 2.1.2.2)

Courses made available for students of the Collaborative Health Technologies Program use a wide variety of teaching and learning methodologies (e.g., lectures, case-studies, student presentations, in-class group discussion, etc.) designed to provide students with an engaging learning experience. Though not specific to this program, at the University of Waterloo, instructors from all faculties are encouraged to make use of the Center for Teaching Excellence, which offers many resources to aid instructors in improving their teaching, course design, and delivery, emphasising *Active Learning* techniques. Instructors of courses offered to Collaborative Health Technologies Program students will be reminded of these resources.

Following program approval and implementation, the faculty-level administrative staff will ensure the program is continually meeting both intended learning outcomes and degree-level expectations.

7.   Assessment of Teaching and Learning (QAF 2.1.2.4)

The performance of students will be assessed both on conventional and existing methods stipulated by the courses they will take, but also based on input from the co-operative education component of this program.

Assessment of teaching and learning will be conducted at the *student* and *program* levels. The program will be assessed at the program level by the Graduate Program Committee and program director. As part of this assessment, the Program Committee will review statistics, such as program performance versus learning objectives, student success rates and teaching evaluations – as provided through both student perception surveys and peer-assessment of teaching. The committee will identify opportunities to improve performance, such as enriching course content or teaching.

Performance indicators that will be considered by the Program Committee will include:
- Applications to and enrollment within the program;
- Student evaluations of courses;
- Student graduation rates;
- Surveys of alumni; and
- Surveys of employers/industry partners.

At the student level, there will be the following types of activities with assessments:

a) Coursework: Students will be assigned a grade based on typical assessment methods used in other graduate courses, such as papers, reports, tests, projects, and presentations.
b) Co-operative Education Work-Term Reports.

Refer to the table in Appendix A for more specific information on how assessments will be made, both for course-based and co-operative education components of this program.

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8.   Resources for All Programs (QAF 2.1.2.6)

For the anticipated enrolment numbers of the Collaborative Health Technologies Program, the additional students enrolling into pre-existing courses will not present a significant burden on the University's resources (i.e., students take courses from large pools and therefore, there will likely not be so many additional students per course that additional sections and having more instructors would be necessary – in fact, in some cases, the additional grad students enrolling may help improve the instructor utilization efficiency for courses that typically have too low of enrollment numbers). The program would not necessitate hiring any new faculty members and instead would rely on existing known-to-be qualified faculty members already teaching courses. In addition, students will have access to the University's facilities and spaces, including library resources, working spaces, access to existing resources for student well-being and counselling, as well as technology support from their home department. This program is not expected to impose additional student costs for use of resources. Program coordination can be handled by existing staff resources in the home departments with the Faculty of Engineering providing additional support as needed, as is the case for other existing collaborative programs.

9.   Resources for Graduate Programs (QAF 2.1.2.7)

Given the course-based nature of the Collaborative Health Technologies Program, an assessment of the research-related and supervisory expertise of faculty is not required for this program to function. The breadth of courses available for students to take is immense and course instructors may change from term-to-term. Therefore, nearly *all* faculty from the participating units may serve this program through the teaching of courses in which Health Technology students may enroll. On a course-by-course /offering-to-offering basis, ensuring instructor competence is left to the discretion of the corresponding department. Following the precedent of existing professional master's programs in Engineering, no financial assistance will be provided to students. Ensuring the quality of incoming students, will be left to the discretion of the home departments and will be put into action through the standard program admission requirements, as are described in Section 3.

10.   Quality and Other Indicators (QAF 2.1.2.8)

To ensure the quality of the program a Program Committee will be created to oversee and regularly evaluate the program, to ensure all program requirements and course related graduate-level degree requirements are met. This committee will consist of a Program Director, the Course Coordinator, a faculty member from each participating department, and a graduate student representative. Furthermore, the co-op office will principally oversee all co-op related activities and components of this program. Within each department of Engineering, Graduate Associate Chairs will monitor the progress of their constituent students from this program, as is already their responsibility for existing professional programs. Specifically, student progression through the program, grades, and successful completion of co-op terms will be tracked. Where needed, remedial action will be taken to ensure students remain on-track and able to maximally benefit from participation in this program.

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Appendix A - Summary of Learning Outcomes Mapped to Courses and Assessment Methods

Specific GDLEs and Associated Learning Outcomes	Courses												Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CHE | CIVE | ECE | MSE						Dept-level MSE | HEALTH													
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Dept-specific and Health-specific Elective Courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
1. Depth and Breadth of Knowledge																					
Understand the principles, concepts, terminology, tools of health technology	A	A	A	C	A	A	A	A	A	AC	NA	NA	A	NA	A	A	A	A	A	A	NA
Demonstrate awareness of key elements of both the ethical considerations and impacts of health technologies	A	A	A	NA	C	NA	NA	NA	C	AC	A	NA	A	NA	A	A	A	A	A	A	NA
Interpret, understand, and critically assess state-of-the-art methods, theories, and advances in health technology	C	C	A	NA	A	C	C	A	A	AC	NA	NA	C	NA	A	A	A	A	A	A	NA
2. Research & Scholarship																					
Integrate complex engineering concepts related to the breadth of health technology, and the underlying and associated sciences.	NA	NA	A	C	A	A	A	A	A	AC	C	NA	C	NA	A	A	A	A	A	A	NA

Specific GDLEs and Associated Learning Outcomes	Courses										Co-operative Education			Assessment method							
	University-level ARTS | ENG		Faculty-level SYDE | MME | CHE | CIVE | ECE | MSE							Dept-level MSE | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Dept-specific and Health-specific Elective Courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
3. Level of Application of Knowledge																					
Interpret, critically assess and apply state-of-the-art methods, theories, and advances in health technology	A	A	A	C	A	A	A	A	A	AC	NA	NA	A	NA	A	A	A	A	A	A	NA
Understand current issues faced by the health technology industry	A	A	C	C	A	NA	NA	C	A	AC	A	C	A	NA	A	A	A	A	A	A	NA
4. Professional Capacity / Autonomy																					
Independently recognize, define, and solve complex real-world health technology needs and associated challenges	A	A	NA	C	C	C	C	C	C	AC	A	A	A	NA	AC	AC	AC	AC	C	AC	NA
Engage in self-directed professional development and life-long learning	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	C	C	A	NA	NA	NA	NA	NA	A	NA	NA
Develop an ability to recognize, appreciate, consider and apply appropriate ethics, law, regulations, and accountability to the field of health technologies	A	A	C	C	C	NA	NA	C	C	AC	A	C	A	NA	A	A	A	A	A	A	NA

Specific GDLEs and Associated Learning Outcomes	Courses										Co-operative Education			Assessment method							
	University-level ARTS | ENG			Faculty-level SYDE | MME | CHE | CIVE | ECE | MSE						Dept-level MSE | HEALTH											
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Dept-specific and Health-specific Elective Courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
Understand the value of engaging in inter-disciplinary collaboration in health technology as well as the complexity of knowledge & limitations of different fields	C	C	C	C	NA	NA	NA	NA	NA	AC	NA	NA	A	NA	NA	NA	C	NA	A	C	NA
Adopt a mindset for collaboration (work effectively in interdisciplinary teams including healthcare professionals, engineers, designers, business developers, etc.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	A	A	C	NA	NA	NA	NA	NA	C	NA	NA
5. Level of Communications Skills																					
Effectively communicate complex concepts in health technology to a wide audience ranging from general public to experts in the field. Concepts may include health technology needs and associated challenges (includes GDLE 6 Awareness of Limits of Knowledge)	C	C	C	NA	NA	NA	NA	NA	NA	NA	C	C	C	NA	NA	NA	NA	NA	C	C	NA
The ability to communicate ideas, issues and conclusions clearly.	C	C	NA	NA	NA	NA	NA	NA	NA	NA	C	C	A	NA	NA	NA	NA	NA	A	C	NA

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| Specific GDLEs and Associated Learning Outcomes | Courses | | | | | | | | | | Co-operative Education | | | Assessment method | | | | | | | |
| | University-level ARTS \| ENG | | Faculty-level SYDE \| MME \| CHE \| CIVE \| ECE \| MSE | | | | | | Dept-level MSE \| HEALTH | | | | | | | | | | |
	PHIL 626: Bioethics & Technology	ECON 643: Health Economics	MSE 619: Healthcare Analytics	BME 600: Design of Biomedical Technologies	BME 602: Foundations in Biomechanical Engineering	CHE 621: Model Building and Response Surface Methodology	ENVE 585: Air Quality Engineering & Impact	ECE 608: Quantitative Methods in Biomedical Engineering	MSE 630: Human-Computer Interaction	Dept-specific and Health-specific Elective Courses	Employer Input	Co-op Office Evaluation	Work Term Report	Forum communication	Multi-part assignments	Quizzes / Tests	Written assignments / arguments / policy briefs	Data interpretation, synthesis, visualization	Technical reports / plans	Slide decks / presentations	Video production
6. Awareness of Limits of Knowledge																					
Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.	A	A	C	C	C	C	C	C	C	AC	A	A	A	NA	C	NA	NA	NA	A	A	NA
Understand the value of inter-disciplinarity in the field of health technology.	C	C	C	C	C	C	C	C	C	AC	C	C	C	NA	C	NA	C	NA	C	C	NA

Table Legend:

Assessed (A) .... The outcome is addressed and is formally assessed.

Covered (C) .... The outcome is addressed but not assessed.

Assessed or Covered (AC)............ The outcome may be addressed and assessed but is at least covered (depending on selected courses).

Not addressed (NA) .... The outcome is not addressed.

UNIVERSITY OF WATERLOO

Graduate Studies
Program Revision Template

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

Faculty: Engineering

Program: Master of Management Science (MMSc) - Health Technologies - Co-operative Program

Program contact name(s): Sibel Alumur Alev, Siva Sivoththaman

Form completed by:

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

The Department of Management Science and Engineering is joining the inaugural Collaborative Health Technologies Program and is thus adding a Master of Management Science (MMSc) - Health Technologies - Co-operative Program (direct entry).

Is this a major modification to the program? Yes

Rationale for change(s):

Please refer to the attached brief for full details.

Proposed effective date: Term: Spring   Year: 2025

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

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs?group=Management%20Science%20and%20Engineering

Current primary program in the home unit: MMSc - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MMSc - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
Master of Management Science (MMSc) - Co-operative Program (direct entry) **Admit term(s)** • Fall **Delivery mode** • On-campus **Registration option(s)** • Full-time	**Master of Management Science (MMSc) - <u>Health Technologies</u> - Co-operative Program (direct entry)** **Admit term(s)** • Fall **Delivery mode** • On-campus **Registration option(s)**

Current primary program in the home unit: MMSc - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MMSc - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
Program type(s) • Co-operative **Study option(s)** • Coursework **Length of program** • 5 terms (20 months) **Graduate research fields** • Applied Operations Research • Information Systems • Management of Technology **Admission requirements: Minimum requirements** • The Department of Management Science and 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. • Background in quantitative methods (e.g., Calculus, Linear Algebra, Probability and Statistics). • All applicants must submit a "Statement of Purpose" - a one page statement addressing their academic background and future goals. • Applicants who fall slightly below the minimum academic requirements may be considered for admission as transitional or probationary students. • [English language proficiency (ELP)](#) (if applicable) **Admission requirements: Application materials** • Résumé/Curriculum vitae • Supplementary information form • Transcript(s) **Admission requirements: References** • Number of references: 2	• Full-time **Program type(s)** • Co-operative • <u>Collaborative</u> **Study option(s)** • Coursework **Length of program** • 5 terms (20 months) ~~**Graduate research fields**~~ • ~~Applied Operations Research~~ • ~~Information Systems~~ • ~~Management of Technology~~ **Admission requirements: Minimum requirements** • The Department of Management Science and 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. • Background in quantitative methods (e.g., Calculus, Linear Algebra, Probability and Statistics). • All applicants must submit a "Statement of Purpose" - a one page statement addressing their academic background and future goals. • Applicants who fall slightly below the minimum academic requirements may be considered for admission as transitional or probationary students. • [English language proficiency (ELP)](#) (if applicable) **Admission requirements: Application materials** • Résumé/Curriculum vitae • Supplementary information form • Transcript(s) **Admission requirements: References**

Current primary program in the home unit: MMSc - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MMSc - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
- Type of references: academic (preferred) or professional **Degree requirements** - Students must complete the course and milestone requirements listed below in addition to the [Graduate Academic Integrity Module (Graduate AIM)](#). - The MMSc - Co-operative Program will enable students to combine graduate studies with work experience. The program includes completion of 2 required work terms. The work terms typically take place in terms 3 and 4. The work terms must meet Co-operative and Experiential Education (CEE) standard work term requirements and Departmental requirements. Students should apply to jobs related to their program of study. Note: the program must start and end on an academic term. Students in the program are encouraged to complete WIL 601 Career Foundations for Work-Integrated Learning in the academic term prior to the first work term. **Coursework option: Course requirements** - Students must successfully complete the following 4 General Requirement courses (0.50 unit weight per course/4 units): - MSE 603 Principles of Operations Research [this course may be replaced with MSE 634 if a student has a strong background in Operations Research] - MSE 605 Organizational Behaviour - MSE 607 Applied Economics for Management - MSE 609 Quantitative Data Analysis for Management Sciences - In addition to the 4 General Requirement courses (MSE 603, MSE 605, MSE 607, MSE 609), students must take at least 4 additional courses, totaling a minimum requirement of 8 courses overall (0.50 unit weight per course/4 units). These courses may include at most 2 500-level courses approved by the Associate Chair for Graduate Studies. All other courses must be at the 600 and 700 level. Students must maintain an overall average of at least 73% at the end of each term, with no more than 2 failed courses overall. - No more than 1 course (0.50 unit weight per course) may be taken outside of the Management Science and Engineering	- Number of references: 2 - Type of references: academic (preferred) or professional **Degree requirements** - Students must complete the course and milestone requirements listed below in addition to the [Graduate Academic Integrity Module (Graduate AIM)](#). - The MMSc - Health Technologies - Co-operative Program will enable students to combine graduate studies with work experience. The program includes completion of 2 required work terms. The work terms typically take place in terms 3 and 4. The work terms must meet Co-operative and Experiential Education (CEE) standard work term requirements and Departmental requirements. Students should apply to jobs related to their program of study. Note: the program must start and end on an academic term. Students in the program are encouraged to complete WIL 601 Career Foundations for Work-Integrated Learning in the academic term prior to the first work term. **Coursework option: Course requirements** - Students must successfully complete the following 4 General Requirement courses (0.50 unit weight per course/4 units): - MSE 603 Principles of Operations Research [this course may be replaced with MSE 634 if a student has a strong background in Operations Research] - MSE 605 Organizational Behaviour - MSE 607 Applied Economics for Management - MSE 609 Quantitative Data Analysis for Management Sciences - MSE 619 Healthcare Analytics - MSE 630 Human-Computer Interaction 1 of the following Health Technologies core courses: - ECON 643 Health Economics - PHIL 626 Bioethics and Technology 1 of the following Faculty of Engineering Health Technologies elective courses: - BME 600 Design of Biomedical Technologies

Current primary program in the home unit: MMSc - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MMSc - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:

Department. This course will require the approval of the Associate Chair for Graduate Studies.
• Students who have completed their BASc degree in Management Engineering at the University of Waterloo are required to choose their courses in consultation with the Associate Chair for Graduate Studies
 	
Coursework option: Milestone requirements
 	
Graduate Studies Work Report I and Graduate Studies Work Report II
• Students must complete two work-term experiences. The co-operative work-term experiences must relate to the program of study. For each work experience, a work report must be submitted to the Department for review to earn credit for the work report.
• Students are responsible for following the [roles and responsibilities of Co-operative and Experiential Education (CEE)](#).
	▪ BME 602 Foundations in Biomechanical Engineering
	▪ CHE 621 Model Building and Response Surface Methodology
	▪ ECE 608 Quantitative Methods in Biomedical Engineering
	▪ ENVE 585 Air Quality Engineering and Impacts
	  o 1 of the following Health Technologies elective courses:
	    ▪ HLTH 605B Quantitative Methods and Analysis
	    ▪ HLTH 606B Principles of Epidemiology for Public Health
	    ▪ HLTH 612 Introduction to Health Information and Data Standards
	    ▪ HLTH 615 Requirements Specifications and Analysis in Health Systems
	    ▪ HLTH 633 Digital Health
	    ▪ HLTH 650A Application of Artificial Intelligence in Health (0.25) and 650B Machine Learning Techniques in Health (0.25)
	• ~~In addition to the 4 General Requirement courses (MSE 603, MSE 605, MSE 607, MSE 609), students must take at least 4 additional courses, totaling a minimum requirement of 8 courses overall (0.50 unit weight per course/4 units). These courses may include at most 2 500-level courses approved by the Associate Chair for Graduate Studies. All other courses must be at the 600 and 700 level.~~ Students must maintain an overall average of at least 73% at the end of each term, with no more than 2 failed courses overall.
	• ~~No more than 1 course (0.50 unit weight per course) may be taken outside of the Management Science and Engineering Department. This These course will require the approval of the Associate Chair for Graduate Studies.~~
	• ~~Students who have completed their BASc degree in Management Engineering at the University of Waterloo are required to choose their courses in consultation with the Associate Chair for Graduate Studies~~
	
	Coursework option: Milestone requirements

Current primary program in the home unit: MMSc - Co-operative Program Graduate Studies Academic Calendar content:	Proposed MMSc - Health Technologies - Co-operative Program Graduate Studies Academic Calendar content:
	Graduate Studies Work Report I and Graduate Studies Work Report II • Students must complete two work-term experiences. The co-operative work-term experiences must relate to the program of study. For each work experience, a work report must be submitted to the Department for review to earn credit for the work report. • Students are responsible for following the [roles and responsibilities of Co-operative and Experiential Education (CEE)]().

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

Current students will not be impacted. The program will be open to new students once it goes into effect.

Department/School approval date (mm/dd/yy):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 12/05/24
Faculty approval date (mm/dd/yy): 12/17/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

**INDUSTRY AND JOB ANALYSIS FOR MASTER OF HEALTH TECHNOLOGIES**

Prepared by Justin Kieffer, Faculty Relations Manager, Math & Eva Skuza, Faculty Relations Manager, Engineering

July 3, 2024

Introduction

Labour market and employment trends are volatile and may change quickly. While this report is a snapshot in time, Co-operative and Experiential Education (CEE) actively monitors labour market and employment changes. Additional insights will be provided through regular updates at the faculty and program level and more detailed data is provided in Cyclical Program Reviews.

As of fall 2023, approximately 68% or roughly 26,800 students at the University of Waterloo are enrolled in co-operative education programs. Both the number of students in co-op and the proportion of students in co-op programs have continued to increase annually (68% in 2023 vs 60% in 2017).
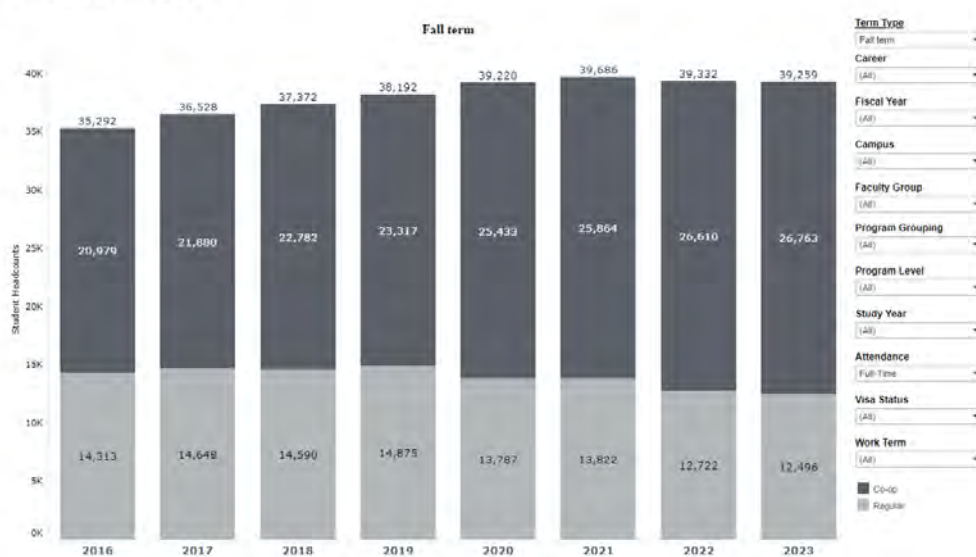
Graduate students in co-op programs currently represent a small proportion (~1.5%) of total co-op enrollment, with 390 total students as of fall 2023. The Faculty of Engineering has expanded its master level programs that include co-operative education as part of degree requirements. The most recently added programs are:

- Chemical Engineering
- Civil and Environmental Engineering
- Mechanical and Mechatronics Engineering
- Electrical and Computer Engineering

Upcoming programs are:

- Systems Design Engineering

Enrolment in these programs has increased the number of Engineering masters co-op students by approximately 100 students in 2024; an increase of approximately 26% in the number of masters co-op students at the University of Waterloo.

The proposed Master of Health Technologies program is expected to add an additional 50 co-op students.

To ensure that masters students are set up to succeed in co-op, Co-operative and Experiential Education (CEE) has conducted a competitive analysis to understand co-op employment trends, job opportunities, external labour markets, and surveyed employer interest in Master of Engineering co-op students.

Employment Trends

To get a sense of expected employment success for students in the Health Technologies program, CEE analyzed recent employment rates of comparable undergraduate Engineering co-op programs at Waterloo and existing master's co-op programs in the faculties of Engineering and Mathematics.

The list of programs used for comparison are listed below. While most data is summarized at the aggregate level, program level data is available upon request.

Undergraduate	Graduate
Chemical Engineering	Applied Mathematics
Civil Engineering	Computer Science
Computer Engineering	Data Science & Artificial Intelligence
Electrical Engineering	Management Sciences Engineering
Mechanical Engineering	Mechanical & Mechatronics Engineering
Mechatronic Engineering	
Systems Design Engineering	

Employment rates in 2020 and 2021 were heavily impacted by the Covid-19 pandemic, the included undergraduate co-op programs in Engineering averaged an employment rate of 96.6% over the reporting period, representing more than 30,000 employed work terms. Undergraduate students in Chemical and Mechatronic Engineering programs were slightly less successful from an overall employment perspective than the other listed programs.

Shifting labour markets and economic downturns may indicate that additional focus on supporting these students in their job search by ensuring they access specific workshops and appointments offered by the Centre for Career Development to expand their work search would be beneficial. By searching for jobs both in and outside of WaterlooWorks, Undergraduate and Graduate students would uncover more work opportunities.

Undergraduate Programs Employment Rate
2018 to 2022
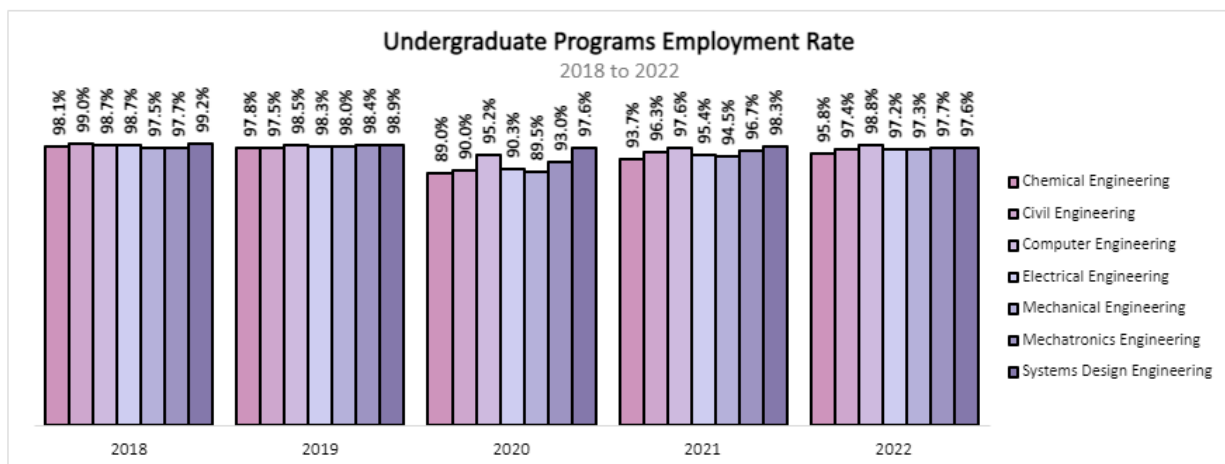
Unlike the undergraduate programs, co-op is not a requirement of all M. Eng degrees and students can

switch out of the co-op program, which impacts employment rates. Master's students in existing co-op programs have historically been very successful from an employment perspective, with employment rates often outperforming those at the undergraduate level. M. Eng co-op students are strongly competitive from an employment standpoint due to smaller program sizes, expertise and skills of students, different support models and increased flexibility in work term scheduling contributing to employment rate differences.

Graduate Programs Employment Rate — 2018 to 2022
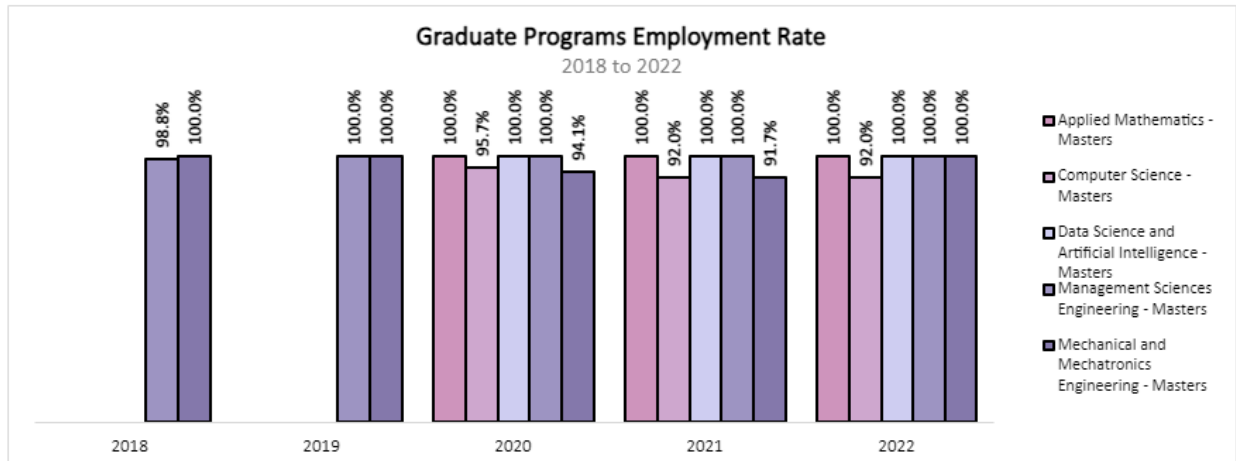
Where Students Work

Analysis by industry indicates strong alignment between the skills developed by students in the specific undergraduate Engineering programs and the sectors in which they worked. Computer systems, Architectural/building engineering, software development, universities and motor vehicle manufacturing are the five largest industries by volume of the specified undergraduate Engineering employment. Substantial growth has been observed in the Management, Scientific and Technical Consulting Services industry and its related organizations.

Overall Top 10 NAICS Codes by Employed Count for Compareable Undergraduate Programs from 2018 to 2022

Employer NAICS Code	2018 # Emp. / Rank		2019 # Emp. / Rank		2020 # Emp. / Rank		2021 # Emp. / Rank		2022 # Emp. / Rank		Overall 2018 to 2022	2018 to 2022	Overall Net Change
5415 - Computer Systems Design and Related Services	703	1	686	1	601	1	626	1	679	1	3295		0
5413 - Architectural, Engineering and Related Services	620	2	577	2	444	3	459	3	534	2	2634		0
5112 - Software Publishers	366	3	395	3	375	4	409	4	440	3	1985		0
6113 - Universities	333	4	326	4	498	2	520	2	276	5	1953		-1
3361 - Motor Vehicle Manufacturing	223	5	206	5	245	5	239	5	319	4	1232		1
5416 - Management, Scientific and Technical Consulting Services	164	9	181	6	216	6	210	6	217	6	988		3
5614 - Business Support Services	206	6	161	7	141	8	142	7	122	10	772		-4
3344 - Semiconductor and Other Electronic Component Manufacturing	182	7	133	12	142	7	131	8	166	7	754		0
3342 - Communications Equipment Manufacturing	128	12	143	9	137	9	125	9	111	11	644		1
3363 - Motor Vehicle Parts Manufacturing	165	8	126	14	97	12	124	10	123	9	635		-1

For graduate students, the landscape is slightly different in terms of industries that students are most likely to work in, which could be attributed to the skills and interests of the students in the sample list of programs used for comparison.

Overall Top 10 NAICS Codes by Employed Count for Compareable Graduate Programs from 2018 to 2022

Employer NAICS Code	2018 # Emp. / Rank		2019 # Emp. / Rank		2020 # Emp. / Rank		2021 # Emp. / Rank		2022 # Emp. / Rank		2018 to 2022	2018 to 2022	Overall Net Change
5415 - Computer Systems Design and Related Services	7	4	5	3	10	2	11	3	28	2	61		2
5221 - Depository Credit Intermediation	9	3	11	2	7	6	6	6	8	5	41		-2
5173 - Telecommunications Resellers		47		38	19	2	12	2	7	7	38		40
4451 - Grocery Stores	2	18	1	19	11	3	4	8	18	3	36		15
5241 - Insurance Carriers	4	11	1	19	7	6	7	5	6	8	25		3
9120 - Provincial and Territorial Public Administration		47	1	19		37	8	4	9	4	18		43
3361 - Motor Vehicle Manufacturing	5	5	4	4		37	3	12	6	8	18		-3
5112 - Software Publishers	5	5	2	8	3	9	4	8	4	11	18		-6
5412 - Accounting, Tax Preparation, Bookkeeping and Payroll Services	5	5		38	2	12	2	20	8	5	17		0
6113 - Universities		47		38	8	5	6	6	2	23	16		24

Focusing on industries related to health technologies, CEE analyzed recent co-op hiring data to understand the potential to source relevant employment opportunities for students in this program from

within the existing hiring base. More than 2,500 organizations by NAICS are actively participating in the co-op hiring process in relevant professional, scientific/technical services and health care industries.

UW Data - Count WW Organiations with NAICS Codes	Active
Professional, scientific and technical services	**1,979**
5415 - Computer Systems Design and Related Services	1,007
5416 - Management, Scientific and Technical Consulting Services	454
5417 - Scientific Research and Development Services	188
5419 - Other Professional, Scientific and Technical Services	330
Health care and social assistance	**554**
6211 - Offices of Physicians	36
6212 - Offices of Dentists	19
6213 - Offices of Other Health Practitioners	223
6214 - Out-Patient Care Centres	29
6215 - Medical and Diagnostic Laboratories	21
6216 - Home Health Care Services	19
6219 - Other Ambulatory Health Care Services	5
6221 - General Medical and Surgical Hospitals	56
62211 - Paediatric Hospitals	2
6222 - Psychiatric and Substance Abuse Hospitals	3
6223 - Specialty (except Psychiatric and Substance Abuse) Hospitals	7
6231 - Nursing Care Facilities	17
6232 - Residential Developmental Handicap, Mental Health and Substance Abuse Facilitie	17
6233 - Community Care Facilities for the Elderly	15
6239 - Other Residential Care Facilities	13
6241 - Individual and Family Services	56
6242 - Community Food and Housing, and Emergency and Other Relief Services	12
6243 - Vocational Rehabilitation Services	4
Overall Total	**2,533**

Speifically, within the Healthcare industry, by volume of students hired, the 10 largest organizations have accounted for 377 work terms since 2019 (587 hires by all organizations in these NAICS).

Organization Name	Top 10 Organizations by Work Terms (2019 to 2023)
University Health Network	107
Unity Health Toronto	87
The Hospital for Sick Children	60
Sunnybrook Health Sciences Centre	31
Swift Medical Inc	18
Scispot.io	16
Centre For Addiction and Mental Health	13
William Osler Health System	12
Grand River Hospital	9
London Health Sciences Centre	8
Mount Sinai Hospital	8
Mackenzie Health	8
Grand Total	**377**

Some of the most common job titles held by students in these positions include: Project Coordinator, Research Assistant, QA Tester, Special Project Engineering Assistant, Software Engineering and Software Developer.

Overall co-op hiring has grown in these industries since 2019, with recent hiring peaking in 2022.

UW Hiring Data (All Students)	2019	2020	2021	2022	2023	Trend 2019 to 2023	Net Growth/Decline
Professional, scientific and technical services	3,125	2,690	3,489	3,714	3,421		296
5415 - Computer systems design and related services	2,060	1,697	2,098	2,195	1,910		-150
5416 - Management, scientific and technical consulting services	621	634	815	858	787		166
5417 - Scientific research and development services	234	213	342	399	383		149
5419 - Other professional, scientific and technical services	210	146	234	262	341		131
Health care and social assistance	787	779	942	1,140	1,130		343
6211 - Offices of physicians	14	10	40	58	78		64
6212 - Offices of dentists	2	10	12	17	18		16
6213 - Offices of other health practitioners	156	175	243	256	298		142
6214 - Out-patient care centres	69	78	44	60	50		-19
6215 - Medical and diagnostic laboratories	28	34	43	51	41		13
6216 - Home health care services	21	26	36	19	25		4
6219 - Other ambulatory health care services	6	4	2	2	4		-2
6221 - General medical and surgical hospitals	310	283	310	453	351		41
62211 - Paediatric Hospitals	44	33	42	31	46		2
6222 - Psychiatric and substance use hospitals	8	1	3	3	3		-5
6223 - Specialty hospitals (except psychiatric and substance use)	19	16	18	11	21		2
6231 - Nursing care facilities	28	20	27	26	48		20
6232 - Residential facilities for persons with an intellectual or developmental disability, a mental health or substance use condition	43	58	63	75	72		29
6233 - Community care facilities for the elderly	11	18	24	22	17		6
6239 - Other residential care facilities	2	3	6	4	4		2
6241 - Individual and family services	21	3	19	42	45		24
6242 - Community food and housing, and emergency and other relief services	2	4	2	4	2		0
6243 - Vocational rehabilitation services	3	3	8	6	7		4

Hiring of Engineering students, specifically within the health care and social assistance NAICS have remained relatively flat, indicating opportunities to enhance and promote these roles to students in Engineering as well as to further promote the skills and knowledge of health technologies students to these organizations.

UW Hiring Data (Eng Only)	2019	2020	2021	2022	2023	Trend 2019 to 2023	Net Growth/Decline
Professional, scientific and technical services	1,448	1,364	1,510	1,710	1,537		89
5415 - Computer systems design and related services	978	874	918	1,036	865		-113
5416 - Management, scientific and technical consulting services	263	321	343	354	319		56
5417 - Scientific research and development services	96	105	147	198	185		89
5419 - Other professional, scientific and technical services	111	64	102	122	168		57
Health care and social assistance	115	110	90	156	114		-1
6211 - Offices of physicians		2	3	7	10		10
6212 - Offices of dentists			2	2	2		2
6213 - Offices of other health practitioners	14	10	10	6	4		-10
6214 - Out-patient care centres	10	10	1	6	2		-8
6215 - Medical and diagnostic laboratories	5	11	9	19	11		6
6216 - Home health care services	3	3	4	2			-3
6219 - Other ambulatory health care services	3				1		-2
6221 - General medical and surgical hospitals	54	60	49	99	67		13
62211 - Paediatric Hospitals	23	13	10	8	11		-12
6222 - Psychiatric and substance use hospitals	1						-1
6223 - Specialty hospitals (except psychiatric and substance use)			2	2	2		2
6231 - Nursing care facilities					1		1
6232 - Residential facilities for persons with an intellectual or developmental disability, a mental health or substance use condition	1			1			-1
6233 - Community care facilities for the elderly		1	2				0
6239 - Other residential care facilities							0
6241 - Individual and family services	1			4	3		2
6242 - Community food and housing, and emergency and other relief services							0
6243 - Vocational rehabilitation services							0

Analysis of the relevant occupation codes (NOCS) that Health Technologies are well suited to pursue indicate ongoing overall growth, but also indicate a need for further exploration on ways to increase Engineering student participation in these occupations.

UW Hiring Data (All Students)	2019	2020	2021	2022	2023	Trend 2019 to 2023	Net Growth/Decline
1122 – Professional occupations in business management consulting	1543	1445	1923	1899	1793		250
1211 – Court reporters, transcriptionists, records management technicians and statistical officers	45	47	66	62	72		27
2147 – Computer engineers (except software engineers and designers)	851	680	646	932	775		-76
2171 – Information systems analysts and consultants	820	643	776	807	764		-56
2172 – Database analysts and data administrators	395	472	589	656	657		262
2174 – Computer programmers and interactive media developers	774	709	726	744	678		-96
2211 – Chemical technologists and technicians	87	65	54	83	89		2
2281 – Computer network technicians	44	34	16	27	37		-7
4165 – Health policy researchers, consultants and program officers	60	43	78	69	75		15

UW Hiring Data (Eng Only)	2019	2020	2021	2022	2023	Trend 2019 to 2023	Net Growth/Decline
1122 – Professional occupations in business management consulting	348	422	468	459	418		70
1211 – Court reporters, transcriptionists, records management technicians and statistical officers	13	9	11	9	9		-4
2147 – Computer engineers (except software engineers and designers)	494	424	368	518	417		-77
2171 – Information systems analysts and consultants	307	280	303	324	328		21
2172 – Database analysts and data administrators	106	160	142	188	174		68
2174 – Computer programmers and interactive media developers	379	366	307	322	276		-103
2211 – Chemical technologists and technicians	38	36	28	45	40		2
2281 – Computer network technicians	20	17	6	14	24		4
4165 – Health policy researchers, consultants and program officers	3	1	2	0	11		8

As well as analyzing the current co-op landscape pertaining to relevant graduate and undergraduate co-op programs as a proxy for the upcoming Health Technologies program, CEE also analyzed external labour market data to understand relevant industry trends and business development opportunities to support co-op program growth.

Statistics Canada Labour Force data shows growth from 2019 to 2023 in terms of the number of people employed in the Professional, scientific, and technical services and the health care and social assistance industries.

NAICS Data (Canada)

| NAICS Sector	2019	2020	2021	2022	2023	Trend 2019 to 2023	Net Growth/Decline
Professional, scientific and technical services [54]	1,343,400	1,358,900	1,470,200	1,581,900	1,645,500		302,100
Health care and social assistance [62]	1,937,900	1,908,000	1,982,300	2,061,900	2,131,000		193,100

Similarly, growth in the number of Canadians working in occupations relevant to health technologies have also continued to grow over this time period.

NOCS Data

| NOC	2019	2020	2021	2022	2023	Trend 2019 to 2023	Net Growth/Decline
Professional occupations in business [112]	334,500	365,900	398,700	421,600	429,700		95,200
Administrative and financial supervisors and specialized administrative occupations [12]	530,200	526,300	596,700	601,100	654,900		124,700
Professional occupations in applied sciences (except engineering) [212]	586,000	660,900	733,200	791,900	778,000		192,000
Professional occupations in engineering [213]	236,700	232,400	265,000	275,100	277,900		41,200
Technical occupations related to natural and applied sciences [22]	533,400	541,700	512,400	544,400	543,700		10,300
Health treating and consultation services professionals [311]	196,100	204,300	208,700	206,300	203,900		7,800
Therapy and assessment professionals [312]	67,200	71,800	71,800	71,800	84,300		17,100
Technical occupations in health [32]	257,200	263,700	270,900	283,200	301,900		44,700
Professional occupations in government services [414]	190,900	189,400	224,000	235,300	250,000		59,100

Student Experience

Analysis of evaluation data for comparable co-op programs reveals that undergraduate and graduate students received similar, strong overall evaluation ratings from their employers. The percentage of undergraduate students in comparable programs who received a 'Very Good' to 'Outstanding' rating was slightly higher than that of graduate co-op students (95% vs 92%).

Overall Employer Evaluation (2018 - 2022)

	Unsatisfactory	Marginal	Satisfactory	Good	Very Good	Excellent	Outstanding
Comparable Graduate Programs	0%	0%	2%	6%	18%	46%	27%
Comparable Undergraduate Programs	0%	0%	1%	4%	16%	50%	28%
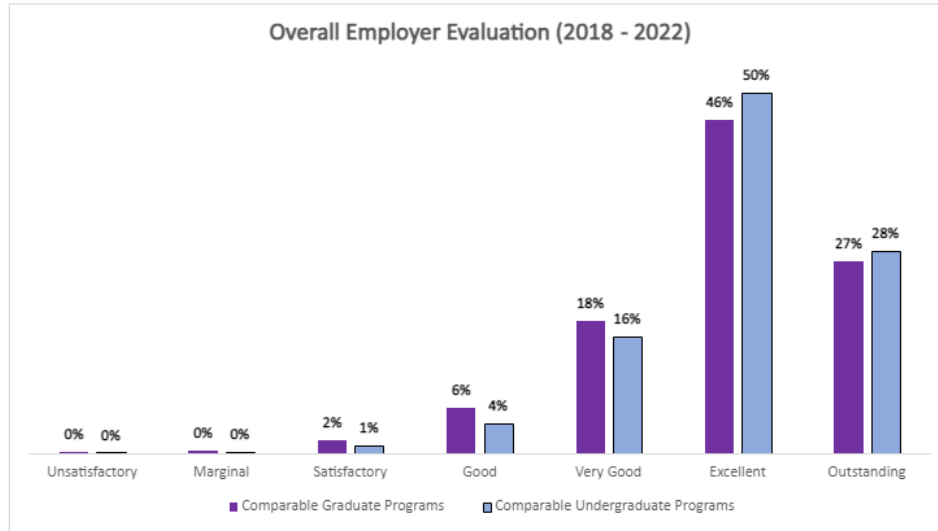
Graduate students do appear to be more satisfied with their work term experiences compared to undergraduate students in comparable programs, with 84% of students rating their overall satisfaction an '8' or above, compared to 76% of undergraduate students (the undergraduate average is on par with the overall distribution for all students over this timeframe). This may indicate that students in graduate co-op programs are more likely to find employment in jobs that strongly align with their expectations.

Overall Satisfaction with Work Term (2018 to 2022)

|	1	2	3	4	5	6	7	8	9	10
Comparable Graduate Programs	0%	0%	1%	1%	1%	3%	10%	23%	32%	29%
Comparable Undergraduate Programs	0%	1%	1%	1%	2%	5%	13%	26%	30%	21%
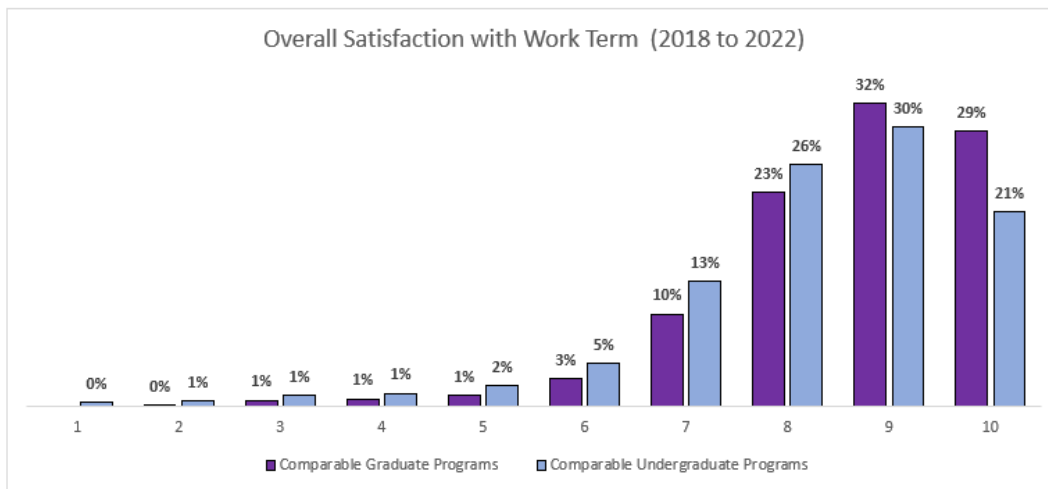
Graduate students also rate their overall average satisfaction on each of the individual work term attributes slightly higher than undergraduate students in comparable programs. Graduate co-op students are significantly more likely to rate the possibility of working with their employer post-graduation higher than undergraduate students. This may be indicative of a different employment approach or strategy by the organizations hiring graduate co-op students and the fact that these students are closer to program completion.

Average Satisfaction Rating by Question (2018 to 2022)
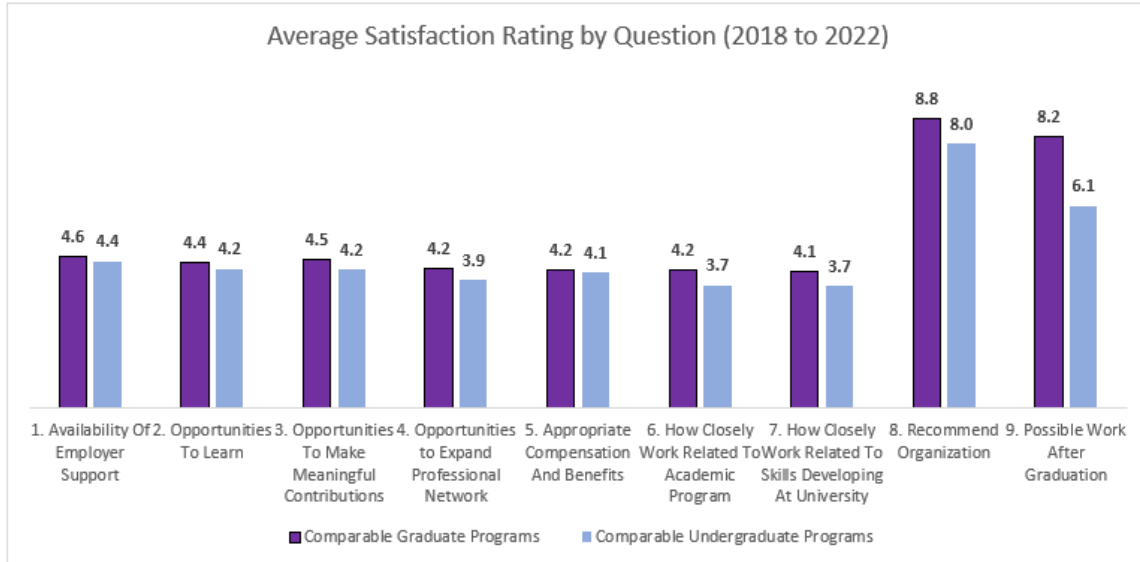
External Industry Projections

To understand the outlook of the medical and health technologies market, CEE analyzed industry projections conducted by Statista, which project continued growth out to 2028.

Medical Technology – The Medical Technology market, which encompasses various markets, including Medical Devices, is anticipated to witness significant revenue growth in the coming years. By 2024, the market is projected to reach a staggering US$610.20bn worldwide.

Medical Technology - Revenue
Worldwide (billion USD (US$))

Source: Statista Market Insights
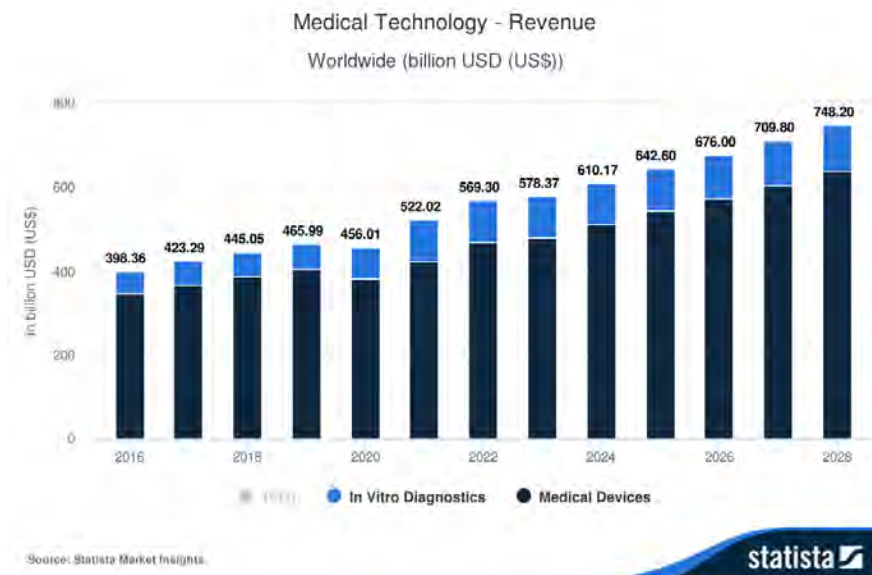
Among these markets, Medical Devices are expected to dominate, with a projected market volume of US$511.20bn by 2024. Furthermore, the Medical Technology market is expected to demonstrate a steady annual growth rate of 5.23% from 2024 to 2028.

As a result, the market volume is estimated to reach US$748.20bn by 2028. In terms of global comparison, the United States is poised to generate the highest revenue in the Medical Technology market.

This growth is expected to be driven by overall GDP growth, increased device penetration globally, inflation and increased health expenditure.
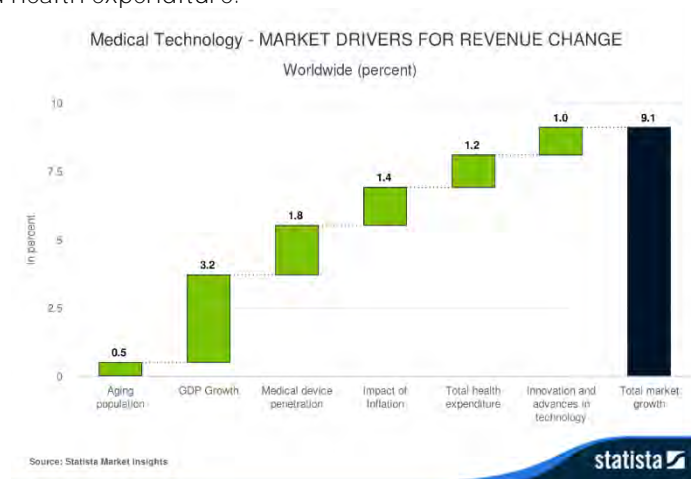
In 2021, the medical technology industry generated revenue of approximately C$793 billion. The below statistic shows how global MedTech revenue was distributed across categories of different products. According to the data, in-vitro diagnostics generated 18.1 percent of the total MedTech revenue, while medical devices represented the remaining 81.9 percent of it. Among medical devices, the most important category was that of devices related to cardiology, which accounted for 10.8 percent of the total revenue of this industry.
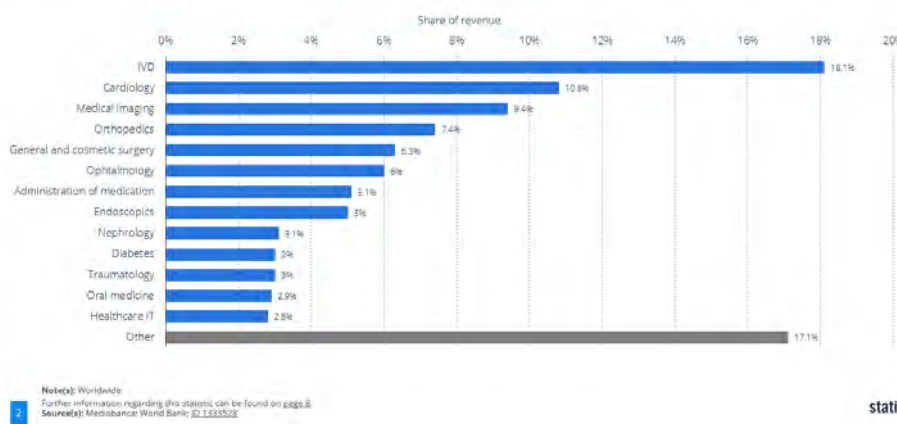

Digital Health in Canada

In 2022, the digital health market in Canada was forecast to reach revenues of approximately 2.4 billion U.S. dollars. This would represent a nine percent growth from the preceding year. When broken down, this market was projected to be made up of revenues of 1.4 billion U.S. dollars in the eHealth segment and 970 million U.S. dollars from the digital fitness and well-being division. The eHealth segment within digital health encompasses such things as doctor consultations which take place via technologies (such as video or online) rather than in-person, and devices that track the health metrics of a person.
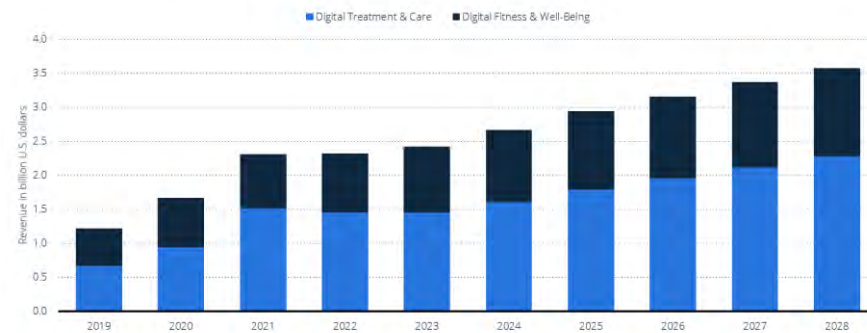
Uses of AI in healthcare

As of 2021, around a fifth of healthcare organizations worldwide, which were surveyed, indicated they were in an early stage of adoption in regard to AI models. This meant that their models had been in production for less than two years. Fewer than ten percent of healthcare organizations had been utilizing AI for more than five years. The most common type of AI software in use in healthcare was functions related to healthcare data integration and natural language processing (NLP). The main intended users of AI among organizations in the mature stage of adoption were clinicians and providers, although 60 percent also reported that patients should be able to use the AI technologies implemented.

In 2021, the artificial intelligence (AI) in healthcare market was worth around 11 billion U.S. dollars worldwide. It was forecast that the global healthcare AI market would be worth almost 188 billion U.S. dollars by 2030, increasing at a compound annual growth rate of 37 percent from 2022 to 2030.
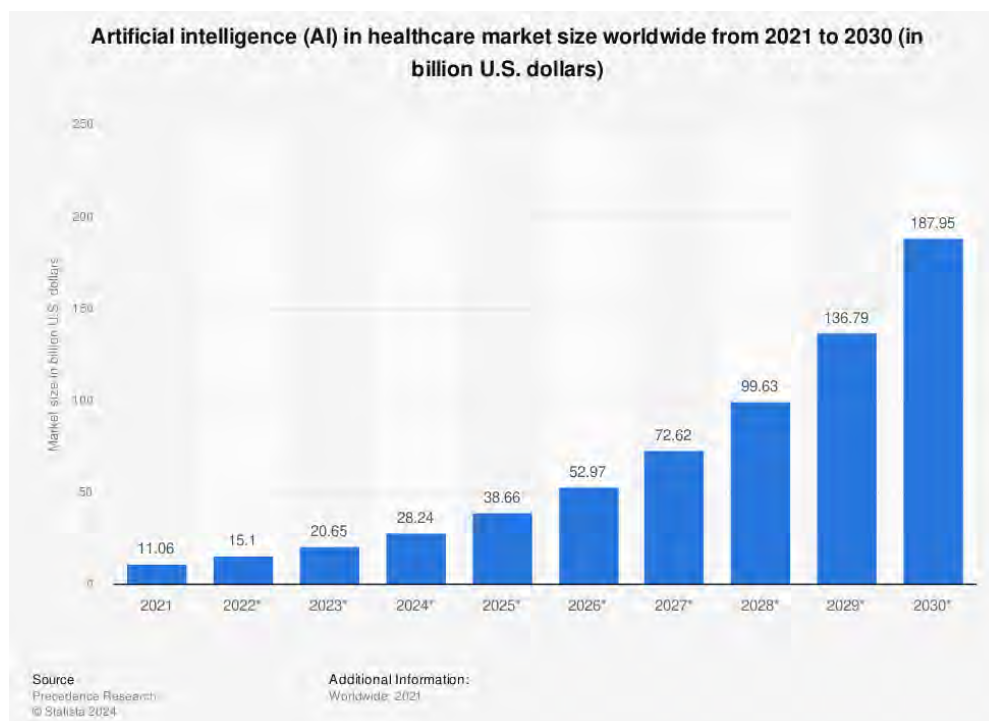
Labour Force Analysis

[Employment and Social Development Canada](#) (ESDC) uses the [Canadian Occupational Projection System](#) (COPS) and the [National Occupational Classification](#) (NOC, 2016 version) to identify occupations that may face labour shortage or labour surplus conditions over the projection period. The latest projections cover the 2022 to 2031 period. Their analysis of occupations expected to align with the Health Technologies program indicates:

[Computer and information system managers](#) – **SHORTAGE**: Over the period 2022-2031, the number of job openings (arising from expansion demand and replacement demand) are expected to total **42,600**, while the number of job seekers (arising from school leavers, immigration and mobility) is expected to total **53,400**.

This gap is not considered statistically significant, which means the number of job openings and seekers is projected to be similar over the 2022-2031 period. As such, the labour shortage conditions seen in recent years will not clear and are expected to persist over the projection period. Job openings are expected to arise equally from employment growth and retirements.

[**Health information management occupations**](#) – **BALANCE:** Over the period 2022-2031, the number of job openings (arising from expansion demand and replacement demand) are expected to total 10,500, while the number of job seekers (arising from school leavers, immigration, and mobility) is expected to total 10,600.

As job openings and job seekers are projected to be at relatively similar levels over the 2022-2031 period, the balance between labour supply and demand seen in recent years is expected to continue over the projection period.

[Software engineers and designers](#) – SHORTAGE: Over the period 2022-2031, the number of job openings (arising from expansion demand and replacement demand) for Software engineers and designers are expected to total 44,300, while the number of job seekers (arising from school leavers, immigration and mobility) is expected to total 48,800.

This gap is not considered statistically significant, which means the number of job openings and seekers is projected to be similar over the 2022-2031 period. As such, the labour shortage conditions seen in recent years will not clear and are expected to persist over the projection period. Employment is projected to grow at a significantly higher rate than the average of all occupations. As a result, job creation will represent around 68% of all openings, a proportion that is substantially above the average of all occupations (about 37% of openings). Most of these workers are employed in the computer systems design and related services industry; in telecommunications, information, and culture services; as well as in finance, insurance, real estate, and leasing services. Computer systems design will continue to outperform most industries in terms of production and employment growth, as demand is expected to be supported by technological changes. Demand for workers in this occupation will continue to be driven by the need for businesses and governments to upgrade their ICT systems to keep up with the most recent technologies and remain competitive.

Strategic Planning at UWaterloo

Part of the "Waterloo at 100" strategic plan includes [Global Futures](#), which focuses on what lies ahead for humanity and the planet and inspires collaborative and interdisciplinary approaches in educational programs, research, and innovation activities. Under Global Futures are specific calls to action regarding [Health Futures.](#) As a result of these initiatives, we will be seeking to make connections with the Health Futures council to work alongside them, leverage partnerships and develop co-op opportunities for students.

Employer and Employment Relations Feedback

CEE reached out to selected, relevant employers as well as UWaterloo faculty members who have established connections to the health tech sector, by introducing the proposed program and soliciting feedback on the level of interest in future Health Technologies program students.

No faculty members and only one employer provided feedback at this time, therefore, more engagement both within Waterloo and outside of Waterloo will be necessary to identify new connections as well as those that already exist so that we can build a robust employment market for these students.

Employer Feedback

Employers were asked the same eight questions and one responded; their answers are listed below. Overall, the interest in the Health Technologies program seems to be positive, however, the employer noted that they are more interested in health sciences skills rather than engineering or business skills. It will be prudent for students in this program to focus on honing their specialized health sciences skills and to ensure they are able to differentiate themselves from other Engineering students.

Employer Survey Questions and Response from One Employer

1. Based on the introduction to the program provided, would you be interested in hiring co-op students from this program? (why or why not)

Possibly from the Electrical & Computer or Systems Design programs. We have had good bioinformatics undergraduate co-op students from both CS and Systems Design Engineering in the past. I would not be interested in students from the Chemical, Management Science, or Mechanical & Mechatronics programs.

2. What additional information about this program would be helpful for you to know?

Since Health Informatics is listed as an Area of Employment Interest, I would want to know what background the students have in the health sciences as opposed to engineering.

3. What specific skills would you expect students in this program to have?

Exceptional computer programming and scripting skills, experience with high-performance (i.e., cluster) computing and/or cloud computing, proficiency in scripting language (Python), advanced statistical analysis (likely proficiency in R/Bioconductor). These are more skills I would LIKE them to have, rather than EXPECT them to have, though.

4. Are there specific roles or job titles that you feel would be a good fit for Health Technologies co-op student within your organization?

Bioinformatician would be the most likely fit, or Programmer/Analyst. Not interested in business skills.

5. Which term(s) would you be most interested in hiring co-op students from this program? (Fall, Winter, Spring)

Any or all, we hire students continuously. The schedule above says only Spring or Fall though. The program might be more attractive if students were also available in Winter.

6. What length of time would you prefer to hire these co-op students for? (4, 8, 12 months)

8 months has usually worked well for us. 12 seems like too long a commitment, whereas 4 is often just enough time to bring a student up to speed. That works out well if they are returning, so if the intent is to have multiple terms, then 4-month terms would be ok if the student returns.

7. Is there anything else you'd like to add regarding the potential addition of the Bachelor of Business and Applied Science co-op program at the University of Waterloo?

I don't really understand the need to include the business part in here. There is an undergraduate Science & Business co-op program and I have never been impressed with the skills that these students have (and have rarely interviewed them).

8. Finally, do you have any suggestions on how Co-operative and Experiential Education at the University of Waterloo could better engage companies in your industry/sector?

You're doing a great job with us. Not sure if hitting the Toronto teaching hospitals (i.e., TAHSN network) at a higher level might get you more traction than interacting with individual institutions.

UWaterloo Employment Relations Team Feedback

The Employment Relations team within CEE was consulted and provided feedback on interactions they've had with other co-op employers as well as changes they've noticed in hiring patterns and in the current labour market.

The Employment Relations team stated that although there is demand for these kinds of specialized skillsets, this is a relatively new area of employment that is still developing, particularly in the private sector. As a result, competition between the faculties of Health and Engineering as well as competition with other universities in Ontario and Quebec suggests that students will need to engage early and often in their job search with a strong sense of independence. Employers have shared that the work in this sector does not lend itself to 4-month work terms since the responsibilities are complex and project-based and there is a strong interest to hire students for longer, 8-month work terms.

Students should also be aware that pay rates may not be as attractive as in the traditional "tech" sector. They should be encouraged to plan accordingly for remuneration to be more modest than in the tech sector.

GradWIL Pilot

Building on Waterloo's tradition and strength in experiential learning, students in graduate programs are encouraged to think beyond the classroom through engagement in work-integrated learning (WIL) opportunities. WIL provides students with crucial professional development, networking, funding, and opportunities to build skills for transition to the workforce. Through a partnership between Graduate Studies and Postdoctoral Affairs (GSPA) and Co-operative and Experiential Education (CEE), which began in 2020, the university continues to further develop graduate WIL opportunities.

Co-op is in the midst of a Graduate Work Integrated Learning pilot and in 2024 will be proposing an enhanced student support model and new program requirements for graduate students. It will leverage existing resources and infrastructure and provide customized resources and supports for programs and students. MEng programs and students involved in pilots are providing feedback and input to these changes.

Currently, the project team is also in the process of consulting with the campus community, including students, faculty, staff and senior leadership, to gather feedback on proposed models of grad WIL.

Conclusion

External industry data projects that the medical/health technologies sector will continue to grow over the next five years, driven by increases in automation, artificial intelligence, and research. This appears to

position the Health Technologies program well to address this market's needs, however, Health Technologies students will need to engage early and often in their job search with a strong sense of independence. These students will need to have clarity about their sense of purpose and their intended contributions to the sector so that CEE can support them in their job search. The planned student support model that has emerged from the GradWIL pilots will provide students with resources, programming, and advising to enable meaningful engagement with the health technologies sector.

The health technologies sector has not been an area of specific focus of opportunity development for CEE. The Health Technologies program will need engagement from those leading in Health Futures (researchers, faculty members and staff) so that relationships can be built in the sector to create opportunities for work terms and other WIL experiences for the M. Eng Health Technologies program.

CEE will leverage relationships with health-related organizations to identify potential health technology jobs, noting that historically, co-op hiring has been focused on patient care and research. To date, relatively few Engineering students are employed in health-related organizations, presenting both a challenge and opportunity for CEE and Waterloo to further investigate opportunities that would align with the skills students in the Health Technologies program would acquire.

CEE, the program, Health Futures researchers, faculty, staff, and students will need to partner to develop a plan to build a robust market of jobs for Health Technologies co-op students.

UNIVERSITY OF WATERLOO | Senate

For Approval   **Open Session**

To: Senate

From: Senate Graduate and Research Council

Presenter(s):   Charmaine Dean
                     Vice-President, Research & International

                     Clarence Woudsma
                     Interim Co-Associate Vice-President, Graduate Studies and
                     Postdoctoral Affairs

Date of Meeting: March 3, 2025

Agenda Item: **6.2   Senate Graduate and Research Council: Faculty of
                                   Environment – Major Modifications**

Recommendation/Motion

Motion: That Senate approve the major modifications to the Doctor of Philosophy (PhD) in
Planning – Water, MA in Geography, MES in Geography, MSc in Geography, PhD in
Geography, MES in Sustainability Management effective 1 May 2025, as presented.

Summary

Senate Graduate & Research Council met on January 27, 2025 and agreed to forward the
following items to Senate for approval as part of the regular agenda.

a. PhD Planning (Water)
    The School of Planning is joining the Collaborative Water Program (CWP) and is thus
    adding a Doctor of Philosophy (PhD) in Planning - Water program.

b. GEOG Redesign (MA, MES, MSc, PhD)
    Program Updates – removing joint program wording, changing course requirements
    and changing electives wording

c. MES in Sustainability Management
    Adding coursework study option

Proposal/Rationale

a. PhD Planning (Water)

The School of Planning is joining the Collaborative Water Program (CWP) to expand relevant
program offerings available to our students. The CWP will add a foundational education in

water from an interdisciplinary perspective to the PhD in Planning. The CWP will provide graduate students with water-related problems to solve in interdisciplinary teams. The addition of the CWP to PhD in Planning is intended to enhance their studies to support students understanding how their discipline applies to water-related issues. Joining the CWP will allow current and future students studying water-related issues to gain knowledge and support from CWP courses and advisors. Several students have already expressed interest in the program

b. GEOG Redesign (MA, MES, MSc, PhD)

Dissolving the joint program arrangement with Wilfrid Laurier University. Waterloo and Laurier will continue to offer the programs separately. Some of the required courses are also being updated due to the dissolution.

c. MES in Sustainability Management

Over the last few years, a number of challenges have emerged in the delivery of the Master of Environmental Studies (MES) in Sustainability Management (SUSM) program. These challenges were identified via consultations in the recent program cyclical review, along with the SEED Director, Associate Director of Grad Studies (research programs), faculty, and graduate administrators. The individuals consulted voiced support for the creation of a coursework study option within the program. Please note that none of the program learning outcomes are being revised as part of the proposed program revisions. Below is a summary of the findings from these consultations:

First, the program has a high demand with many applicants meeting the requirements, but they cannot find a supervisor due to limited department capacity. For example, since the program started in 2016 the average number of applicants is 82 per year, whereas the department average number of offers is 33. In recent years, supervisory capacity has decreased further widening the gap between eligible applicants and spots in the program. With a coursework option, students would not require a dedicated supervisor opening up capacity to admit more students who meet requirements.

Second, both students and faculty have expressed support for a coursework option as a means of introducing flexibility for streaming between a research and course-based program. Students could then transfer to the research-based option depending on their ambitions and fit. Research ready students could also be positioned for admission to the SUSM PhD program.

Third, the streaming component could also address challenges some students experience in completing the degree on time, which was also identified as a problem in the cyclical review. We have tried to move some students to other programs within the department and faculty, but aligning program requirements proves to be a barrier. With a coursework option, these students could transition and still complete the degree.

Jurisdictional Information

This item is being submitted to Senate in accordance with Senate Bylaw 2, section 4.03(e): "Consider, study and review all proposals for new graduate programs, the deletion of graduate programs, major changes to existing graduate programs, arrange for internal appraisals as the council shall see fit, and make recommendations to Senate thereon."

Governance Path

Environment Faculty Council: 11/14/2024

Senate Graduate and Research Council: 01/27/2025

Documentation Provided

Appendix: Proposed Major Modifications – Faculty of Environment

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

Faculty: Environment

Program: Doctor of Philosophy (PhD) in Planning - Water

Program contact name(s): Jeremy Pittman

Form completed by: Jeremy Pittman

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

The School of Planning is joining the Collaborative Water Program (CWP) and is thus adding a Doctor of Philosophy (PhD) in Planning - Water program.

Is this a <u>major modification</u> to the program? Yes

Rationale for change(s):

The School of Planning is joining the Collaborative Water Program (CWP) to expand relevant program offerings available to our students. The CWP will add a foundational education in water from an interdisciplinary perspective to the PhD in Planning. The CWP will provide graduate students with water-related problems to solve in interdisciplinary teams. The addition of the CWP to PhD in Planning is intended to enhance their studies to support students understanding how their discipline applies to water-related issues. Joining the CWP will allow current and future students studying water-related issues to gain knowledge and support from CWP courses and advisors. Several students have already expressed interest in the program.

Proposed effective date: Term: Spring   Year: 2025

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

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs?group=Planning

Current PhD in Planning Graduate Studies Academic Calendar content:	**Proposed PhD in Planning - Water Graduate Studies Academic Calendar content:**
Doctor of Philosophy (PhD) in Planning **Admit term(s)** • Fall **Delivery mode**	**Doctor of Philosophy (PhD) in Planning <u>-</u> <u>Water</u>** **Admit term(s)** • Fall

Current PhD in Planning Graduate Studies Academic Calendar content:	Proposed PhD in Planning - Water Graduate Studies Academic Calendar content:

• On-campus
 	
Registration option(s)
• Full-time
• Part-time
 	
Study option(s)
• Thesis
 	
Length of program
• Full-time: 12 terms (48 months)
• Part-time: 18 terms (72 months)
 	
Graduate research fields
• Human and Built Environment
• Physical/Natural Environment
 	
Admission requirements: Minimum requirements
• A master's degree with excellent standing (minimum 80%) from a recognized university. Evidence of ability to pursue independent research is essential.
• English language proficiency (ELP) (if applicable)
 	
Admission requirements: Application materials
• Résumé
• Supplementary information form
• Transcript(s)
   o Two official academic transcripts from each post-secondary institution.
• Writing sample
   o At least one substantial example of work completed during the last two years of academic study. Students with professional experience may submit a professional report of which they were sole or senior author.
 	
Admission requirements: References
• Number of references: 3
• Type of references: at least 2 academic
 	
Degree requirements
• Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
 	
Course requirements
• Students must complete the following graduate level courses (in the following sequence):
   o Fall (year 1):
	Delivery mode
	• On-campus
	
	Registration option(s)
	• Full-time
	• Part-time
	
	Program type(s)
	• Collaborative
	
	Study option(s)
	• Thesis
	
	Length of program
	• Full-time: 12 terms (48 months)
	• Part-time: 18 terms (72 months)
	
	~~Graduate research fields~~
	• ~~Human and Built Environment~~
	• ~~Physical/Natural Environment~~
	
	Admission requirements: Minimum requirements
	• A master's degree with excellent standing (minimum 80%) from a recognized university. Evidence of ability to pursue independent research is essential.
	• English language proficiency (ELP) (if applicable)
	
	Admission requirements: Application materials
	• Résumé
	• Supplementary information form
	• Transcript(s)
	   o Two official academic transcripts from each post-secondary institution.
	• Writing sample
	   o At least one substantial example of work completed during the last two years of academic study. Students with professional experience may submit a professional report of which they were sole or senior author.
	
	Admission requirements: References
	• Number of references: 3
	• Type of references: at least 2 academic
	
	Degree requirements
	• Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).

Current PhD in Planning Graduate Studies Academic Calendar content:	Proposed PhD in Planning - Water Graduate Studies Academic Calendar content:
- PLAN 700 Planning Paradigms and Theory (0.5 unit) - PLAN 801 Foundations of Planning Scholarship (0.5 unit) - PLAN 800A PhD Colloquium 1 (0.0 unit, credit/no credit, held with PLAN 800C) - Winter (year 1): - PLAN 802 Advanced Planning Theory (0.5 unit) - PLAN 800B PhD Colloquium 2 (0.0 unit, credit/no credit, held with PLAN 800D) - Spring (year 1): - PLAN 803 Advanced Research Design in Planning (0.5 unit) - Fall (year 2): - PLAN 800C PhD Colloquium 3 (0.0 unit, credit/no credit, held with PLAN 800A) - Winter (year 2): - PLAN 800D PhD Colloquium 4 (0.0 unit, credit/no credit, held with PLAN 800B) - Students must take 1 additional PLAN elective in Year 1 and may be directed take up to 2 additional one-term graduate level courses by the supervisory committee. **Milestone requirements** **PhD Comprehensive Examination** - Students are required to meet the University-level PhD Comprehensive Examination minimum requirements. - Further details are available from the School of Planning website. **PhD Research Plan** - Students must complete a research plan approved by the supervisory committee by the completion of 2nd year. **PhD Thesis** - A PhD thesis in planning constitutes original scholarship and an innovative contribution to knowledge in planning and related fields. The thesis must demonstrate familiarity with existing work in the field and show ability to design an approach, conduct rigorous and advanced research, present findings and results, and defend conclusions in a scholarly manner. As well, the thesis must clearly demonstrate how it advances knowledge in a	**Course requirements** - Students must complete the following graduate level courses (in the following sequence): - Water core courses (note: students should consult the schedule of classes to determine when the WATER courses are offered): - WATER 601 Integrated Water Management - WATER 602 Integrated Water Management Project - Fall (year 1): - PLAN 700 Planning Paradigms and Theory (0.5 unit) - PLAN 801 Foundations of Planning Scholarship (0.5 unit) - PLAN 800A PhD Colloquium 1 (0.0 unit, credit/no credit, held with PLAN 800C) - Winter (year 1): - PLAN 802 Advanced Planning Theory (0.5 unit) - PLAN 800B PhD Colloquium 2 (0.0 unit, credit/no credit, held with PLAN 800D) - Spring (year 1): - PLAN 803 Advanced Research Design in Planning (0.5 unit) - Fall (year 2): - PLAN 800C PhD Colloquium 3 (0.0 unit, credit/no credit, held with PLAN 800A) - Winter (year 2): - PLAN 800D PhD Colloquium 4 (0.0 unit, credit/no credit, held with PLAN 800B) - Students must take 1 additional PLAN elective in Year 1 and may be directed take up to 2 additional one-term graduate level courses by the supervisory committee. - This degree is offered through the Collaborative Water Program. This program, jointly offered by a range of departments/schools across several academic faculties, promotes the development of interdisciplinary perspectives on water. Collaborative Water Program students complete their specialist training in their respective home departments, while working with colleagues from a variety of other departments/schools in core

Current PhD in Planning Graduate Studies Academic Calendar content:	Proposed PhD in Planning - Water Graduate Studies Academic Calendar content:
chosen area of study within planning. A PhD thesis in planning must be written in compliance with the requirements outlined in the "Thesis" section of the Graduate Studies and Postdoctoral Affairs site (which includes detailed information regarding thesis exam regulations, formatting, editing, copyright, submission, etc.).	interdisciplinary courses (WATER 601 and WATER 602). o Students who have already completed WATER 601 and WATER 602 as part of their Masters Water degree, must complete the following course requirement: ▪ 1 graduate level water course from outside the student's home Faculty agreed to by the student's Supervisor and the Collaborative Water Program Director. **Milestone requirements** **Collaborative Research Seminar I** • Students are required to present a seminar on their thesis or major paper research proposal and, if appropriate, early stage results to current and past Water students and Water Institute faculty members. Seminars will normally occur following the completion of WATER 601 and WATER 602. Seminars will provide the opportunity for students to discuss how learnings from Water courses were applied in, or influenced, research proposals or research work in the student's home department/school. Seminars will normally be poster presentations at Water Institute organized events. The seminar is not an oral examination of the thesis or paper; rather, its purpose is to develop the student's ability to communicate their research in an organized and informative manner. **Collaborative Research Seminar II** • Students who have completed the Collaborative Research Seminar 1 as part of their Masters Water degree, must complete the Collaborative Research Seminar 2. • Students are required to present a seminar on their PhD thesis proposal to current and past water students and Water Institute faculty members. Seminars will normally occur following the completion of required courses and the comprehensive exam. Seminars should present how learnings from the Collaborative Water Program were applied in, or influenced, thesis proposals. Seminars will normally be poster presentations or talks at Water Institute organized events. The seminar is not an oral examination of the thesis

Current PhD in Planning Graduate Studies Academic Calendar content:	Proposed PhD in Planning - Water Graduate Studies Academic Calendar content:
	proposal; rather, its purpose is to develop the student's ability to communicate their research in an organized and informative manner. **Collaborative Academic Contribution** • Students who have completed the Collaborative Water Program Research Seminar 1 as part of their Masters Water degree, must complete the Collaborative Academic Contribution milestone. • Students are required to make an academic contribution to the Collaborative Water Program. The proposed contribution will be documented by the student and approved by the student's Supervisor and the Collaborative Water Program Director. Potential contributions may include, but not be limited to: ○ Development of new or improved curricula or course content; ○ Delivery of a lecture(s); ○ Preparation of a publication; ○ Preparation of a case study; ○ Mentorship of a group of students. **PhD Comprehensive Examination** • Students are required to meet the University-level PhD Comprehensive Examination minimum requirements. • Further details are available from the School of Planning website. **PhD Research Plan** • Students must complete a research plan approved by the supervisory committee by the completion of 2nd year. **PhD Thesis** • A PhD thesis in planning constitutes original scholarship and an innovative contribution to knowledge in planning and related fields. The thesis must demonstrate familiarity with existing work in the field and show ability to design an approach, conduct rigorous and advanced research, present findings and results, and defend conclusions in a scholarly manner. As well, the thesis must clearly demonstrate how it advances knowledge in a chosen area of study within planning and related to water. A PhD thesis in planning must be written in compliance with the requirements outlined in the "Thesis" section of the Graduate Studies and Postdoctoral Affairs site (which includes detailed information regarding thesis

Current PhD in Planning Graduate Studies Academic Calendar content:	Proposed PhD in Planning - Water Graduate Studies Academic Calendar content:
	exam regulations, formatting, editing, copyright, submission, etc.).

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

Students currently registered in the PhD in Planning program will have the option to transfer/program change into the equivalent PhD in Planning - Water program.

Department/School approval date (09/13/2024):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 10/03/24
Faculty approval date (mm/dd/yy): 11/14/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

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

Faculty: Environment

Program: Master of Arts (MA) in Geography

Program contact name(s): Maria Strack

Form completed by: Maria Strack

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

Dissolving the joint program arrangement with Wilfrid Laurier University. Waterloo and Laurier will continue to offer the programs separately. Some of the required courses are also being updated due to the dissolution.

Is this a major modification to the program? Yes

Rationale for change(s):

The rationale for the creation of the joint Waterloo-Laurier Graduate Program in Geography (W-LGPIG) in 1992 was to capitalise on the relative size of the Geography departments at the two institutions at the time and to provide faculty and students with access to a PhD program. Both departments have grown since that time and in recent years the two programs had grown considerably independent of each other, and institutional priorities and infrastructural frictions challenged the cohesion and operation of the W-LGPIG. During the self-study process for the 2021/22 cyclical academic program review, faculty members of the Joint program at both institutions decided that dissolving the program was the best path forward. As a result, reviewers were asked to weigh in on the implications of this move and the quality of the programs if run independently. The reviewers concluded that both institutions are well suited to hosting excellent Geography independent graduate programs and that students and faculty in both Departments will likely continue to benefit from the positive aspects of the Joint program, such as community, shared research interests, etc.

Problems related to "jointness" of the program had been identified earlier as well. For example, the 2014/15 cyclical academic program review of the joint program included the following recommendation: "It was brought to our attention by the students that there may not exist equal ease of access to facilities at the "other" university. The problem may arise in part from lack of awareness by all students of how access may be secured, in part from lack of awareness on behalf of the UW and WLU administrative structures as to why equal access is important given the nature of this joint-program. We recommend that W-LGPIG investigate and negotiate the resolution to issues of unequal access." In response to this recommendation, opportunities to overcome this issue were explored, but a complete solution could not be found. The fundamental issue was that students were enrolled at their home institution and this limited their access to programs and facilities at the other institution that fell outside the joint program (e.g., the Collaborative Water Program at Waterloo). This example highlights some of the institutional challenges that contributed to the mutual decision to dissolve the joint program.

Proposed effective date: Term: Spring   Year: 2025

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

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

Master of Arts (MA) in Geography
 	
Admit term(s)
 	
- Fall
- Winter
 	
Delivery mode
 	
- On-campus
 	
Registration option(s)
 	
- Full-time
- Part-time
 	
~~Program type(s)~~
 	
- ~~Joint~~
 	
Study option(s)
 	
- Thesis
- Master's Research Paper
 	
Length of program
 	
- Thesis option:
  - Full-time: limit of six terms
  - Part-time: limit of twelve terms
- Master's Research Paper option:
  - Full-time: limit of three terms
  - Part-time: limit of six terms
 	
Graduate research fields
 	
- Environmental and Resource Management
- Geomatics
- Human Geography
 	
Admission requirements: Minimum requirements
 	
- An honours undergraduate degree or equivalent with at least a 75% average. Normally, the undergraduate degree will be in Geography, but applications are welcomed from superior students regardless of background. However, students must demonstrate that they have the necessary background to pursue graduate work in their field of specialization.
	Master of Arts (MA) in Geography
	
	Admit term(s)
	
	- Fall
	- Winter
	
	Delivery mode
	
	- On-campus
	
	Registration option(s)
	
	- Full-time
	- Part-time
	
	Study option(s)
	
	- Thesis
	- Master's Research Paper
	
	Length of program
	
	- Thesis option:
	  - Full-time: limit of six terms
	  - Part-time: limit of twelve terms
	- Master's Research Paper option:
	  - Full-time: limit of three terms
	  - Part-time: limit of six terms
	
	Graduate research fields
	
	- Environmental and Resource Management
	- Geomatics
	- Human Geography
	
	Admission requirements: Minimum requirements
	
	- An honours undergraduate degree or equivalent with at least a 75% average. Normally, the undergraduate degree will be in Geography, but applications are welcomed from superior students regardless of background. However, students must demonstrate that they have the necessary background to pursue graduate work in their field of specialization.
	- English language proficiency (ELP) (if applicable)

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

• English language proficiency (ELP) (if applicable)
 	
Admission requirements: Application materials
 	
• Résumé
• Supplementary information form
• Transcript(s)
 	
Admission requirements: References
 	
• Number of references: 3
• Type of references: academic references are required unless a professional reference is specified.
 	
Degree requirements
 	
• Students must complete the course and milestone requirements associated with their chosen study option in addition to the Graduate Academic Integrity Module (Graduate AIM).
 	
Thesis option: Course requirements
 	
• Complete all of the following
  o Complete all the following:
    ▪ GEOG700 - ~~Professional Skills Development for Master's Students~~ (0.50)
  o Complete 1 of the following:
    ▪ ~~GEOG600 - Foundations in Spatial Data Handling (0.50)~~
    ▪ GEOG620 - Foundations in Human Geography (0.50)
    ▪ GEOG640 - ~~Foundations in Environmental Science~~ (0.50)
    ▪ ~~GEOG660 - Foundations in Resource and Environmental Management (0.50)~~
  o Any 2 other GEOG graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take ~~a non-GEOG elective course~~ with approval of the Graduate Officer.
 	
    Failure to obtain a final grade of at least 70% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program.
	Admission requirements: Application materials
	
	• Résumé
	• Supplementary information form
	• Transcript(s)
	
	Admission requirements: References
	
	• Number of references: 3
	• Type of references: academic references are required unless a professional reference is specified.
	
	Degree requirements
	
	• Students must complete the course and milestone requirements associated with their chosen study option in addition to the Graduate Academic Integrity Module (Graduate AIM).
	
	Thesis option: Course requirements
	
	• Complete all of the following
	  o Complete all the following:
	    ▪ GEOG700<u>A - Geographic Scholarship and Practice 1 - Masters</u> (0.25)
	    ▪ <u>GEOG700B - Geographic Scholarship and Practice 2 - Masters (0.25)</u>
	  o Complete 1 of the following:
	    ▪ <u>GEOG 604 – Spatial Statistics (0.50)</u>
	    ▪ <u>GEOG617 - Applied Statistics in Ecology and Environment (0.50)</u>
	    ▪ GEOG620 - Foundations in Human Geography (0.50)
	    ▪ <u>GEOG625 – Qualitative Methods in Geography (0.50)</u>
	    ▪ GEOG640 – <u>Contextualizing Research in Earth System Science</u> (0.50)
	  o Any 2 other GEOG <u>or GEMCC</u> graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take <u>an elective course outside of GEOG or GEMCC</u> with approval of the Graduate Officer.
	
	    Failure to obtain a final grade of at least 70% in each course will result in an automatic review of the student's status

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
The coursework part of the program is designed to develop advanced understanding of issues relating to environmental studies, and also to provide students with training in additional methods/skills for their thesis research and its defence. Students will normally complete the 4 one-term courses during their first year.	in the program, which may require that the student withdraw from the program.

The coursework part of the program is designed to develop advanced understanding of issues relating to environmental studies, and also to provide students with training in additional methods/skills for their thesis research and its defence. Students will normally complete the 4 one-term courses during their first year.

Left column:

Thesis option: Milestone requirements

Master's Thesis Proposal

- During the first year, students develop a thesis proposal that will be approved by their supervisor and committee, normally before the end of the first year.

Master's Thesis

- Upon approval of the thesis proposal, students will then proceed to the research and writing of the thesis. Normally, students should complete and defend the thesis within two years of starting the program.

Other requirements

- If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.

Master's Research Paper option: Course requirements

- Complete all of the following
  - Complete all the following:
    - GEOG700 - ~~Professional Skills Development for Master's Students~~ (0.50)
  - Complete 1 of the following:
    - ~~GEOG600 - Foundations in Spatial Data Handling (0.50)~~
    - GEOG620 - Foundations in Human Geography (0.50)
    - GEOG640 - ~~Foundations in Environmental Science~~ (0.50)
    - ~~GEOG660 - Foundations in Resource and Environmental Management (0.50)~~
  - Any 4 other GEOG graduate level courses (0.50 unit weight per course)

Right column:

Thesis option: Milestone requirements

Master's Thesis Proposal

- During the first year, students develop a thesis proposal that will be approved by their supervisor and committee, normally before the end of the first year.

Master's Thesis

- Upon approval of the thesis proposal, students will then proceed to the research and writing of the thesis. Normally, students should complete and defend the thesis within two years of starting the program.

Other requirements

- If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.

Master's Research Paper option: Course requirements

- Complete all of the following
  - Complete all the following:
    - GEOG700A - Geographic Scholarship and Practice 1 - Masters (0.25)
    - GEOG700B - Geographic Scholarship and Practice 2 - Masters (0.25)
  - Complete 1 of the following:
    - GEOG604 - Spatial Statistics (0.50)
    - GEOG617 - Applied Statistics in Ecology and Environment (0.50)

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
that complement the student's graduate research field. Students may elect to take ~~non~~ ~~GEOG elective courses~~ with approval of the Graduate Officer. Failure to obtain a final grade of at least 70% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program. **Master's Research Paper option: Milestone requirements** **Master's Research Paper** • Each student will have a Supervisor and a Reader. The student will develop a research proposal for approval by their Supervisor, normally prior to the end of the first term. The research paper will normally be completed in the Spring (third) term. The paper should be approximately 12,000 words/50 pages in length. **Other requirements** • If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.	▪ GEOG620 - Foundations in Human Geography (0.50) ▪ <u>GEOG625 - Qualitative Methods in Geography (0.50)</u> ▪ GEOG640 - <u>Contextualizing Research in Earth System Science</u> (0.50) ○ Any 4 other GEOG <u>or GEMCC</u> graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take <u>elective courses outside of GEOG or GEMCC</u> with approval of the Graduate Officer. Failure to obtain a final grade of at least 70% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program. **Master's Research Paper option: Milestone requirements** **Master's Research Paper** • Each student will have a Supervisor and a Reader. The student will develop a research proposal for approval by their Supervisor, normally prior to the end of the first term. The research paper will normally be completed in the Spring (third) term. The paper should be approximately 12,000 words/50 pages in length. **Other requirements** • If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.

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

Currently registered students can complete their degrees using the calendar requirements active at the time of their entry into the program. Most will have completed their course requirements prior to the active date for these changes. These calendar changes update the list of required courses, but retain the same number of required courses. Further, students currently registered in the program will already meet these revised course requirements in most cases.

Department/School approval date (mm/dd/yy): 09/20/24
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 09/27/24

Faculty approval date (mm/dd/yy): 11/14/24
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 <u>content revision instructions</u> and information regarding <u>major/minor modifications</u>. For questions about the form submission, contact <u>Trevor Clews</u>, Graduate Studies and Postdoctoral Affairs (GSPA).

Faculty: Environment

Program: Master of Environmental Studies (MES) in Geography

Program contact name(s): Maria Strack

Form completed by: Maria Strack

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

Dissolving the joint program arrangement with Wilfrid Laurier University. Waterloo and Laurier will continue to offer the programs separately. Some of the required courses are also being updated due to the dissolution.

Is this a <u>major modification</u> to the program? Yes

Rationale for change(s):

The rationale for the creation of the joint Waterloo-Laurier Graduate Program in Geography (W-LGPIG) in 1992 was to capitalise on the relative size of the Geography departments at the two institutions at the time and to provide faculty and students with access to a PhD program. Both departments have grown since that time and in recent years the two programs had grown considerably independent of each other, and institutional priorities and infrastructural frictions challenged the cohesion and operation of the W-LGPIG. During the self-study process for the 2021/22 cyclical academic program review, faculty members of the Joint program at both institutions decided that dissolving the program was the best path forward. As a result, reviewers were asked to weigh in on the implications of this move and the quality of the programs if run independently. The reviewers concluded that both institutions are well suited to hosting excellent Geography independent graduate programs and that students and faculty in both Departments will likely continue to benefit from the positive aspects of the Joint program, such as community, shared research interests, etc.

Problems related to "jointness" of the program had been identified earlier as well. For example, the 2014/15 cyclical academic program review of the joint program included the following recommendation: "It was brought to our attention by the students that there may not exist equal ease of access to facilities at the "other" university. The problem may arise in part from lack of awareness by all students of how access may be secured, in part from lack of awareness on behalf of the UW and WLU administrative structures as to why equal access is important given the nature of this joint-program. We recommend that W-LGPIG investigate and negotiate the resolution to issues of unequal access." In response to this recommendation, opportunities to overcome this issue were explored, but a complete solution could not be found. The fundamental issue was that students were enrolled at their home institution and this limited their access to programs and facilities at the other institution that fell outside the joint program (e.g., the Collaborative Water Program at Waterloo). This example highlights some of the institutional challenges that contributed to the mutual decision to dissolve the joint program.

Proposed effective date: Term: Spring   Year: 2025

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

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Master of Environmental Studies (MES) in Geography	**Master of Environmental Studies (MES) in Geography**
Admit term(s)	**Admit term(s)**
• Fall • Winter	• Fall • Winter
Delivery mode	**Delivery mode**
• On-campus	• On-campus
Registration option(s)	**Registration option(s)**
• Full-time • Part-time	• Full-time • Part-time
~~**Program type(s)**~~	**Study option(s)**
• ~~Joint~~	• Thesis • Master's Research Paper
Study option(s)	**Length of program**

• Thesis
• Master's Research Paper
	• Thesis option:
	  o Full-time: limit of six terms
	  o Part-time: limit of twelve terms
	• Master's Research Paper option:
	  o Full-time: limit of three terms
	  o Part-time: limit of six terms

Length of program	**Graduate research fields**

• Thesis option:
  o Full-time: limit of six terms
  o Part-time: limit of twelve terms
• Master's Research Paper option:
  o Full-time: limit of three terms
  o Part-time: limit of six terms
	• Environmental and Resource Management
	• Environmental Science
	• Geomatics
	• Human Geography

Graduate research fields	**Admission requirements: Minimum requirements**
• Environmental and Resource Management • Environmental Science • Geomatics • Human Geography	• An honours undergraduate degree or equivalent with at least a 75% average. Normally, the undergraduate degree will be in Geography, but applications are welcomed from superior students regardless of background. However, students must demonstrate that they have the necessary background to pursue graduate work in their field of specialization.
Admission requirements: Minimum requirements	
• An honours undergraduate degree or equivalent with at least a 75% average. Normally, the undergraduate degree will be in Geography, but applications are welcomed from superior students regardless of background. However, students must	

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

• demonstrate that they have the necessary background to pursue graduate work in their field of specialization.
• English language proficiency (ELP) (if applicable)
 	
Admission requirements: Application materials
 	
• Résumé
• Supplementary information form
• Transcript(s)
 	
Admission requirements: References
 	
• Number of references: 3
• Type of references: academic references are required unless a professional reference is specified.
 	
Degree requirements
 	
• Students must complete the course and milestone requirements associated with their chosen study option in addition to the Graduate Academic Integrity Module (Graduate AIM).
 	
Thesis option: Course requirements
 	
• Complete all of the following
    o Complete all the following:
        ▪ GEOG700 - ~~Professional Skills Development for Master's Students~~ (0.50)
    o Complete 1 of the following:
        ▪ ~~GEOG600 - Foundations in Spatial Data Handling (0.50)~~
        ▪ GEOG620 - Foundations in Human Geography (0.50)
        ▪ GEOG640 - ~~Foundations in Environmental Science~~ (0.50)
        ▪ ~~GEOG660 - Foundations in Resource and Environmental Management (0.50)~~
    o Any 2 other GEOG graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take ~~a non-GEOG elective course~~ with approval of the Graduate Officer.
 	
    Failure to obtain a final grade of at least 70% in each course will result in an automatic review of the student's status
	• English language proficiency (ELP) (if applicable)
	
	Admission requirements: Application materials
	
	• Résumé
	• Supplementary information form
	• Transcript(s)
	
	Admission requirements: References
	
	• Number of references: 3
	• Type of references: academic references are required unless a professional reference is specified.
	
	Degree requirements
	
	• Students must complete the course and milestone requirements associated with their chosen study option in addition to the Graduate Academic Integrity Module (Graduate AIM).
	
	Thesis option: Course requirements
	
	    o Complete all the following:
	        ▪ <u>GEOG700A - Geographic Scholarship and Practice 1 - Masters (0.25)</u>
	        ▪ <u>GEOG700B - Geographic Scholarship and Practice 2 - Masters (0.25)</u>
	    o Complete 1 of the following:
	        ▪ <u>GEOG 604 – Spatial Statistics (0.50)</u>
	        ▪ <u>GEOG617 - Applied Statistics in Ecology and Environment (0.50)</u>
	        ▪ GEOG620 - Foundations in Human Geography (0.50)
	        ▪ <u>GEOG625 – Qualitative Methods in Geography (0.50)</u>
	        ▪ GEOG640 - <u>Contextualizing Research in Earth System Science</u> (0.50)
	    o Any 2 other GEOG <u>or GEMCC</u> graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take <u>an elective course outside of GEOG or GEMCC</u> with approval of the Graduate Officer.
	
	    Failure to obtain a final grade of at least

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
in the program, which may require that the student withdraw from the program. The coursework part of the program is designed to develop advanced understanding of issues relating to environmental studies, and also to provide students with training in additional methods/skills for their thesis research and its defence. Students will normally complete the 4 one-term courses during their first year.	70% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program. The coursework part of the program is designed to develop advanced understanding of issues relating to environmental studies, and also to provide students with training in additional methods/skills for their thesis research and its defence. Students will normally complete the 4 one-term courses during their first year.

Thesis option: Milestone requirements

Master's Thesis Proposal

- During the first year, students develop a thesis proposal that will be approved by their supervisor and committee, normally before the end of the first year.

Master's Thesis

- Upon approval of the thesis proposal, students will then proceed to the research and writing of the thesis. Normally, students should complete and defend the thesis within two years of starting the program.

Other requirements

- If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.

Master's Research Paper option: Course requirements

- Complete all of the following
  - Complete all the following:
    - GEOG700 – Professional Skills Development for Master's Students (0.50)
  - Complete 1 of the following:
    - GEOG600 - Foundations in Spatial Data Handling (0.50)
    - GEOG620 - Foundations in Human Geography (0.50)
    - GEOG640 - Foundations in Environmental Science (0.50)

Thesis option: Milestone requirements

Master's Thesis Proposal

- During the first year, students develop a thesis proposal that will be approved by their supervisor and committee, normally before the end of the first year.

Master's Thesis

- Upon approval of the thesis proposal, students will then proceed to the research and writing of the thesis. Normally, students should complete and defend the thesis within two years of starting the program.

Other requirements

- If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.

Master's Research Paper option: Course requirements

- Complete all of the following
  - Complete all the following:
    - GEOG700A - Geographic Scholarship and Practice 1 - Masters (0.25)
    - GEOG700B - Geographic Scholarship and Practice 2 - Masters (0.25)
  - Complete 1 of the following:
    - GEOG 604 – Spatial Statistics (0.50)

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

• ~~GEOG660 - Foundations in Resource and Environmental Management (0.50)~~
  o Any 4 other GEOG graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take ~~non-GEOG elective courses~~ with approval of the Graduate Officer.
 	
    Failure to obtain a final grade of at least 70% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program.
 	
Master's Research Paper option: Milestone requirements
 	
Master's Research Paper
 	
• Each student will have a Supervisor and a Reader. The student will develop a research proposal for approval by their Supervisor, normally prior to the end of the first term. The research paper will normally be completed in the Spring (third) term. The paper should be approximately 12,000 words/50 pages in length.
 	
Other requirements
 	
• If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.
	▪ <u>GEOG617 - Applied Statistics in Ecology and Environment (0.50)</u>
	    ▪ GEOG620 - Foundations in Human Geography (0.50)
	    ▪ <u>GEOG625 – Qualitative Methods in Geography (0.50)</u>
	    ▪ GEOG640 - <u>Contextualizing Research in Earth System Science</u> (0.50)
	  o Any 4 other GEOG <u>or GEMCC</u> graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take <u>elective courses outside of GEOG or GEMCC</u> with approval of the Graduate Officer. Failure to obtain a final grade of at least 70% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program.
	
	Master's Research Paper option: Milestone requirements
	
	Master's Research Paper
	
	• Each student will have a Supervisor and a Reader. The student will develop a research proposal for approval by their Supervisor, normally prior to the end of the first term. The research paper will normally be completed in the Spring (third) term. The paper should be approximately 12,000 words/50 pages in length.
	
	Other requirements
	
	• If a student wishes to switch from the Thesis option to the Master's Research Paper option or vice versa, the change must be approved by the Graduate Officer.

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

Currently registered students can complete their degrees using the calendar requirements active at the time of their entry into the program. Most will have completed their course requirements prior to the active date for these changes. These calendar changes update the list of required courses, but retain the same number of required courses. Further, students currently registered in the program will already meet these revised course requirements in most cases.

Department/School approval date (mm/dd/yy): 09/20/24

Page 5 of 6

Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 09/27/24
Faculty approval date (mm/dd/yy): 11/14/24
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 <u>content revision instructions</u> and information regarding <u>major/minor modifications</u>. For questions about the form submission, contact <u>Trevor Clews</u>, Graduate Studies and Postdoctoral Affairs (GSPA).

Faculty: Environment

Program: Master of Science (MSc) in Geography

Program contact name(s): Maria Strack

Form completed by: Maria Strack

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

Dissolving the joint program arrangement with Wilfred Laurier University. Waterloo and Laurier will continue to offer the programs separately. Some of the required courses are also being updated due to the dissolution.

Is this a <u>major modification</u> to the program? Yes

Rationale for change(s):

The rationale for the creation of the joint Waterloo-Laurier Graduate Program in Geography (W-LGPIG) in 1992 was to capitalise on the relative size of the Geography departments at the two institutions at the time and to provide faculty and students with access to a PhD program. Both departments have grown since that time and in recent years the two programs had grown considerably independent of each other, and institutional priorities and infrastructural frictions challenged the cohesion and operation of the W-LGPIG. During the self-study process for the 2021/22 cyclical academic program review, faculty members of the Joint program at both institutions decided that dissolving the program was the best path forward. As a result, reviewers were asked to weigh in on the implications of this move and the quality of the programs if run independently. The reviewers concluded that both institutions are well suited to hosting excellent Geography independent graduate programs and that students and faculty in both Departments will likely continue to benefit from the positive aspects of the Joint program, such as community, shared research interests, etc.

Problems related to "jointness" of the program had been identified earlier as well. For example, the 2014/15 cyclical academic program review of the joint program included the following recommendation: "It was brought to our attention by the students that there may not exist equal ease of access to facilities at the "other" university. The problem may arise in part from lack of awareness by all students of how access may be secured, in part from lack of awareness on behalf of the UW and WLU administrative structures as to why equal access is important given the nature of this joint-program. We recommend that W-LGPIG investigate and negotiate the resolution to issues of unequal access." In response to this recommendation, opportunities to overcome this issue were explored, but a complete solution could not be found. The fundamental issue was that students were enrolled at their home institution and this limited their access to programs and facilities at the other institution that fell outside the joint program (e.g., the Collaborative Water Program at Waterloo). This example highlights some of the institutional challenges that contributed to the mutual decision to dissolve the joint program.

Proposed effective date: Term: Spring   Year: 2025

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

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Master of Science (MSc) in Geography **Admit term(s)** • Fall • Winter **Delivery mode** • On-campus **Registration option(s)** • Full-time • Part-time **Registration options information** • This program will not normally be offered on a part-time basis. In exceptional circumstances, students may assume part-time status after their formal course work has been completed. ~~**Program type(s)**~~ • ~~Joint~~ **Study option(s)** • Thesis **Length of program** • Normally, the formal requirements of the program are to be completed in two years. **Graduate research fields** • Environmental Science • Geomatics **Admission requirements: Minimum requirements** • Students must normally hold an Honours Bachelor of Science (BSc) degree. Students with an Honours Bachelor of Environmental Science (BES) or Bachelor of Arts (BA) degree in Physical Geography, Environmental or Earth Science, Geomatics, or the equivalent, will also be considered. Students must demonstrate that they have the necessary science	**Master of Science (MSc) in Geography** **Admit term(s)** • Fall • Winter **Delivery mode** • On-campus **Registration option(s)** • Full-time • Part-time **Registration options information** • This program will not normally be offered on a part-time basis. In exceptional circumstances, students may assume part-time status after their formal course work has been completed. **Study option(s)** • Thesis **Length of program** • Normally, the formal requirements of the program are to be completed in two years. **Graduate research fields** • Environmental Science • Geomatics **Admission requirements: Minimum requirements** • Students must normally hold an Honours Bachelor of Science (BSc) degree. Students with an Honours Bachelor of Environmental Science (BES) or Bachelor of Arts (BA) degree in Physical Geography, Environmental or Earth Science, Geomatics, or the equivalent, will also be considered. Students must demonstrate that they have the necessary science background to pursue graduate work in their field of specialization. Students will have completed the undergraduate degree with an overall average of at least 75%.

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

background to pursue graduate work in their field of specialization. Students will have completed the undergraduate degree with an overall average of at least 75%.
• English language proficiency (ELP) (if applicable)
 	
Admission requirements: Application materials
 	
• Résumé
• Supplementary information form
• Transcript(s)
 	
Admission requirements: References
 	
• Number of references: 3
• Type of references: at least 2 academic
 	
Degree requirements
 	
• Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
 	
Thesis option: Course requirements
 	
• Complete all of the following
   o Complete all the following:
      • GEOG700 - ~~Professional Skills Development for Master's Students~~ (0.50)
   o Complete 1 of the following:
      • ~~GEOG600 - Foundations in Spatial Data Handling (0.50)~~
      • GEOG620 - Foundations in Human Geography (0.50)
      • GEOG640 - ~~Foundations in Environmental Science~~ (0.50)
      • ~~GEOG660 - Foundations in Resource and Environmental Management (0.50)~~
   o Any 2 other GEOG graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take ~~a non-GEOG elective course~~ with approval of the Graduate Officer.
 	
The coursework part of the program is designed to develop advanced understanding of issues relating to environmental studies, and also to provide students with training in
	• English language proficiency (ELP) (if applicable)
	
	Admission requirements: Application materials
	
	• Résumé
	• Supplementary information form
	• Transcript(s)
	
	Admission requirements: References
	
	• Number of references: 3
	• Type of references: at least 2 academic
	
	Degree requirements
	
	• Students must complete the course and milestone requirements as listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
	
	Thesis option: Course requirements
	
	• Complete all of the following
	   o Complete all the following:
	      • GEOG700<u>A - Geographic Scholarship and Practice 1 - Masters (0.25)</u>
	      • <u>GEOG700B - Geographic Scholarship and Practice 2 - Masters (0.25)</u>
	   o Complete 1 of the following:
	      • <u>GEOG604 – Spatial Statistics (0.50)</u>
	      • <u>GEOG617 - Applied Statistics in Ecology and Environment (0.50)</u>
	      • GEOG620 - Foundations in Human Geography (0.50)
	      • <u>GEOG625 – Qualitative Methods in Geography (0.50)</u>
	      • GEOG640 – <u>Contextualizing Research in Earth System Science</u> (0.50)
	   o Any 2 other GEOG <u>or GEMCC</u> graduate level courses (0.50 unit weight per course) that complement the student's graduate research field. Students may elect to take <u>an elective course outside of GEOG or GEMCC</u> with approval of the Graduate Officer.
	
	The coursework part of the program is designed to develop advanced understanding of issues relating to

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
additional methods/skills for their thesis research and its defence. Students will normally complete the 4 one-term courses during their first year. **Thesis option: Milestone requirements** **Master's Thesis Proposal** • During the first year, students develop a thesis proposal that will be approved by their supervisor and committee, normally before the end of the first year. **Master's Thesis** • Upon approval of the thesis proposal, students will then proceed to the research and writing of the thesis. Normally, students should complete and defend the thesis within two years of starting the program. **Other requirements** • Fieldwork: many students will engage in fieldwork as part of their research. Several courses provide experience and training, to complement what most students will have obtained in their undergraduate degrees. Individual faculty also provide specialized training before and during fieldwork activity. Fieldwork is subject to environmental and other impact assessment through NSERC funding reviews, as well as research permit applications in many jurisdictions where students work, e.g., in the Yukon, Northwest Territories, or Nunavut.	environmental studies, and also to provide students with training in additional methods/skills for their thesis research and its defence. Students will normally complete the 4 one-term courses during their first year. **Thesis option: Milestone requirements** **Master's Thesis Proposal** • During the first year, students develop a thesis proposal that will be approved by their supervisor and committee, normally before the end of the first year. **Master's Thesis** • Upon approval of the thesis proposal, students will then proceed to the research and writing of the thesis. Normally, students should complete and defend the thesis within two years of starting the program. **Other requirements** • Fieldwork: many students will engage in fieldwork as part of their research. Several courses provide experience and training, to complement what most students will have obtained in their undergraduate degrees. Individual faculty also provide specialized training before and during fieldwork activity. Fieldwork is subject to environmental and other impact assessment through NSERC funding reviews, as well as research permit applications in many jurisdictions where students work, e.g., in the Yukon, Northwest Territories, or Nunavut.

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

Currently registered students can complete their degrees using the calendar requirements active at the time of their entry into the program. Most will have completed their course requirements prior to the active date for these changes. These calendar changes update the list of required courses, but retain the same number of required courses. Further, students currently registered in the program will already meet these revised course requirements in most cases.

Department/School approval date (mm/dd/yy): 09/20/24
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 09/27/24
Faculty approval date (mm/dd/yy): 11/14/24
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 <u>content revision instructions</u> and information regarding <u>major/minor modifications</u>. For questions about the form submission, contact <u>Trevor Clews</u>, Graduate Studies and Postdoctoral Affairs (GSPA).

Faculty: Environment

Program: Doctor of Philosophy (PhD) in Geography

Program contact name(s): Maria Strack

Form completed by: Maria Strack

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

Dissolving the joint program arrangement with Wilfred Laurier University. Waterloo and Laurier will continue to offer the programs separately. Some of the required courses are also being updated due to the dissolution.

Is this a <u>major modification</u> to the program? Yes

Rationale for change(s):

The rationale for the creation of the joint Waterloo-Laurier Graduate Program in Geography (W-LGPIG) in 1992 was to capitalise on the relative size of the Geography departments at the two institutions at the time and to provide faculty and students with access to a PhD program. Both departments have grown since that time and in recent years the two programs had grown considerably independent of each other, and institutional priorities and infrastructural frictions challenged the cohesion and operation of the W-LGPIG. During the self-study process for the 2021/22 cyclical academic program review, faculty members of the Joint program at both institutions decided that dissolving the program was the best path forward. As a result, reviewers were asked to weigh in on the implications of this move and the quality of the programs if run independently. The reviewers concluded that both institutions are well suited to hosting excellent Geography independent graduate programs and that students and faculty in both Departments will likely continue to benefit from the positive aspects of the Joint program, such as community, shared research interests, etc.

Problems related to "jointness" of the program had been identified earlier as well. For example, the 2014/15 cyclical academic program review of the joint program included the following recommendation: "It was brought to our attention by the students that there may not exist equal ease of access to facilities at the "other" university. The problem may arise in part from lack of awareness by all students of how access may be secured, in part from lack of awareness on behalf of the UW and WLU administrative structures as to why equal access is important given the nature of this joint-program. We recommend that W-LGPIG investigate and negotiate the resolution to issues of unequal access." In response to this recommendation, opportunities to overcome this issue were explored, but a complete solution could not be found. The fundamental issue was that students were enrolled at their home institution and this limited their access to programs and facilities at the other institution that fell outside the joint program (e.g., the Collaborative Water Program at Waterloo). This example highlights some of the institutional challenges that contributed to the mutual decision to dissolve the joint program.

Proposed effective date: Term: Spring   Year: 2025

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

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Doctor of Philosophy (PhD) in Geography	**Doctor of Philosophy (PhD) in Geography**
Admit term(s)	**Admit term(s)**
• Fall • Winter	• Fall • Winter
Delivery mode	**Delivery mode**
• On-campus	• On-campus
Registration option(s)	**Registration option(s)**
• Full-time • Part-time	• Full-time • Part-time
~~**Program type(s)**~~	**Study option(s)**
• ~~Joint~~	• Thesis
Study option(s)	**Graduate research fields**
• Thesis	• Environmental and Resource Management • Environmental Science • Geomatics • Human Geography
Graduate research fields	**Admission requirements: Minimum requirements**
• Environmental and Resource Management • Environmental Science • Geomatics • Human Geography	• A Master's degree in geography or equivalent, with at least an 80% average in all graduate work. • Exceptional students may be allowed to enter the PhD program directly from the Master's program. Such students must have completed all Master of Arts (MA)/Master of Environmental Studies (MES)/Master of Science (MSc) requirements except the thesis, have demonstrated a superior academic record and satisfied other conditions (details of which can be obtained from the <u>Graduate Officer</u>). • English language proficiency (ELP) (if applicable)
Admission requirements: Minimum requirements	
• A Master's degree in geography or equivalent, with at least an 80% average in all graduate work. • Exceptional students may be allowed to enter the PhD program directly from the Master's program. Such students must have completed all Master of Arts (MA)/Master of Environmental Studies (MES)/Master of Science (MSc) requirements except the thesis, have demonstrated a superior academic record and satisfied other conditions (details of which can be obtained from the ~~Director of the Program~~).	
• English language proficiency (ELP) (if applicable)	
Admission requirements: Application materials	**Admission requirements: Application materials**
	• Résumé • Supplementary information form

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

• Résumé
• Supplementary information form
• Transcript(s)
 	
Admission requirements: References
 	
• Number of references: 3
• Type of references: academic references are required unless a professional reference is specified.
 	
Degree requirements
 	
• Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
 	
Course requirements
 	
• Complete all of the following
   o Complete all the following:
      ▪ GEOG800 - ~~Professional Skills Development for Doctoral Students (0.50)~~
   o Complete 1 of the following:
      ▪ ~~GEOG600 - Foundations in Spatial Data Handling (0.50)~~
      ▪ GEOG620 - Foundations in Human Geography (0.50)
      ▪ GEOG640 - ~~Foundations in Environmental Science~~ (0.50)
      ▪ ~~GEOG660 - Foundations in Resource and Environmental Management (0.50)~~
   o Additional coursework may be assigned subject to the needs of individual students. Failure to obtain a final grade of at least 77% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program.
 	
Milestone requirements
 	
PhD Comprehensive Examination
 	
• Students are required to meet the University-level PhD Comprehensive Examination minimum requirements.
• In addition to the University-level PhD Comprehensive Examination minimum requirements, students in the PhD in
	• Transcript(s)
	
	Admission requirements: References
	
	• Number of references: 3
	• Type of references: academic references are required unless a professional reference is specified.
	
	Degree requirements
	
	• Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
	
	Course requirements
	
	• Complete all of the following
	   o Complete all the following:
	      ▪ <u>GEOG800A – Geographic Scholarship and Practice 1 - Doctoral (0.25)</u>
	      ▪ <u>GEOG800B – Geographic Scholarship and Practice 2 - Doctoral (0.25)</u>
	   o Complete 1 of the following:
	      ▪ <u>GEOG 604 – Spatial Statistics (0.50)</u>
	      ▪ <u>GEOG617 - Applied Statistics in Ecology and Environment (0.50)</u>
	      ▪ GEOG620 - Foundations in Human Geography (0.50)
	      ▪ <u>GEOG625 – Qualitative Methods in Geography (0.50)</u>
	      ▪ GEOG640 – <u>Contextualizing Research in Earth System Science</u> (0.50)
	   o Additional coursework may be assigned subject to the needs of individual students. Failure to obtain a final grade of at least 77% in each course will result in an automatic review of the student's status in the program, which may require that the student withdraw from the program.
	
	Milestone requirements
	
	PhD Comprehensive Examination
	
	• Students are required to meet the University-level PhD Comprehensive Examination minimum requirements.

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Geography program are also required to meet the following requirements: ○ The Comprehensive Examination includes both a written and an oral component. Normally the Examination involves the student writing answers to a question or questions over a period of three weeks. The answer(s) will not exceed 10,000 words, excluding the bibliography, abstract, figures and tables. In the oral component of the Examination, which normally lasts no longer than three hours, the student defends the written document. The topics to be covered and the format of the Examination are determined by the student's Comprehensive Examination Committee, in consultation with the student. ~~With the approval of the Waterloo-Laurier Graduate Program in Geography Committee, alternative formats for the Comprehensive Examination process may be permitted, provided they meet the objectives of the Comprehensive Examination.~~ ○ The Comprehensive Examining Committee will consist of the student's ~~Advisor and~~ three additional Examiners, ~~one of whom will be from outside the Waterloo-Laurier Graduate Program in~~ Geography (normally, this person will be internal to the University of Waterloo). ~~The committee must contain at least two members of the Waterloo-Laurier Graduate Program in Geography. At least one member of the committee must be from the Geography Department at the University of Waterloo or Wilfred Laurier University.~~	• In addition to the University-level PhD Comprehensive Examination minimum requirements, students in the PhD in Geography program are also required to meet the following requirements: ○ The Comprehensive Examination includes both a written and an oral component. Normally the Examination involves the student writing answers to a question or questions over a period of three weeks. The answer(s) will not exceed 10,000 words, excluding the bibliography, abstract, figures and tables. In the oral component of the Examination, which normally lasts no longer than three hours, the student defends the written document. The topics to be covered and the format of the Examination are determined by the student's Comprehensive Examination Committee, in consultation with the student. ○ The Comprehensive Examining Committee will consist of the student's <u>Supervisor plus</u> three additional Examiners, <u>all of whom must hold a PhD (or equivalent) degree. The supervisor, along with one of the committee members, must hold a faculty appointment inside the Department of Geography and Environmental Management and at least one of the two GEM members must hold a tenured or tenure-track position. Of the remaining two members, one must have a faculty appointment at the University of Waterloo but</u> outside the <u>Department of</u> Geography <u>and Environmental Management</u> (normally, this person will be internal to the University of Waterloo).
PhD Thesis Proposal • Students develop a thesis proposal that will be approved by their Supervisor and Comprehensive Examining Committee, normally before the end of the second year. **PhD Thesis** • Upon approval of the thesis proposal, students will then proceed to the research and writing of the thesis. Normally, students should complete	**PhD Thesis Proposal** • Students develop a thesis proposal that will be approved by their Supervisor and Comprehensive Examining Committee, normally before the end of the second year. **PhD Thesis** • Upon approval of the thesis proposal, students will then proceed to the research and writing of

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
and defend the thesis within four years of starting the program.	the thesis. Normally, students should complete and defend the thesis within four years of starting the program.

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

Currently registered students can complete their degrees using the calendar requirements active at the time of their entry into the program. Most will have completed their course requirements prior to the active date for these changes. These calendar changes update the list of required courses, but retain the same number of required courses. Further, students currently registered in the program will already meet these revised course requirements in most cases.

Department/School approval date (mm/dd/yy): 09/20/24
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 10/15/24
Faculty approval date (mm/dd/yy): 11/14/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

UNIVERSITY OF WATERLOO

Graduate Studies
Program Revision Template

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

Faculty: Environment

Program: Master of Environmental Studies (MES) in Sustainability Management

Program contact name(s): Jason Thistlethwaite, Heather Hall

Form completed by: Jason Thistlethwaite, Heather Hall

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

Adding a Coursework study option to the MES in Sustainability Management program.

Is this a <u>major modification</u> to the program? Yes

Rationale for change(s):

Over the last few years, a number of challenges have emerged in the delivery of the Master of Environmental Studies (MES) in Sustainability Management (SUSM) program. These challenges were identified via consultations in the recent program cyclical review, along with the SEED Director, Associate Director of Grad Studies (research programs), faculty, and graduate administrators. The individuals consulted voiced support for the creation of a coursework study option within the program. Please note that none of the program learning outcomes are being revised as part of the proposed program revisions. Below is a summary of the findings from these consultations:

First, the program has a high demand with many applicants meeting the requirements, but they cannot find a supervisor due to limited department capacity. For example, since the program started in 2016 the average number of applicants is 82 per year, whereas the department average number of offers is 33. In recent years, supervisory capacity has decreased further widening the gap between eligible applicants and spots in the program. With a coursework option, students would not require a dedicated supervisor opening up capacity to admit more students who meet requirements.

Second, both students and faculty have expressed support for a coursework option as a means of introducing flexibility for streaming between a research and course-based program. Students could then transfer to the research-based option depending on their ambitions and fit. Research ready students could also be positioned for admission to the SUSM PhD program.

Third, the streaming component could also address challenges some students experience in completing the degree on time, which was also identified as a problem in the cyclical review. We have tried to move some students to other programs within the department and faculty, but aligning program requirements proves to be a barrier. With a coursework option, these students could transition and still complete the degree.

Proposed effective date: Term: Spring   Year: 2025

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

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/S1A3sRk2n

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Admit term(s) • Fall **Delivery mode** • On-campus **Registration option(s)** • Full-time • Part-time **Study option(s)** • Thesis **Length of program** • Part-time students will be obligated to complete their requirements within five calendar years from the date of their initial registration. **Admission requirements: Minimum requirements** • A four-year undergraduate degree equivalent in a humanities, social science, health, engineering, natural science, environmental science, or business discipline with an overall average of at least 75% in the last two years. • English language proficiency (ELP) (if applicable) **Admission requirements: Application materials** • Résumé • Supplementary information form • Transcript(s) **Admission requirements: References** • Number of references: 2 • Type of references: academic **Degree requirements** • Students must complete the course and milestone requirements ~~listed below~~ in addition to the Graduate Academic Integrity Module (Graduate AIM). **Thesis option: Course requirements** • Required courses:	**Admit term(s)** • Fall **Delivery mode** • On-campus **Registration option(s)** • Full-time • Part-time **Study option(s)** • Thesis • <u>Coursework</u> **Length of program** • Part-time students will be obligated to complete their requirements within five calendar years from the date of their initial registration. **Admission requirements: Minimum requirements** • A four-year undergraduate degree equivalent in a humanities, social science, health, engineering, natural science, environmental science, or business discipline with an overall average of at least 75% in the last two years. • English language proficiency (ELP) (if applicable) **Admission requirements: Application materials** • Résumé • Supplementary information form • Transcript(s) **Admission requirements: References** • Number of references: 2 • Type of references: academic **Degree requirements** • Students must complete the course and milestone requirements <u>associated with their chosen study option</u> in addition to the Graduate Academic Integrity Module (Graduate AIM).

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
- o SUSM 601 Foundations for Sustainability Management (Fall) - o SUSM 602 Theories and Concepts of Sustainability Management (Fall) - o SUSM 603 Research Methods for Sustainable Management (Winter) - o SUSM 605 Thesis Development (Winter) - Elective courses: 2 graduate-level open electives that complement the student's program of study and are chosen in agreement with the supervisor and the program Graduate Administrator. - Note: 1 elective course should be taken in the Fall term and 1 should be taken in the Winter term. **Thesis option: Milestone requirements** **Master's Thesis** - The thesis should demonstrate the student's ability to conduct original research under the guidance of a faculty member. Furthermore a successful thesis in the program demonstrates knowledge of existing research within the area of inquiry, the development of a sound research question and the ability to apply appropriate methods. The results of research should be original and contribute to the existing body of knowledge in the selected field. The thesis should be approximately 100 pages.	**Thesis option: Course requirements** - Required courses: - o SUSM 601 Foundations for Sustainability Management (Fall) - o SUSM 602 Theories and Concepts of Sustainability Management (Fall) - o SUSM 603 Research Methods for Sustainable Management (Winter) - o SUSM 605 Thesis Development (Winter) - Elective courses: 2 graduate-level open electives that complement the student's program of study and are chosen in agreement with the supervisor and the program Graduate Administrator. - Note: 1 elective course should be taken in the Fall term and 1 should be taken in the Winter term. **Thesis option: Milestone requirements** **Master's Thesis** - The thesis should demonstrate the student's ability to conduct original research under the guidance of a faculty member. Furthermore a successful thesis in the program demonstrates knowledge of existing research within the area of inquiry, the development of a sound research question and the ability to apply appropriate methods. The results of research should be original and contribute to the existing body of knowledge in the selected field. The thesis should be approximately 100 pages. **Coursework option: Course requirements** - Required courses: - o Fall: ▪ ENBUS 642 Stakeholder Engagement, Collaborations and Partnerships ▪ SUSM 601 Foundations for Sustainability Management ▪ SUSM 602 Theories and Concepts of Sustainability Management ▪ 1 graduate-level elective course - o Winter: ▪ ECDEV 605 Entrepreneurship and Small Business Development ▪ SUSM 640 Strategies for Sustainable Enterprises ▪ 2 graduate-level elective courses

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

	o Spring:
	A graduate-level projects course as approved by the SEED Grad Officer
	
	• Suggested elective courses
	  ▪ DEVP 603 Global Health
	  ▪ DEVP 604 Sustainable Cities
	  ▪ DEVP 605 Economics for Sustainable Development
	  ▪ DEVP 606 Energy Sustainability
	  ▪ DEVP 608 Water and Security
	  ▪ ECDEV 601 Economic Development: Theories and Frameworks
	  ▪ ECDEV 602 Economic Development Policy and Practice
	  ▪ ECDEV 603 Analytical Tools for Economic Development
	  ▪ ECDEV 604 Management and Policy Tools for Economic Development and Sustainability Professionals
	  ▪ ECDEV 606 Innovation and Economic Development in Cities and Regions
	  ▪ ECDEV 615 Community Economic Development
	  ▪ ENBUS 612 Social Entrepreneurship and Scaling Social Innovation
	  ▪ ENBUS 620 Business Operations and Sustainability
	  ▪ ENBUS 630 Enterprise Marketing and Social Accountability
	  ▪ ENBUS 632 Sustainability Reporting
	  ▪ ENBUS 652 Business and Climate Change
	  ▪ ENBUS 690B Enterprise Sustainability Project
	  ▪ SUSM 620 Sustainable Operations
	  ▪ SUSM 630 Marketing for Sustainability
	  ▪ SUSM 650 Sustainable Finance
	  ▪ SUSM 660 Public International Law
	  ▪ SUSM 678 Governing the Commons
	  ▪ SUSM 680 Industrial Ecology: Principles and Approaches

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	- GEMCC 605 Climate change and society - Further details on elective courses are available from the School of Environment, Enterprise and Development (SEED) website. - Students may take other electives available in the Faculty after consultation with the program administrator.

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

Current students will be provided with the option to remain in the current version of the SUSM program or switch to the new option in Winter 2025. A program coffee chat will be held with the students in Fall 2024 to discuss the proposed changes and provide opportunity for students to ask questions and make an informed decision.

Department/School approval date (10/25/24):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 10/01/24
Faculty approval date (mm/dd/yy): 11/14/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

For Approval   **Open Session**

To:	Senate
From:	Senate Graduate and Research Council
Presenter(s):	Charmaine Dean Vice-President, Research & International
	Clarence Woudsma
	Interim Co-Associate Vice-President, Graduate Studies and Postdoctoral Affairs
Date of Meeting:	March 3, 2025
Agenda Item:	**6.3 Senate Graduate and Research Council: Faculty of Health — Major Modifications**

Recommendation/Motion

Motion: That Senate approve the major modifications to the PhD in Public Health Sciences and Master of Health Informatics (MHI), effective 1 May 2025, as presented.

Summary

Senate Graduate & Research Council met on January 27, 2025 and agreed to forward the following items to Senate for approval as part of the regular agenda.

   a. Aging and Health - Field Removal

   b. MHI to Master of Health Informatics and Analytics - Program Changes

Proposal/Rationale

a.   Aging and Health Field Removal

Abolishing the Aging and Health graduate research field in the PhD program in Public Health Sciences. Students interested in pursuing a PhD in aging and health may enrol in the collaborative Aging, Health, and Well-being (AHWB) program offered in the Faculty of Health.

b.   MHI to Master of Health Informatics and Analytics - Program Changes

The program name is being updated to "Master of Health Informatics and Analytics" to reflect the evolving industry demands for expertise in analytics, data science, machine learning, and artificial intelligence. Consultations with faculty, students, and an External

Advisory Committee confirmed the importance of including both "Health Informatics" and "Analytics" in the name to accurately represent the program's curriculum, meet the continuing need for health informatics specialists in Canada, and enhance students' skills in analytics. The program learning outcomes remain unchanged.

The introduction of two specializations—Health Informatics and Advanced Analytics—addresses the need for targeted expertise in these areas. This structure allows students to gain a solid foundation in both areas while specializing in one, enhancing their skills and employability. Feedback from faculty, students, and external advisors highlighted the importance of these specializations to meet industry standards and student interests.

We are cleaning up the elective courses because some of them were never offered online and need to be removed from the online program. Given the new specializations, some of the core courses from the original MHI program are now electives.

Modifying the referee language for the Admissions Requirements to make it clearer for students that they need one academic and one professional reference for a complete application to the MHIA program.

Jurisdictional Information

This item is being submitted to Senate in accordance with Senate Bylaw 2, section 4.03(e): "Consider, study and review all proposals for new graduate programs, the deletion of graduate programs, major changes to existing graduate programs, arrange for internal appraisals as the council shall see fit, and make recommendations to Senate thereon."

Governance Path

Health Faculty Council: 10/25/2024

Senate Graduate and Research Council: 01/27/2025

Documentation Provided

Appendix: Proposed Major Modifications – Faculty of Health

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: Health

Programs: Doctor of Philosophy (PhD) in Public Health Sciences

Program contact name(s): Mark Oremus

Form completed by: Mark Oremus

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

Abolishing the Aging and Health graduate research field in the PhD program in Public Health Sciences. Students interested in pursuing a PhD in aging and health may enrol in the collaborative Aging, Health, and Well-being (AHWB) program offered in the Faculty of Health.

Is this a major modification to the program? Yes

Rationale for change(s):

Students interested in pursuing a PhD in aging and health may enrol in the collaborative Aging, Health, and Well-being (AHWB) program offered in the Faculty of Health. The requirements for the AHWB program and the Aging and Health field are similar enough to render the field redundant.

Proposed effective date: Term: Spring   Year: 2025

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/applied-health-sciences/school-public-health-sciences/doctor-philosophy-phd-public-health-and-health-systems

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Graduate research fields • ~~Aging and Health~~ • Epidemiology and Biostatistics • Global Health • Health and Environment • Health Evaluation • Health Informatics • Work and Health	**Graduate research fields** • Epidemiology and Biostatistics • Global Health • Health and Environment • Health Evaluation • Health Informatics • Work and Health **Degree requirements**

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

Degree requirements
 	
- Courses
  - 9 one-term graduate courses beyond the Bachelor's degree, including at least 4 courses (2 required and 2 electives) beyond the Master's degree, is the normal minimum requirement.
  - Required courses (2)
    - HTLH 701 Interdisciplinary Seminar in Public Health and Health Systems
  - 1 of the following required methods courses:
    - HLTH 704 Advanced Qualitative Methods for Health Research
    - HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data
    - HLTH 706 Advanced Epidemiological Methods
    - HLTH 719 Advanced Research Methods in Health Informatics
  - Elective courses (2)
    - 1 methods elective course at the 600-or 700-level, selected in consultation with the supervisor (may include courses outside the SPHS), or courses offered by SPHS, including additional courses from the required course list.
    - 1 additional elective, selected in consultation with the supervisor. Students without a background in public health and health systems, and focusing in research areas other than Health Informatics, should take HLTH 601 Lifespan Determinants of Health and Disease. Students focusing in Health Informatics may choose to take HLTH 611 The Health Care System or an equivalent course approved by the SPHS Graduate Officer.
  - Plus other free electives as may be required
    - It is important to keep in mind that these are minimum requirements. Many students
	- Courses
	  - 9 one-term graduate courses beyond the Bachelor's degree, including at least 4 courses (2 required and 2 electives) beyond the Master's degree, is the normal minimum requirement.
	  - Required courses (2)
	    - HTLH 701 Interdisciplinary Seminar in Public Health and Health Systems
	  - 1 of the following required methods courses:
	    - HLTH 704 Advanced Qualitative Methods for Health Research
	    - HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data
	    - HLTH 706 Advanced Epidemiological Methods
	    - HLTH 719 Advanced Research Methods in Health Informatics
	  - Elective courses (2)
	    - 1 methods elective course at the 600-or 700-level, selected in consultation with the supervisor (may include courses outside the SPHS), or courses offered by SPHS, including additional courses from the required course list.
	    - 1 additional elective, selected in consultation with the supervisor. Students without a background in public health and health systems, and focusing in research areas other than Health Informatics, should take HLTH 601 Lifespan Determinants of Health and Disease. Students focusing in Health Informatics may choose to take HLTH 611 The Health Care System or an equivalent course approved by the SPHS Graduate Officer.
	  - Plus other free electives as may be required
	    - It is important to keep in mind that these are minimum requirements. Many students complete at least three courses within their area of research interest, which may require the addition of one or more extra

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
complete at least three courses within their area of research interest, which may require the addition of one or more extra courses to the minimum coursework requirement.	courses to the minimum coursework requirement.
o At a minimum, students must obtain an average of 75% or higher in aggregate on the courses presented in fulfilment of the degree requirements. Grades on all courses presented to fulfill the degree requirements must be 70% or higher. A grade below 70% in any course or failing to maintain an average of 75% will necessitate a review of the student's status by the School and may result in a student being required to complete additional coursework or being required to withdraw from the program. The School reserves the right to stipulate additional coursework if it is necessary for the student's preparation.	o At a minimum, students must obtain an average of 75% or higher in aggregate on the courses presented in fulfilment of the degree requirements. Grades on all courses presented to fulfill the degree requirements must be 70% or higher. A grade below 70% in any course or failing to maintain an average of 75% will necessitate a review of the student's status by the School and may result in a student being required to complete additional coursework or being required to withdraw from the program. The School reserves the right to stipulate additional coursework if it is necessary for the student's preparation.
o Students in the PhD in Public Health and Health Systems program may also wish to pursue one of the following Graduate Research Fields:	o Students in the PhD in Public Health and Health Systems program may also wish to pursue one of the following Graduate Research Fields:
1. ~~Aging and Health~~ 2. Epidemiology and Biostatistics 3. Global Health 4. Health and Environment 5. Health Evaluation 6. Health Informatics 7. Work and Health	1. Epidemiology and Biostatistics 2. Global Health 3. Health and Environment 4. Health Evaluation 5. Health Informatics 6. Work and Health
o A Graduate Research Field is a University credential that is recognized on the student's transcript and is intended to reflect that a student has successfully completed research and a set of courses that together provide an in-depth study in the area of the Graduate Research Field. A student will only obtain the Graduate Research Field on their transcript if they have completed the requirements associated with the PhD degree and the requirements associated with the Graduate Research Field.	o A Graduate Research Field is a University credential that is recognized on the student's transcript and is intended to reflect that a student has successfully completed research and a set of courses that together provide an in-depth study in the area of the Graduate Research Field. A student will only obtain the Graduate Research Field on their transcript if they have completed the requirements associated with the PhD degree and the requirements associated with the Graduate Research Field.
o All PhD Graduate Research Fields in the SPHS consist of a Comprehensive Examination, a PhD Thesis that is confirmed by the SPHS to be in the chosen Graduate Research Field, and a set of 4 graduate (0.50 weight) level	o All PhD Graduate Research Fields in the SPHS consist of a Comprehensive Examination, a PhD Thesis that is confirmed by the SPHS to be in the chosen Graduate Research Field, and a set of 4 graduate (0.50 weight) level courses. This set of courses is comprised of a mix of required and elective courses. Required courses are those that are prescribed as part of the Graduate Research Field. Elective

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
courses. This set of courses is comprised of a mix of required and elective courses. Required courses are those that are prescribed as part of the Graduate Research Field. Elective courses are those that are on a list of courses designated as electives for a given Graduate Research Field. o Students who have completed the MSc in Public Health and Health Systems and obtained a Graduate Research Field can obtain the same or another Field or (by taking the applicable required/elective courses) as part of their PhD program. o For any of the Graduate Research Fields below, a directed studies course (HLTH 620 or HLTH 720) focused on the Graduate Research Field or an appropriate alternate course may replace a required or elective course, with the approval of the Associate Director, Graduate Studies~~Research Graduate Program~~, School of Public Health Sciences. o The course requirements for the Graduate Research Fields are described below. ~~1. Graduate Research Field in Aging and Health~~ ~~o Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Aging and Health Graduate Research Field designation will be completed by the SPHS.~~ ~~▪ Required courses:~~ ~~▪ HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems~~ ~~▪ HLTH 750 Fundamentals of Aging, Health and Well Being (over two terms, parts A and B)~~ ~~▪ Elective courses:~~ ~~▪ Select 1 from the following list:~~ ~~▪ HLTH 704 Advanced Qualitative~~	courses are those that are on a list of courses designated as electives for a given Graduate Research Field. o Students who have completed the MSc in Public Health and Health Systems and obtained a Graduate Research Field can obtain the same or another Field or (by taking the applicable required/elective courses) as part of their PhD program. o For any of the Graduate Research Fields below, a directed studies course (HLTH 620 or HLTH 720) focused on the Graduate Research Field or an appropriate alternate course may replace a required or elective course, with the approval of the Associate Director, Graduate Studies, School of Public Health Sciences. o The course requirements for the Graduate Research Fields are described below. 1. Graduate Research Field in Epidemiology and Biostatistics o Students must successfully complete 3 required courses and 1 elective course. An assessment of whether or not the student's thesis warrants the Epidemiology and Biostatistics Graduate Research Field designation will be completed by the SPHS. ▪ Required courses: ▪ HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems ▪ HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data ▪ HLTH 706 Advanced Epidemiological Methods ▪ Elective course: ▪ Select 1 from the following list: ▪ HLTH 634 Environmental Epidemiology for Public Health ▪ HLTH 672 Epidemiological

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

~~Methods for Health Research~~
• ~~HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data~~
• ~~HLTH 706 Advanced Epidemiological Methods~~
• ~~Select 1 from the following list:~~
    ▪ ~~HLTH 626 Analysis and Management of Health Information in Aging Populations~~
    ▪ ~~HLTH 627 Advanced Dementia Care~~
    ▪ ~~HLTH 630 Advanced Geriatric Medicine and Healthcare~~
    ▪ ~~HLTH 642 Interdisciplinary Perspectives on Aging~~
    ▪ ~~HLTH 672 Epidemiological Methods in Aging Research~~
 	
2. Graduate Research Field in Epidemiology and Biostatistics
 	
    o Students must successfully complete 3 required courses and 1 elective course. An assessment of whether or not the student's thesis warrants the Epidemiology and Biostatistics Graduate Research Field designation will be completed by the SPHS.
        ▪ Required courses:
            ▪ HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems
	Methods in Aging Research
	
	2. Graduate Research Field in Global Health
	
	    o Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Global Health Graduate Research Field designation will be completed by the SPHS.
	        ▪ Required courses:
	            ▪ HLTH 662 Global Health (or equivalent)
	            ▪ HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems
	        ▪ Elective courses:
	            ▪ Select 1 from the following list:
	                ▪ HLTH 704 Advanced Qualitative Methods for Health Research
	                ▪ HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data
	                ▪ HLTH 706 Advanced Epidemiological Methods
	                ▪ HLTH 719 Advanced Research Methods in Health Informatics
	            ▪ Select 1 from the following list (these courses are global-health focused in all examples and assignments):
	                ▪ HLTH 632 Health Economics and Public Health

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
- HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data - HLTH 706 Advanced Epidemiological Methods - Elective course: - Select 1 from the following list: - HLTH 634 Environmental Epidemiology for Public Health - HLTH 672 Epidemiological Methods in Aging Research 3. Graduate Research Field in Global Health - Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Global Health Graduate Research Field designation will be completed by the SPHS. - Required courses: - HLTH 662 Global Health (or equivalent) - HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems - Elective courses: - Select 1 from the following list: - HLTH 704 Advanced Qualitative Methods for Health Research - HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data - HLTH 706 Advanced	- HLTH 654 Systems Thinking and Analysis in Health Program Planning and Evaluation 3. Graduate Research Field in Health and Environment - Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Health and Environment Graduate Research Field designation will be completed by the SPHS. - Required courses: - HLTH 604 Public Health and the Environment (or equivalent) - HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems - Elective courses: - Select 1 from the following list: - HLTH 704 Advanced Qualitative Methods for Health Research - HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data - HLTH 706 Advanced Epidemiological Methods - Select 1 from the following list: - HLTH 623 Risk and Exposure Assessment in Public Health - HLTH 624 Environmental

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
- Epidemiological Methods - HLTH 719 Advanced Research Methods in Health Informatics - Select 1 from the following list (these courses are global-health focused in all examples and assignments): - HLTH 632 Health Economics and Public Health - HLTH 654 Systems Thinking and Analysis in Health Program Planning and Evaluation 4. Graduate Research Field in Health and Environment - Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Health and Environment Graduate Research Field designation will be completed by the SPHS. - Required courses: - HLTH 604 Public Health and the Environment (or equivalent) - HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems - Elective courses: - Select 1 from the following list: - HLTH 704 Advanced Qualitative Methods for Health Research - HLTH 705 Advanced Statistical Methods for	- Toxicology in Public Health - HLTH 631 Public Health Surveillance - HLTH 634 Environmental Epidemiology for Public Health - HLTH 661 Geographic Information Systems and Public Health - HLTH 662 Global Health 4. Graduate Research Field in Health Evaluation - Students must successfully complete 1 required course and 3 elective courses. An assessment of whether or not the student's thesis warrants the Health Evaluation Graduate Research Field designation will be completed by the SPHS. - Required course: - HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems - Elective courses: - Select 1 from the following list: - HLTH 655 Health Measurement and Survey Methods - HLTH 704 Advanced Qualitative Methods for Health Research - HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data - Select 1 or 2 from the following list:

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
- Analyzing Public Health and Health Systems Data - HLTH 706 Advanced Epidemiological Methods - Select 1 from the following list: - HLTH 623 Risk and Exposure Assessment in Public Health - HLTH 624 Environmental Toxicology in Public Health - HLTH 631 Public Health Surveillance - HLTH 634 Environmental Epidemiology for Public Health - HLTH 661 Geographic Information Systems and Public Health - HLTH 662 Global Health 5. Graduate Research Field in Health Evaluation - Students must successfully complete 1 required course and 3 elective courses. An assessment of whether or not the student's thesis warrants the Health Evaluation Graduate Research Field designation will be completed by the SPHS. - Required course: - HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems - Elective courses: - Select 1 from the following list: - HLTH 655 Health Measurement and Survey Methods	- HLTH 614 Foundations of Program Evaluation - HLTH 651 Theory and Applications in Program Evaluation - HLTH 653 Evaluation Practice and Management - HLTH 654 Systems Thinking and Analysis in Health Program Planning and Evaluation - Select 1 from the following list if only 1 course was selected above: - HLTH 603 Health Systems and Policy - HLTH 626 Analysis and Management of Health Information in Aging Populations - HLTH 639 Experiential Learning in Evaluation 5. Graduate Research Field in Health Informatics - Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Health Informatics Graduate Research Field designation will be completed by the SPHS. - Required courses: - HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
- HLTH 704 Advanced Qualitative Methods for Health Research - HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data - Select 1 or 2 from the following list: - HLTH 614 Foundations of Program Evaluation - HLTH 651 Theory and Applications in Program Evaluation - HLTH 653 Evaluation Practice and Management - HLTH 654 Systems Thinking and Analysis in Health Program Planning and Evaluation - Select 1 from the following list if only 1 course was selected above: - HLTH 603 Health Systems and Policy - HLTH 626 Analysis and Management of Health Information in Aging Populations - HLTH 639 Experiential Learning in Evaluation	- HLTH 719 Advanced Research Methods in Health Informatics OR Equivalent - Elective courses: - Select 1 from the following list: - HLTH 615 Requirements Specification and Analysis in Health Systems - HLTH 616 Decision Making and Systems Thinking in Health Informatics - HLTH 626 Analysis and Management of Health Information in Aging Populations - HLTH 629 Information Visualization - HLTH 633 Digital Health - HLTH 637 Public Health Informatics - Select 1 from the following list: - COGSCI 600 Seminar in Cognitive Science - CS 634 Security and Privacy for Health Systems - CS 792 Data Structures and Standards in Health Informatics - CS 846 Advanced Topics in Software Engineering: Topic 30 Software Engineering for Big Data

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

6. Graduate Research Field in Health Informatics
 	
   ○ Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Health Informatics Graduate Research Field designation will be completed by the SPHS.
     ▪ Required courses:
       ▪ HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems
       ▪ HLTH 719 Advanced Research Methods in Health Informatics OR Equivalent
     ▪ Elective courses:
       ▪ Select 1 from the following list:
         ▪ HLTH 615 Requirements Specification and Analysis in Health Systems
         ▪ HLTH 616 Decision Making and Systems Thinking in Health Informatics
         ▪ HLTH 626 Analysis and Management of Health Information in Aging Populations
         ▪ HLTH 629 Information Visualization
         ▪ HLTH 633 Digital Health
         ▪ HLTH 637 Public Health Informatics
       ▪ Select 1 from the following list:
         ▪ COGSCI 600 Seminar in Cognitive Science
	▪ SYDE 642 Cognitive Engineering Methods
	     ▪ SYDE 644 Human Factors Testing
	
	6. Graduate Research Field in Work and Health
	
	   ○ Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Work and Health Graduate Research Field designation will be completed by the SPHS.
	     ▪ Required courses:
	       ▪ HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems
	       ▪ HLTH 728 What is Fair? International Perspectives On Equity In Work and Health
	     ▪ Elective courses:
	       ▪ Select 1 from the following list:
	         ▪ HLTH 704 Advanced Qualitative Methods for Health Research
	         ▪ HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data
	         ▪ HLTH 706 Advanced Epidemiological Methods
	         ▪ HLTH 719 Advanced Research Methods in Health Informatics
	       ▪ Select 1 from the following list:

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
- CS 634 Security and Privacy for Health Systems - CS 792 Data Structures and Standards in Health Informatics - CS 846 Advanced Topics in Software Engineering: Topic 30 Software Engineering for Big Data - SYDE 642 Cognitive Engineering Methods - SYDE 644 Human Factors Testing 7. Graduate Research Field in Work and Health - Students must successfully complete 2 required courses and 2 elective courses. An assessment of whether or not the student's thesis warrants the Work and Health Graduate Research Field designation will be completed by the SPHS. - Required courses: - HLTH 701 Interdisciplinary Seminar in Public Health and Health Systems - HLTH 728 What is Fair? International Perspectives On Equity In Work and Health - Elective courses: - Select 1 from the following list: - HLTH 704 Advanced Qualitative Methods for Health Research - HLTH 705 Advanced Statistical Methods for	- HLTH 614 Foundations of Program Evaluation - HLTH 623 Risk and Exposure Assessment in Public Health - HLTH 639 Experiential Learning in Evaluation - HLTH 654 Systems Thinking and Analysis In Health Program Planning and Evaluation - HLTH 731 Approaches to Research in Work and Health

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

Analyzing Public Health and Health Systems Data
▪ HLTH 706 Advanced Epidemiological Methods
▪ HLTH 719 Advanced Research Methods in Health Informatics
▪ Select 1 from the following list:
    ▪ HLTH 614 Foundations of Program Evaluation
    ▪ HLTH 623 Risk and Exposure Assessment in Public Health
    ▪ HLTH 639 Experiential Learning in Evaluation
    ▪ HLTH 654 Systems Thinking and Analysis In Health Program Planning and Evaluation
    ▪ HLTH 731 Approaches to Research in Work and Health	

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

We currently do not have any PhD students registered in the Aging and Health field.

Department/School approval date (03/18/24):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 07/28/22
Faculty approval date (mm/dd/yy): 10/25/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

UNIVERSITY OF WATERLOO

Graduate Studies
Program Revision Template

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

Faculty: Health

Program: Master of Health Informatics (MHI)

Program contact name(s): Jennifer Yessis, Michelle Fluit

Form completed by: Jennifer Yessis, Michelle Fluit

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

1) *Changing the name of the "Master of Health Informatics (MHI)" program to "Master of Health Informatics and Analytics (MHIA)".*
2) *Updating the degree requirements to include two new Graduate Specializations.*
3) *Updating the list of required and elective courses.*
4) *Updating the type of references required for admission.*

Is this a <u>major modification</u> to the program? Yes

Rationale for change(s):

1) *The program name is being updated to "Master of Health Informatics and Analytics" to reflect the evolving industry demands for expertise in analytics, data science, machine learning, and artificial intelligence. Consultations with faculty, students, and an External Advisory Committee confirmed the importance of including both "Health Informatics" and "Analytics" in the name to accurately represent the program's curriculum, meet the continuing need for health informatics specialists in Canada, and enhance students' skills in analytics. The program learning outcomes remain unchanged.*

2) *The introduction of two specializations—Health Informatics and Advanced Analytics—addresses the need for targeted expertise in these areas. This structure allows students to gain a solid foundation in both areas while specializing in one, enhancing their skills and employability. Feedback from faculty, students, and external advisors highlighted the importance of these specializations to meet industry standards and student interests.*

3) *We are cleaning up the elective courses because some of them were never offered online and need to be removed from the online program. Given the new specializations, some of the core courses from the original MHI program are now electives.*

4) *Modifying the referee language for the Admissions Requirements to make it clearer for students that they need one academic and one professional reference for a complete application to the MHIA program.*

Proposed effective date: Term: Spring   Year: 2025

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

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/rJMTx1CAin

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Master of Health Informatics (~~MHI~~)	**Master of Health Informatics <u>and Analytics</u> (<u>MHIA</u>)**
Admission requirements: References • Number of references: 2 • Type of references: ~~at least one of which must be from an academic source,~~ unless more than 5 years have elapsed since the applicant last registered in a university course, in which case both references can be from professional sources. ~~In the latter case,~~ at least one of the professional referees must be asked to comment specifically on the applicant's academic abilities.	**Admission requirements: References** • Number of references: 2 • Type of references: • <u>1 from an academic source,</u> unless more than 5 years have elapsed since the applicant last registered in a university course, in which case both references can be from professional sources. At least one of the professional referees must be asked to comment specifically on the applicant's academic abilities. • <u>1 professional from a relevant paid or volunteer work experience.</u>
Degree requirements • Students must complete the course requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).	**<u>Graduate specializations</u>** • <u>Health Informatics</u> • <u>Advanced Analytics</u> **Degree requirements** • Students must complete the course requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).

Course requirements
• ~~Required courses~~
 o The MHI program requires the completion of 10 graduate-level courses. 8 (including the practicum course) of the 10 courses are required core courses. The remaining 2 courses are electives:
  ▪ CS 634 Security and Privacy in Health Systems
  ▪ CS 638 Principles of Data Management and Use or ~~HLTH 605B Quantitative Methods and Analysis~~
  ▪ ~~HLTH 611 The Health Care System~~
  ▪ HLTH 612/CS 792 Data Structures and Standards in Health Informatics
  ▪ HTLH 613 Information Technology for the Health Professional
	Course requirements
	• The MHI<u>A</u> program requires the <u>successful</u> completion of 10 graduate-level courses <u>(6.0 units of courses in total) (note: full credit courses are worth 0.5 units. Half credit modular courses are worth 0.25 units)</u>. 8 (including the practicum course) of the 10 courses are required core courses. The remaining 2 courses are electives. <u>Alternatively, students may choose to pursue one of the Graduate Specializations outlined below.</u>
	• <u>Students are required to complete the following core courses in List A:</u>
	 o <u>HLTH 605B Quantitative Methods and Analysis (0.5 unit weight)</u>

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

▪ HLTH 615 Requirements Specification and Analysis in Health Systems
 	
▪ ~~HLTH 637 Public Health Informatics (offered online)~~
 	
▪ HLTH 640 Professional Experience Practicum
 	
▪ ~~In situations where a student has previously taken a course with learning objectives similar to that of a required MHI course, a higher level graduate course in the same domain area will be substituted.~~
 	
• Elective courses
  o ~~2 of the required 10 courses are electives. The following online courses are currently offered and can be chosen as electives:~~
    ▪ ~~CS 636 Introduction to Computer Networks and Distributed Computer Systems~~
    ▪ ~~CS 638 Principles of Data Management and Use or HLTH 605B Quantitative Methods and Analysis (note: courses taken from the list of required courses cannot be taken to satisfy the elective course requirements)~~
    ▪ HLTH 603 Health Policy in Public Health
    ▪ HLTH 608 Health and Risk Communication in Public Health
    ▪ HLTH 609 Management and Administration of Public Health Services
    ▪ HLTH 614 Evaluation of Public Health Programs
    ▪ ~~HTLH 616 Decision Making and Systems Thinking in Health Informatics~~
    ▪ HLTH 631 Public Health Surveillance
    ▪ HLTH 632 Health Economics and Public Health
    ▪ ~~HLTH 649 Ethics and Privacy Considerations for Digital Technology and AI in Health~~
    ▪ ~~HLTH 650A Application of Artificial Intelligence in Health~~
    ▪ ~~HLTH 650B Machine Learning Techniques in Health~~
    ▪ ~~HLTH 654 Systems Thinking and Analysis~~
	o HLTH 612/CS 792 Data Structures and Standards in Health Informatics (0.5 unit weight)
	  o HTLH 613 Information Technology for the Health Professional (0.5 unit weight)
	  o HLTH 640 Professional Experience Practicum (1.5 unit weight)
	  o <u>HLTH 649A Privacy and Ethics (0.25 unit weight) and HLTH 649B Leadership in Digital Transformation (0.25 unit weight)</u>
	• <u>Students are required to complete 3 core courses (1.50 units total) from List B:</u>
	  o CS 634 Security and Privacy in Health Systems (0.5 unit weight)
	  o CS 638 Principles of Data Management (0.5 unit weight)
	  o HLTH 615 Requirements Specification and Analysis in Health Systems (0.5 unit weight)
	  o <u>HLTH 619 Fundamental Research Methods in Health Informatics (0.5 unit weight)</u>
	  o <u>HLTH 650A Application of Artificial Intelligence in Health (0.25 unit weight) and HLTH 650B Machine Learning Techniques in Health (0.25 unit weight)</u>
	  o <u>HLTH 718A Advanced Artificial Intelligence in Health I (0.5 unit weight)</u>
	  o <u>HLTH 718B Natural Language Processing Algorithm and Application in Health (0.5 unit weight)</u>
	• Elective courses <u>(choose 2 from List C):</u>
	  o HLTH 603 Health Policy in Public Health (0.5 unit weight)
	  o HLTH 608 Health and Risk Communication in Public Health (0.5 unit weight)
	  o HLTH 609 Management and Administration of Public Health Services (0.5 unit weight)
	  o <u>HLTH 611 Health Care System (0.5 unit weight)</u>
	  o HLTH 614 Evaluation of Public Health Programs (0.5 unit weight)
	  o <u>HLTH 620 Pandemic Preparedness (0.5 unit weight)</u>
	  o HLTH 631 Public Health Surveillance (0.5 unit weight)
	  o HLTH 632 Health Economics and Public Health (0.5 unit weight)
	  o <u>HLTH 633 Digital Health (0.5 unit weight)</u>

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
▪ HLTH 661 Geographic Information Systems and Public Health ▪ HLTH 662 Global Health ▪ ~~HLTH 718A Advanced Artificial Intelligence in Health I~~ ▪ ~~HLTH 718B Natural Language Processing Algorithm and Application in Health~~ ▪ STAT 631 Introduction to Statistical Methods in Health Informatics • Students can also choose from online and on-campus courses offered by both Computer Science and the School of Public Health Sciences with the permission of the program leader. • At a minimum, students must obtain an average of 75% or higher in aggregate on the courses presented in fulfilment of the degree requirements. Grades on all courses presented to fulfill the degree requirements must be 70% or higher. A grade below 70% in any course or failing to maintain an average of 75% will necessitate a review of the student's status by the School and may result in a student being required to complete additional coursework or being required to withdraw from the program. The School reserves the right to stipulate additional coursework if it is necessary for the student's preparation.	- o <u>HLTH 637 Public Health Informatics (0.5 unit weight)</u> - o HLTH 661 Geographic Information Systems and Public Health <u>(0.5 unit weight)</u> - o HLTH 662 Global Health <u>(0.5 unit weight)</u> - o STAT 631 Introduction to Statistical Methods in Health Informatics <u>(0.5 unit weight)</u> - o Students can also choose from online and on-campus courses offered by both Computer Science and the School of Public Health Sciences with the permission of the program leader. • <u>Students may choose to pursue one of the following Graduate Specializations:</u> <u>1. Health Informatics</u> <u>2. Advanced Analytics</u> • <u>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 Graduate Specialization.</u> • <u>All MHIA Graduate Specializations consist of a set of at least 4 (0.50 weight) graduate 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 Specializations are described below.</u> <u>1. Graduate Specialization in Health Informatics</u> • <u>To receive the Graduate Specialization in Health Informatics students must successfully complete the following compulsory courses (0.50 unit weight) and 2 (0.50 unit weight) elective courses:</u> - o <u>Compulsory courses (0.50 unit weight):</u> ▪ <u>CS 634 Security and Privacy for Health System (0.5 unit weight)</u> ▪ <u>CS 638 Principles of Database Management and Use (0.5 unit weight)</u>

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	▪ HLTH 612/CS 792 Health Data Standards ▪ HLTH 613A IT Infrastructure for Health Professionals (0.25 unit weight) and HLTH 613B IT Applications for Health Professionals (0.25 unit weight) ▪ HLTH 615 Requirements Specification and Analysis in Health Systems (0.5 unit weight) ▪ HLTH 640 Professional Experience Practicum (1.5 unit weight) ▪ HLTH 649A Privacy and Ethics (0.25 unit weight) and HLTH 649B Leadership in Digital Transformation (0.25 unit weight) ▪ HLTH 605B Quantitative Methods (0.5 unit weight) o Elective courses (choose 2 (0.50 unit weight) from the following list): ▪ HLTH 650A Application of Artificial Intelligence in Health (0.25 unit weight) and HLTH 650B Machine Learning Techniques in Health (0.25 unit weight) ▪ HLTH 619 Fundamental Research Methods in Health Informatics (0.5 unit weight) ▪ HLTH 606B Principles of Epi (0.5 unit weight) ▪ HLTH 611 The Healthcare System (0.5 unit weight) ▪ HLTH 620 Pandemic Preparedness (0.5 unit weight) ▪ HLTH 631 Public Health Surveillance (0.5 unit weight) ▪ HLTH 633 Digital Health (0.5 unit weight) ▪ HLTH 637 Public Health Informatics (0.5 unit weight) ▪ HLTH 661 Geographic Information Systems and Public Health (0.5 unit weight) 2. Graduate Specialization in Advanced Analytics • To receive the Graduate Specialization in Advanced Analytics, students must successfully complete the following compulsory courses (0.50 unit weight) and 2

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	(0.50 unit weight) elective courses:
	o Compulsory courses (0.50 unit weight)
	▪ HLTH 605B Quantitative Methods (0.5 unit weight)
	▪ HLTH 612/CS 792 Health Data Standards (0.5 unit weight)
	▪ HLTH 613A IT Infrastructure for Health Professionals (0.25 unit weight) and HLTH 613B IT Applications for Health Professionals (0.25 unit weight)
	▪ HLTH 619 Fundamental Research Methods in Health Informatics (0.5 unit weight)
	▪ HLTH 640 Professional Experience Practicum (1.5 unit weight)
	▪ HLTH 649A Privacy and Ethics (0.25 unit weight) and HLTH 649B Leadership in Digital Transformation (0.25 unit weight)
	▪ HLTH 650A Application of Artificial Intelligence in Health (0.25 unit weight) and HLTH 650B Machine Learning Techniques in Health (0.25 unit weight)
	▪ HLTH 718A Advanced AI in Health I: Deep Learning (0.25 units weight) and HLTH 718B Advanced AI in Health II: NLP (0.25 unit weight)
	o Elective courses (choose 2 (0.50 unit weight) from the following list):
	▪ CS 634 Security and Privacy for Health System) (0.5 unit weight)
	▪ CS 638 Principles of Database Management and Use (0.5 unit weight)
	▪ HLTH 606B Principles of Epi (0.5 unit weight)
	▪ HLTH 611 The Healthcare System (0.5 unit weight)
	▪ HLTH 637 Public Health Informatics (0.5 unit weight)
	▪ HLTH 620 Pandemic Preparedness (0.5 unit weight)
	▪ HLTH 631 Public Health Surveillance (0.5 unit weight)
	▪ HLTH 633 Digital Health (0.5 unit weight)

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	- ▪ <u>HLTH 661 Geographic Information Systems and Public Health (0.5 unit weight)</u> - At a minimum, students must obtain an average of 75% or higher in aggregate on the courses presented in fulfilment of the degree requirements. Grades on all courses presented to fulfill the degree requirements must be 70% or higher. A grade below 70% in any course or failing to maintain an average of 75% will necessitate a review of the student's status by the School and may result in a student being required to complete additional coursework or being required to withdraw from the program. The School reserves the right to stipulate additional coursework if it is necessary for the student's preparation.

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

1) All currently registered students in the MHI program will have the option of graduating with either the original or revised program name. Details of the program name change will be communicated to them by the School, via email. By default, students will retain the original program name. Students who wish to change to the revised program name will need to indicate this to the Graduate Officer/Graduate Coordinator, and have the required courses for the name change.

2) Students will have the option to select a specialization and take courses towards that goal to gain greater depth in the specialization areas or stay in the general MHIA degree requirements

3) Because of the new program, we are cleaning up the electives so that students are able to take the electives listed. This will not influence students in the program because they can still take any health electives. The removed courses were never offered or available to online students. Students can take a specialization if they can complete all the courses in the specialization.

4) No impact to current students. This admission language will make it clearer to applicants that they need one professional and one academic reference.

Department/School approval date (09/22/24):
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 11/05/24
Faculty approval date (mm/dd/yy): 11/21/24
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):
Senate approval date (mm/dd/yy) (if applicable):

For Approval   **Open Session**

To:	Senate
From:	Senate Graduate and Research Council
Presenter(s):	Charmaine Dean Vice-President, Research & International Clarence Woudsma Interim Co-Associate Vice-President, Graduate Studies and Postdoctoral Affairs
Date of Meeting:	March 3, 2025
Agenda Item:	**6.4 Senate Graduate and Research Council: Faculty of Science – Major Modifications**

Recommendation/Motion

Motion: That Senate approve the major modifications to the PhD and MSc in Biology Graduate research fields, effective 1 May 2025, as presented.

Summary

Senate Graduate & Research Council met on January 27, 2025 and agreed to forward the following items to Senate for approval as part of the regular agenda.

   a. Doctor of Philosophy (PhD) in Biology - revising the Graduate Research Fields
   b. Master of Science (MSc) in Biology – revising the Graduate Research Fields

Proposal/Rationale

The Graduate Research Fields do not reflect the current department following numerous retirements over the past 15 years and the changing names of disciplines. These new fields were discussed at a departmental retreat in Fall 2022 and voted on in a departmental meeting in January 2023. These new Graduate Research Fields were also included in our Self Study Report for Augmented Academic Program Review (2016-2022).

Jurisdictional Information

This item is being submitted to Senate in accordance with Senate Bylaw 2, section 4.03(e): "Consider, study and review all proposals for new graduate programs, the deletion of graduate programs, major changes to existing graduate programs, arrange for internal appraisals as the council shall see fit, and make recommendations to Senate thereon."

Governance Path

Science Faculty Council: 11/25/2025

Senate Graduate and Research Council: 01/27/2025

Documentation Provided

Appendix: Proposed Major Modifications – Faculty of Science

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

Faculty: Science

Programs:

1) Doctor of Philosophy (PhD) in Biology

2) Master of Science (MSc) in Biology

Program contact name(s): Kirsten Müller, Paul Craig, April Wettig

Form completed by: Kirsten Müller

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

  Revising the PhD and MSc in Biology Graduate Research Fields.

Is this a <u>major modification</u> to the program? Yes

Rationale for change(s):

  The Graduate Research Fields do not reflect the current department following numerous retirements over the past 15 years and the changing names of disciplines. These new fields were discussed at a departmental retreat in Fall 2022 and voted on in a departmental meeting in January 2023. These new Graduate Research Fields were also included in our Self Study Report for Augmented Academic Program Review (2016-2022).

Proposed effective date: Term: Spring   Year: 2025

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

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/H1blWJCCjn

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/rk4gbyAAi2

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Graduate research fields • ~~Bioinformatics, Systematics and Evolution~~ • ~~Ecology and Environmental Biology~~ • Microbiology • ~~Molecular Genetics~~ • Physiology~~, Cell~~ <u>and</u> ~~Developmental~~ Biology	**Graduate research fields** • <u>Biochemistry</u> • <u>Computational Biology</u> • <u>Ecology and Evolution</u> • Microbiology • Physiology <u>and</u> Cell Biology

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

Currently there are 132 students enrolled within Biology graduate programs, these students will be informed of the updates to the fields but they will not be impacted by the changes.

Department/School approval date (01/31/2023):

Reviewed by GSPA (for GSPA use only) ⊠ date (mm/dd/yy): 09/20/24

Faculty approval date (11/25/2024):

Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):

Senate approval date (mm/dd/yy) (if applicable):

For Approval   **Open Session**

To: Senate

From: Senate Undergraduate Council

Presenter(s):   David DeVidi
                    Associate Vice-President, Academic

Date of Meeting: March 3, 2025

Agenda Item: **7.1**   **Senate Undergraduate Council: Faculty of Arts —
                                 Major Modifications**

Recommendation/Motion

1. That Senate approve the major modifications for Conrad Grebel University College, including retiring two specializations and creating three new specializations, as part of a larger program revision, effective September 1, 2025, as presented.

2. That Senate approve the major modifications for the Department of Fine Arts: Three-Year General Visual Culture, Honours Visual Culture, and Visual Culture in a Global Context Minor, effective September 1, 2025, as presented.

3. That Senate approve the deletion of the Digital & Public History Specialization, and major plan modifications for the International Studies Minor, effective September 1, 2025, as presented.

4. That Senate approve the major plan modifications to the Financial Leadership Specialization, effective September 1, 2025, as presented.

5. That Senate approve the regulation changes for the Bachelor of Arts Degree Requirements, Assessments: Scheduling Parameters, and Arts: Courses and Classes, effective September 1, 2025, as presented.

Summary

Senate Undergraduate Council met on January 28, 2025 and agreed to forward the above items to Senate for approval as part of the regular agenda.

Proposal/Rationale

1. Conrad Grebel University College, including retiring two specializations and creating three new specializations, as part of a larger program revision.

- There has been minimal uptake of these specializations. Furthermore, new programming better encapsulates the significance of global perspectives in general music studies

2. Department of Fine Arts: Three-Year General Visual Culture, Honours Visual Culture, and Visual Culture in a Global Context Minor

- The new specializations: Composition Specialization, Performance Specialization, and Cultural Context and Analysis Specialization, provide clear guidance to students interested in pursuing particular areas. By formalizing a group of existing courses that concentrate in specific areas of music studies, this removes any ambiguity for advisors and for students who enter the program. This helps students and advisors identify academic goals and develop skills in their areas of interest early on in their music study. Furthermore, adding specializations to the new plan would allow students to show their particular area(s) of interest and excellence after completion of degree requirements to future employers or a graduate admissions committee. We received positive feedback in meetings with music students who have looked over the new plan and specializations. Overall, they have expressed excitement and the importance of being recognized for their work on their diplomas, which the specializations would clearly illustrate. Together, the new plan and specializations serve to better structure a student's progression through the music program in terms of preparing them to take upper-level courses in their third and fourth year.

- The renovation on our VCULT Plans presented here looks to address several issues with our current Visual Culture curricula. It has been several years since we have looked more closely at our VCULT plans. The impacts of COVID on student learning, as well as ongoing changes to our faculty complement, have made it clear that now is the time to address some of the changes we have been thinking about. The proposed changes and revisions will leave the name of our plans unchanged. They will continue to be known as Visual Culture Honours, Visual Culture Three Year General and Visual Culture Minor in a Global Context. We are looking to invigorate our existing course offerings in order to align the plan more closely with current art history and visual culture research, while also being representative of a more global/cosmopolitan approach to teaching visual culture. We have discovered that by introducing more courses with a focus on museological, curatorial and art management, we will address an area of interest among both Visual Culture and Studio Art students who, upon graduation, often go on to work in these fields. The proposed changes will also make the program more self-sustaining, while offering a clear pedagogical focus, which will help students navigate the curriculum.

  This proposal is the result of a year-long work with various stakeholders within our Department, AUO, Centre for Teaching Excellence and our students. The Department's Curriculum Committee has met several times over the last year to work on drafts of this plan as we carefully considered various issues that are central to the Visual Culture curriculum and the needs of our students, as well as to Fine Arts Department as a whole. Some of the principle considerations that we kept close throughout this process include: where our majors and minors in Visual Culture ultimately end up working after they graduate (they work in galleries and museums, art institutions, continue their education and become researchers and professors, and work in the non-profit sector); how the needs of Visual Culture majors intersect with the needs of our Studio Art majors and how we can make closer ties between these degrees; we have also taken a very close look at the current approved courses and have made edits to these courses in order to bring the offering in line with what visual culture, especially as it relates to art, new media and related visual practices, features in the courses. We decided to make sure that courses included on our list reflect current research and pedagogical approaches, and also strengthen the ties between our VCULT and FINE STUDIO plans. Our current faculty complement

impacts the sustainability of our current plan and these changes have been informed by this reality.

3. Digital & Public History Specialization, and major plan modifications for the International Studies Minor

- The History Department proposes the immediate retirement of our Digital and Public History Specialization. The specialization was originally created in the mid-2010s when the History Department's faculty "bench strength" was very different than it is now. Unlike the other Specializations offered in the Department of History, which contain a wide variety of courses for students to choose from, the Digital and Public History Specialization only has five core courses, four of which are required to earn the specialization. Several of these courses in the Specialization have not been offered in the History Department for more than 6 years, and at least one of the required courses (HIST305: Historical Memory and National Identity) has never been taught before. This specialization is, for all intents and purposes, nonexistent, and should be deactivated as soon as possible. The History Department will eventually replace it with a new, social engagement-themed specialization that covers a broader suite of courses.

- The Global Affairs minor is intended to be an applied minor which will prepare students for interdisciplinary graduate programs or for careers in global affairs in the public sector (provincially/federally); NGO sector; or internationally at institutions of global governance. The minor will focus on topics such as humanitarianism, peace and security, international development, trade, foreign policy and democracy-promotion.

  The rationale for this major revision of the existing International Studies minor is to reinvigorate the minor in keeping with the latest pedagogical innovations at the University of Waterloo and its commitments to inter-disciplinary and experiential education. We also want to provide students with an applied learning experience that will expand their global knowledge and develop transferable skills to prepare them for a career in global affairs both in Canada and abroad.

  We are shifting away from the word "international" as it refers to the nation-state as the unit of analysis. Instead, we want to be able to recognize the salience of non-state actors and other civil society actors to global process, institutions and developments. Second, since this is an applied minor that will prepare students for a career as a practitioner of global affairs, we have chosen to rely on the way the Canadian government, describes the work of <u>Global</u> Affairs Canada.

  The University of Waterloo has embedded in its [Strategic Plan 2020-2025](#), [Future Ready Talent Framework](#) and [Degree Level Expectations](#) the commitment to developing talent for a complex future. This priority entails: Empowering students to pursue flexible learning pathways; Embrace bold pedagogical approaches that teach students durable, transferable skills and resilience; Stimulate deep learning and develop competencies that will benefit students outside the classroom.

4. Major plan modifications to the Financial Leadership Specialization

  The changes in this specialization align with changing competencies for prospective accounting professionals interested in starting their careers in advisory roles or in a

rotational program offered by large corporations and public sector organizations. Through the rotational programs, prospective accounting professionals gain pre-approved experience as full-time employees over a three-year period working in two to three different roles typically reporting to the enterprise's Chief Financial Officer (CFO).

The three mandatory courses provide foundational competencies – governance, performance management, and internal control – needed to shape decisions and deliver on an enterprise's strategic objectives. With an expanded list of optional courses, students may focus on specific areas of interest that align with emerging competency expectations for accounting and finance professionals, including business analytics, sustainability, and financing.

5. Regulation changes

Bachelor of Arts Degree

Undergraduate Communication Requirement Changes

- Text edits related to the introduction of the new courses ARTS160 and ARTS160E and and confirming practices to ensure students complete the Undergraduate Communications Requirement.

Breadth Requirements Changes
- Note 4 is updated to reflect the change in courses required to complete the Undergraduate Communication Requirement.
- Subjects added: INNOV (Innovation), effective 01 September 2024, GA (Global Affairs), effective 01 September 2025.
- Move RCS to the Language and Cultures requirement list (previously in the Humanities requirement list). Rational provided by the Religious Studies Department states this move reflects the scope of approaches their field of study offers. This also connects to the change of their subject-indicator from RS (Religious Studies) to RSC (Religion, Culture, Spirituality), approved at SUC June 2024.
- The change of subject code from SMF (Sexuality, Marriage, and Family Studies) to SRF (Sexualities, Relationships, and Families), approved at SUC June 2024, is also reflected here.

Assessments: Scheduling Parameters

- There is existing precedent in other faculties in university for large class multi-section Saturday midterms. Holding Saturday or Sunday exams would support the increasing challenges with scheduling tests during week days. We are also including Sunday to consider potential conflicts in terms of Religious Observances. This option would only be pursued as a final resort and the primary objective would be to schedule midterms from Monday-Friday.

Arts: Courses and Classes

- The text is being edited to clarify the rules of repeated courses for different student groups, specifically post- and non-degree students.

Jurisdictional Information

As provided for in Senate Bylaw 2, section 5.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

b. Make recommendations to Senate with respect to new undergraduate programs/plans, the deletion of undergraduate programs/plans, and major changes to undergraduate programs/plans.

Governance Path

Arts Faculty Council: 10/13/2024, 11/13/2024, 12/05/2024

Senate Undergraduate Council: 01/28/2025

Documentation Provided

Appendix: Proposed Changes – Faculty of Arts

Summary

Accounting and Finance, School of
Courses - retires, new, changes for AFM
Plans - changes for Accounting & Financial Management

Classical Studies, Department of
Courses - changes for CLAS, LAT, GRK

Communication Arts, Department of
Courses - new, changes for COMMST, DAC, THPERF

Conrad Grebel University College
Courses - retires, new, changes for CMW, MUSIC, PACS
Plans - changes for Music, Church Music and Worship

Dean of Arts Office
Courses - new, changes for ARTS (Undergraduate Communication Requirement), BLKST
Plans - changes for Black Studies, Fundamentals of Anti-racist Communication

Economics, Department of
Plans - changes for Economics

English Language and Literature, Department of
Courses - new, changes for ENGL
Plans - changes for Creative and Professional Writing, Literature, Literature and Rhetoric, Rhetoric, Media and Professional Communication

Fine Arts, Department of
Courses - retires, new, changes for FINE and VCULT
Plans - changes for Visual Culture

History, Department of
Courses - changes for HIST

Interaction Design and Business, School of
Courses - new, changes for GBDA
Plans - changes for Global Business and Digital Arts

Philosophy, Department of
Courses - retires, changes for GSJ, PHIL

Political Science, Department of
Courses - retires, new, changes for GA (Global Affairs, new), PSCI
Plans - changes for Political Science

Psychology, Department of
Plans - changes for Psychology

Religious Studies, Department of
Courses - new, changes for JS, RCS
Plans - changes for Jewish Studies

Renison University College
Courses - retires, new, changes for APPLS, CHINA, EASIA, SDS, SI, SOCWK

Sociology and Legal Studies, Department of
Courses - new, changes for SOC

St. Jerome's University
Plans - changes for Sexualities, Relationships, & Families

United College

Courses - new, changes for HRTS, INDG

Plans - changes for Social Innovation & Impact

Other Business

Attachment(s)

Course Proposals

Course Proposal Details

Courses - Retire

AFM 363 - No longer offered.

AFM 476 - Cross-listing of ACTSC 471 is also being retired.

FINE 101 - Retiring to unify all of the visual culture courses under the same VCULT code.

FINE 102 - Retiring to unify all of the visual culture courses under the same VCULT code.

FINE 112 - Retiring to allow existing courses to focus on art historical research and a global approach.

FINE 205 - Retiring and creating one special topics course.

FINE 206 - Retiring and creating one special topics course.

FINE 305 - Retiring and creating one special topics course.

FINE 306 - Retiring and creating one special topics course.

FINE 405 - Retiring and creating one special topics course.

FINE 406 - Retiring and creating one special topics course.

GSJ 408 - Cross-listing of REC 408 is also being retired.

MUSIC 253 - This course is being amalgamated with 254 to create a new course.

MUSIC 254 - This course is being amalgamated with 253 to create a new course.

MUSIC 255 - This course is being amalgamated with 256 to create a new course.

MUSIC 256 - This course is being amalgamated with 255 to create a new course.

MUSIC 262 - Course is no longer offered.

PSCI 494 - Consolidated into new course.

PSCI 495 - Consolidated into new course.

PSCI 496 - Consolidated into new course.

PSCI 497 - Consolidated into new course.

SDS 288R - Course cancelled due to low enrolment.

SDS 323R - Course cancelled due to low enrolment.

SDS 326R - Course has never been offered.

SDS 330R - Course has never been offered.

SDS 431R - Course has not been offered since Winter 2018 and will not be offered again.

SOCWK 320R - Course has not been offered since Winter 2017 and will not be offered again.

SOCWK 322R - Course cancelled due to low enrolment.

SOCWK 326R - Course has never been offered.

SOCWK 390A - Course has not been offered since Spring 2010 and will not be offered again.

SOCWK 390B - Course has not been offered since Spring 2010 and will not be offered again.

SOCWK 421R - Course has not been offered since Fall 2013 and will not be offered again.

Courses - New

AFM 285 - New course to adhere to the new Competency Map 2.0 CPA Canada introduced.

APPLS 383R - Creation of new course to offer instruction in English phonetics. Cross-listed with ENGL 383 (also new).

ARTS 160 - New course for Undergraduate Communication Requirement.

ARTS 160E - New course for Undergraduate Communication Requirement.

BLKST 340 - New course in Contemporary African Literature and Film. Cross-listed with ENGL 340 (also new).

COMMST 235 - New course on Games and Society.

DAC 200 - New special topics course.

DAC 404 - New special topics course.

ENGL 234 - New course on Young Adult Literature.

ENGL 340 - New course in Contemporary African Literature and Film. Cross-listed with BLKST 340 (also new).

ENGL 383 - Creation of new course to offer instruction in English phonetics. Cross-listed with APPLS 383R (also new).

GA 200 - New course on Global Affairs.

GA 390 - New special topics course.

GA 400 - New capstone course.

GA 490 - New special topics course.

GBDA 307 - New course on Organizational Behaviour.

GBDA 308 - New course on Entrepreneurship.

GBDA 405 - New course on Strategic Management.

HRTS 498 - New course on Directed Studies in Human Rights.

JS 231 - New course on Antisemitism.

MUSIC 250 - New required course for all music plans.

MUSIC 251 - New required course for all music plans.

PSCI 346 - New course on Global Crisis of Democracy.

PSCI 352 - New course on Peacebuilding in Divided Societies; cross-listed with PACS 318 (existing)

PSCI 408 - New course on Politics of Global Money and Finance.

PSCI 410 - New course on Economic Statecraft.

PSCI 424 - New experiential learning course.

RCS 231 - New course on Antisemitism.

SOC 388 - New cross-listing to PACS 325 (existing).

THPERF 364 - New cross-listing due to the performance nature of current course; cross-listed with ENGL 364 (existing)

THPERF 367 - New cross-listing due to the performance nature of current course; cross-listed with ENGL 367 (existing)

VCULT 201 - New course to reinvigorate existing courses.

VCULT 204 - New course to reinvigorate existing courses.

VCULT 205 - New special topics course.

VCULT 208 - New course to reinvigorate existing courses.

VCULT 305 - New special topics course.

VCULT 405 - New special topics course.

Courses - Changes

AFM 182 - Revised title.

AFM 191 - Revised title and description.

AFM 205 - Revised prerequisites.

AFM 206 - Revised description.

AFM 208 - Revised description.

AFM 321 - Revised description, prerequisites, and corerequisites.

AFM 322 - Revised description.

AFM 326 - Add an additional component.

AFM 335 - Revised prerequisites.

AFM 426 - Revised description and an additional component.

AFM 452 - Revised description, prerequisites, and corerequisites.

AFM 463 - Revised description, prerequisites, and antirequisites.

BLKST 201 - Revised prerequisites.

BLKST 203 - Revised prerequisites. Cross-listed with COMMST 203 and ENGL 225.

BLKST 210 - Revised prerequisites. Cross-listed with ENGL 326.

BLKST 224 - Revised prerequisites. Cross-listed with COMMST 224 and THPERF 224.

BLKST 230 - Revised prerequisites.

BLKST 240 - Revised prerequisites. Cross-listed with ENGL 327.

BLKST 244 - Revised prerequisites and description. Cross-listed with ENGL 328.

CHINA 401R - Revised prerequisites.

CHINA 402R - Revised prerequisites.

CLAS 241 – Change to cross-listing VCULT 241; added antirequisite.

CLAS 242 – Change to cross-listing VCULT 242 ; added antirequisite.

CLAS 341 - Change to cross-listing VCULT 341; added antirequisite.

CLAS 342 - Change to cross-listing VCULT 342; added antirequisite.

CMW 201 - Revised description and consent.

CMW 202 - Revised description and consent.

COMMST 203 - Revised prerequisites. Cross-listed with BLKST 203 and ENGL 225.

COMMST 224 - Revised prerequisites. Cross-listed with BLKST 224 and THPERF 224.

EASIA 120R - Revised description. Cross-listed with RCS 123.

EASIA 206R - Revised description. Cross-listed with RCS 206.

EASIA 207R - Revised description. Cross-listed with RCS 204.

EASIA 231R - Change to cross-listing VCULT 275 ; added antirequisite.

ENGL 225 - Change to cross-listing BLKST 203 and COMMST 203 only.

ENGL 326 - Change to cross-listing BLKST 210 only.

ENGL 327 - Change to cross-listing BLKST 240 only.

ENGL 328 - Revised description. Cross-listed with BLKST 244.

ENGL 364 - Adding cross-listing of THPERF 364.

ENGL 367 - Adding cross-listing of THPERF 367.

ENGL 378 - Removed cross-listing of MTHEL 300 (will be retired; ENGL 378 will remain).

ENGL 410 - Revised description and prerequisites.

GBDA 102 - Revised number (was 211), course level, description, and antirequisites.

GBDA 206 - Revised number (was 311), course level, and antirequisites.

GBDA 207 - Revised number (was 305), course level, description, prerequisites, and antirequisites.

GBDA 402 - Revised units (from 2.00 to 1.50).

GRK 201 - Revised description. Cross-listed with RCS 223.

GSJ 262 - Change to cross-listing VCULT 262 ; added antirequisite.

GSJ 401 - Revised description. Cross-listed with HLTH 401.

GSJ 410 - Revised description and prerequisites.

HIST 200 - Revised description and removed repeatability.

INDG 216 - Change to cross-listing VCULT 216; added antirequisite.

LAT 101 - Revised description.

LAT 102 - Revised description.

LAT 201 - Revised description.

LAT 202 - Revised description.

MUSIC 111 - Revised description and notes.

MUSIC 260 - Revised title, abbreviated title, and description.

MUSIC 261 - Revised title, abbreviated title, and description.

MUSIC 270 - Revised description component, and prerequisites.

MUSIC 271 - Revised description.

MUSIC 370 - Revised description and component.

MUSIC 371 - Revised description component, and prerequisites.

MUSIC 376 - Revised description.

MUSIC 392 - Revised corerequisites.

PACS 310 - Addition of cross-listing with ERS 310.

PACS 318 - Revised description and creating cross-listing PSCI 352.

PACS 325 - Addition of cross-listing with SOC 388 (new), revision of description.

PHIL 331 - Change to cross-listing VCULT 338; added antirequisite.

PSCI 231 - Revised description.

PSCI 250 - Revised title, abbreviated title, and description.

PSCI 255 - Revised prerequisites.

PSCI 264 - Revised description.

PSCI 301 - Revised description and prerequisites.

PSCI 360 - Revised title, abbreviated title, description, repeat rules, and prerequisites.

PSCI 367 - Revised title, abbreviated title, description, and prerequisites.

PSCI 382 - Revised title, abbreviated title, description, and prerequisites.

PSCI 428 - Revised description.

PSCI 461 - Revised title, abbreviated title, description, repeat rules, and prerequisites.

PSYCH 352 - Revised prerequisites. Cross-listed with PSYCH 352R.

PSYCH 352R - Revised prerequisites. Cross-listed with PSYCH 352.

RCS 123 - Revised description; change of subject code from RS (Religious Studies). Cross-listed with EASIA 120R.

RCS 204 - Revised description; change of subject code from RS (Religious Studies). Cross-listed with EASIA 207R.

RCS 206 - Revised description; change of subject code from RS (Religious Studies). Cross-listed with EASIA 206R.

RCS 223 - Revised description. Cross-listed with GRK 201.

RCS 270 - Change to cross-listing VCULT 252; added antirequisite.

RCS 285 - Revised titles, description; change of subject code from RS (Religious Studies). Cross-listed with ERS 294.

RCS 377 - Change to cross-listing VCULT 377; added antirequisite.

SI 231R - Change to cross-listing VCULT 275; added antirequisite.

SOC 462 - Addition of antirequisite.

SOC 465 - Addition of antirequisite.

SPAN 345 - Revised repeatable course allowance.

THPERF 224 - Revised prerequisites. Cross-listed with BLKST 224 and COMMST 224.

VCULT 100 - Removed cross-listing (FINE 102); added antirequisite.

VCULT 101 - Removed cross-listing (FINE 101); added antirequisite.

VCULT 209 - Revised subject code (from FINE) and prerequisites; added antirequisite.

VCULT 216 - Subject code changed (from FINE); added antirequisite.

VCULT 241- Subject code changed (from FINE); added antirequisite.

VCULT 242- Subject code changed (from FINE); added antirequisite.

VCULT 244 - Subject code changed (from FINE); added antirequisite.

VCULT 245 - Subject code changed (from FINE); added antirequisite.

VCULT 252- Subject code changed (from FINE); added antirequisite.

VCULT 256 - Subject code changed (from FINE); added antirequisite.

VCULT 257 - Subject code changed (from FINE); added antirequisite.

VCULT 262- Subject code changed (from FINE); added antirequisite.

VCULT 275- Subject code changed (from FINE); added antirequisite.

VCULT 281 - Subject code changed (from FINE); added antirequisite.

VCULT 282 - Subject code changed (from FINE); added antirequisite.

VCULT 293 - Subject code changed (from FINE); added antirequisite.

VCULT 319 - Subject code changed (from FINE); added antirequisite.

VCULT 330 - Subject code changed (from FINE); added antirequisite.

VCULT 338- Subject code changed (from FINE); added antirequisite.

VCULT 341 - Subject code changed (from FINE); added antirequisite.

VCULT 342- Subject code changed (from FINE); added antirequisite.

VCULT 377 - Subject code changed (from FINE); added antirequisite.

VCULT 393 - Subject code changed (from FINE); added antirequisite.

Courses: Retire

Code	Title	Type	Workflow Step
AFM 363	Taxation 2 - Integration	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 476	Corporate Financial Decision Making	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 101	Art History and Visual Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 102	World Cinema and Visual Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 112	Modern Art: 1874-1945	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 205	Topics in Art History	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 206	Topics in Film Studies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 305	Topics in Art History	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 306	Topics in Film Studies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 405	Topics in Art History	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
FINE 406	Topics in Film Studies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GSJ 408	Gender and Leisure	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 253	Cathedral and Court: Music to 1600	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 254	Monteverdi to Mozart: Music from 1600-1800	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 255	The Romantic Century: Beethoven and Beyond	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 256	Music Since 1900	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 262	Music for Vocal Ensemble	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 494	Current Issues in Political Science	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 495	Research Apprenticeship in Political Science	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 496	Civic Engagement in Political Science	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 497	Study Abroad Experience	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SDS 288R	International Organizations	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
SDS 323R	International Perspectives in Community Organization	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SDS 326R	Philosophy and History of Social Welfare	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SDS 330R	International Public Policy	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SDS 431R	Radical Ideology and Social Policy	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOCWK 320R	Social Work with Individuals - Theory and Practice 2	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOCWK 322R	International Perspectives in Community Organization	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOCWK 326R	Philosophy and History of Social Welfare	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOCWK 390A	Family Violence: An Advanced Seminar	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOCWK 390B	Family Violence: An Advanced Seminar	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOCWK 421R	Advanced Family Practices	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Courses: New

Code	Title	Type	Workflow Step
AFM 285	Introduction to Sustainability and Sustainable Business	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
APPLS 383R	Phonetics	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ARTS 160	Inquiry and Knowledge Creation	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ARTS 160E	Inquiry and Knowledge Creation	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
BLKST 340	Contemporary African Literature and Film	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
COMMST 235	Games and Society	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
DAC 200	Topics in Digital Design	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
DAC 404	Topics in Advanced Game Design	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 234	Young Adult Literature	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 340	Contemporary African Literature and Film	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 383	Phonetics	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GA 200	Introduction to Global Affairs	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GA 390	Special Topics in Global Affairs	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GA 400	Capstone in Global Affairs	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GA 490	Special Topics in Global Affairs	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GBDA 307	Organizational Behaviour	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GBDA 308	Entrepreneurship	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GBDA 405	Strategic Management	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
HRTS 498	Directed Studies in Human Rights	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
JS 231	Antisemitism	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 250	European Music History 1: Middle Ages to Classical Period	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 251	European Music History 2: Romantic and Modern Eras	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
PSCI 346	Global Crisis of Democracy	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 352	Peacebuilding in Divided Societies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 408	The Politics of Global Money and Finance	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 410	Economic Statecraft	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 424	Experiences in Political Science Beyond the Classroom	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 231	Antisemitism	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOC 388	Refugees and Forced Migration	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
THPERF 364	Shakespeare in Performance at the Stratford Festival	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
THPERF 367	Voice and Text at the Stratford Festival	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 201	Global Histories of Art 1500-1800 C.E.	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 204	Art Institutions	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 205	Topics in Visual Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 208	Global Modern Art: 1800-1940	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 305	Topics in Visual Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 405	Topics in Visual Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Courses: Changes

Code	Title	Type	Workflow Step
AFM 182	Introduction to Financial Reporting and Managerial Decision Making 2	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 191	Introduction to Financial Reporting and Managerial Decision Making 1	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 205	Introduction to Financial Services	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 206	Introduction to Tax	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 208	Introduction to Assurance	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 321	Personal Financial Planning and Taxation	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 322	Derivative Securities	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 326	Student Venture Fund - Analyst	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 335	Business Law for Financial Managers	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 426	Student Venture Fund-Associate	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 452	Internal Audit	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
AFM 463	Introduction to U.S. Taxation	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
BLKST 201	Taking B(l)ack History	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
BLKST 203	Introduction to Anti-Racist Communication	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
BLKST 210	Language, Life, and Literature in the Caribbean	Course	Faculty Council or Skip | Under Review
BLKST 224	Black Performance Studies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
BLKST 230	Black Feminisms	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
BLKST 240	Black Diasporic Lives: 1740-1900	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
BLKST 244	Introduction to Black Canadian Writing	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
CHINA 401R	Introduction to Classical Chinese 1	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
CHINA 402R	Introduction to Classical Chinese 2	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
CLAS 241	Survey of Greek Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
CLAS 242	Survey of Roman Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
CLAS 341	Advanced Studies in Greek Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
CLAS 342	Advanced Studies in Roman Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
CMW 201	Worship Practicum 1	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
CMW 202	Worship Practicum 2	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
COMMST 203	Introduction to Anti-Racist Communication	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
COMMST 224	Black Performance Studies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
EASIA 120R	Monsters and Magic in Japanese Popular Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
EASIA 206R	Japanese Religion and Spirituality	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
EASIA 207R	Buddhism	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
EASIA 231R	Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 225	Introduction to Anti-Racist Communication	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 326	Language, Life, and Literature in the Caribbean	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 327	Black Diasporic Lives: 1740-1900	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 328	Introduction to Black Canadian Writing	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 364	Shakespeare in Performance at The Stratford Festival	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 367	Voice and Text at the Stratford Festival	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 378	Professional Communications in Statistics and Actuarial Science	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
ENGL 410	Eighteenth-Century Women Writers	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GBDA 102	Introduction to Global Business	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GBDA 206	Introduction to Business Financials	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GBDA 207	Global Development and Business	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
GBDA 402	Capstone Course: Cross-Cultural Digital Business	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GRK 201	Intermediate Greek	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GSJ 262	Global Queer Cinema	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GSJ 401	Global Health	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
GSJ 410	Eighteenth-Century Women Writers	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
HIST 200	History and Film	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
INDG 216	Indigenous Visual Culture in Canada	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
LAT 101	Introductory Latin 1	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
LAT 102	Introductory Latin 2	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
LAT 201	Intermediate Latin	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
LAT 202	Selections from Latin Authors	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 111	Fundamentals of Music Theory	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 260	Music for Orchestra	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 261	Opera and Musical Theatre	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 270	Music Theory 1	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 271	Music Theory 2	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 370	Music Theory 3 (19th Century)	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 371	Music Theory 4 (20th Century)	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 376	Composition Seminar	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
MUSIC 392	Special Topics in Global Music	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PACS 310	Peace and the Environment	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PACS 318	Peacebuilding in Divided Societies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
PACS 325	Refugees and Forced Migration	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PHIL 331	Philosophy of Art	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 231	Government and Business	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 250	Comparative Politics: Democracy and Authoritarianism	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 255	Political Economy of Rich Countries	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 264	American Government and Politics	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 301	Canadian Political Economy	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 360	Issues in Canadian Politics	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 367	Issues in American Politics	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 382	Canada in Global Context	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 428	The State and Economic Life	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSCI 461	Critical Perspectives on Canadian Politics	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSYCH 352	Culture and Psychology	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
PSYCH 352R	Culture and Psychology	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 123	Monsters and Magic in Japanese Popular Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 204	Buddhism	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 206	Japanese Religion and Spirituality	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 223	Intermediate Greek	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 270	Religion in Popular Film	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 285	Spirituality, Religion, and Ecology	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
RCS 377	Religion in Science Fiction Films and Television	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SI 231R	Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
SOC 462	Technology and Inequality	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SOC 465	Decolonizing Research Through the Urban Arts	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
SPAN 345	Directed Studies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
THPERF 224	Black Performance Studies	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 100	World Cinema and Visual Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 101	Art History and Visual Culture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 209	Global Modernisms: 1940-1970	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 216	Indigenous Visual Culture in Canada	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 241	Survey of Greek Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 242	Survey of Roman Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 244	History of Visual Media to 1910	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 245	History of Film and Visual Media from 1900 to Today	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 252	Religion in Popular Film	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 256	Experimental Film	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 257	Video, New Media and the Digital Turn	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 262	Global Queer Cinema	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 275	Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 281	Art and Gender	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 282	Canadian Art from the 17th Century to 1940	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 293	Fine Arts Abroad	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 319	Contemporary Art	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
VCULT 330	Topics Course in Museums, Galleries, Curatorship	Course	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
VCULT 338	Philosophy of Art	Course	SUC Subcommittee, SUC Curricular Subcommittee	Under Review
VCULT 341	Advanced Studies in Greek Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee	Under Review
VCULT 342	Advanced Studies in Roman Art and Architecture	Course	SUC Subcommittee, SUC Curricular Subcommittee	Under Review
VCULT 377	Religion in Science Fiction Films and Television	Course	SUC Subcommittee, SUC Curricular Subcommittee	Under Review
VCULT 393	Fine Arts Abroad	Course	SUC Subcommittee, SUC Curricular Subcommittee	Under Review

Programs & Plans Proposals

Programs & Plans Proposal Details

Plans - Minor Modifications

Links to proposals below are in the same order as they are listed here.

Accounting and Finance, School of

Accounting & Financial Management (Bachelor of, Honours)
- Minor revisions to courses required.

Conrad Grebel University College

Music (Three-Year General)
Music (Four-Year General)
Music (Honours)
- Removed audition requirement; removed exit requirement.
- Program vision to promote ideas and practices beyond the Western European art tradition.
- Retirement of two specializations (see related proposals); addition of three new specializations (see related proposals).

Music Minor
- Program vision to promote ideas and practices beyond the Western European art tradition.

Church Music & Worship Diploma
- Open plan up to all students (previously only available to non- and post-degree students).
- Minor revisions to courses required.

Church Music & Worship Minor
- Minor revisions to courses required.

Dean of Arts Office

Black Studies Diploma
- Minor revisions of courses required to give more flexibility to students.

Fundamentals of Anti-Racist Communication Diploma
- Minor revisions of courses required to give more flexibility to students.

Economics, Department of

Economics Minor
- Removal of CS-Business Specialization and SE-Business Specialization from invalid credential list.

English Language & Literature, Department of

English - Creative & Professional Writing (Three-Year General)
English - Language & Literature (Three-Year General)
English - Literature & Rhetoric (Three-Year General)
English - Rhetoric, Media, & Professional Communication (Three-Year General)
English - Creative & Professional Writing (Four-Year General)
English - Literature (Four-Year General)
English - Literature & Rhetoric (Four-Year General)
English - Rhetoric, Media, & Professional Communication (Four-Year General)
English - Creative & Professional Writing (Honours)
English - Literature (Honours)
English - Literature & Rhetoric (Honours)
English - Rhetoric, Media, & Professional Communication (Honours)
Global Literatures Specialization
- Addition of new courses to plan requirements.

Interaction Design and Business, School of

Global Business & Digital Arts (Bachelor of, Honours)
- Text edits related to the introduction of the new courses ARTS 160 and ARTS 160E and confirming practices to ensure students complete the Undergraduate Communications Requirement.
- New courses added to requirements; course removed from requirements.

Political Science, Department of

Political Science (Four-Year General)
Political Science (Honours)
- Minor revisions of courses required.

Psychology, Department of

Psychology (Three-Year General)
Psychology (Four-Year General)
Psychology (Bachelor of Arts, Honours)
- Removal of declaration requirements text. The information already exists in the Regulations for Faculty of Arts Students Regulations - Arts: Academic Plan Information calendar page.
- Changes to the layout of the course requirements.

Religious Studies, Department of

Jewish Studies Minor
- Addition of new course.

St. Jerome's University

Sexualities, Relationships, & Families (Four-Year General)
Sexualities, Relationships, & Families (Honours)
Sexualities, Relationships, & Families Minor
- Minor revisions of courses required.

United College

Social Innovation & Impact Minor
- Minor revisions of courses required.

Programs & Plans: Retire
No proposals have been added.

Programs & Plans: Major Modifications
No proposals have been added.

Programs & Plans: Minor Modifications

Code	Title	Type	Workflow Step
H-Accounting & Financial Management	Accounting and Financial Management (Bachelor of Accounting and Financial Management - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
3G-Music	Music (Bachelor of Arts - Three-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-Music	Music (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-Music	Music (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Music Minor	Music Minor	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Church Music & Worship Diploma	Diploma in Church Music and Worship	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Church Music & Worship Minor	Church Music and Worship Minor	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Black Studies Diploma	Diploma in Black Studies	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Fundamentals of Anti-Racist Communication Diploma	Diploma in Fundamentals of Anti-Racist Communication	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Economics Minor	Economics Minor	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
3G-English - Creative & Professional Writing	English - Creative and Professional Writing (Bachelor of Arts - Three-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
3G-English - Language & Literature	English - Language and Literature (Bachelor of Arts - Three-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
3G-English - Literature & Rhetoric	English - Literature and Rhetoric (Bachelor of Arts - Three-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
3G-English - Rhetoric, Media, & Professional Communication	English - Rhetoric, Media, and Professional Communication (Bachelor of Arts - Three-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-English - Creative & Professional Writing	English - Creative and Professional Writing (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-English - Literature	English - Literature (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-English - Literature & Rhetoric	English - Literature and Rhetoric (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-English - Rhetoric, Media, & Professional Communication	English - Rhetoric, Media, and Professional Communication (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-English - Creative & Professional Writing	English - Creative and Professional Writing (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-English - Literature	English - Literature (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Code	Title	Type	Workflow Step
H-English - Literature & Rhetoric	English - Literature and Rhetoric (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-English - Rhetoric, Media, & Professional Communication	English - Rhetoric, Media, and Professional Communication (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Global Literatures Specialization	Global Literatures Specialization	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-Global Business & Digital Arts	Global Business and Digital Arts (Bachelor of Global Business and Digital Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-Political Science	Political Science (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-Political Science	Political Science (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
3G-Psychology	Psychology (Bachelor of Arts - Three-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-Psychology	Psychology (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-Psychology (BA)	Psychology (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Jewish Studies Minor	Jewish Studies Minor	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
4G-Sexualities, Relationships, & Families	Sexualities, Relationships, and Families (Bachelor of Arts - Four-Year General)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
H-Sexualities, Relationships, & Families	Sexualities, Relationships, and Families (Bachelor of Arts - Honours)	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Sexuality, Marriage, & Family Studies Minor	Sexualities, Relationships, and Families Minor	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review
Social Innovation & Impact Minor	Social Innovation and Impact Minor	Program	SUC Subcommittee, SUC Curricular Subcommittee | Under Review

Regulations Proposals

Regulations Proposal Details

Regulations: Retire

No proposals have been added.

Regulations: New

No proposals have been added.

Regulations: Changes

No proposals have been added.

Music & Peace Specialization
Music and Peace Specialization

Under Review | Fall 2025

Proposal Information

Status

Changes

~~Active~~**Retired**

Warning: All versions that start after the retired version will be deleted.

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes

- Effective Term and Year
- participants
- Admin Notes

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2023

Proposal Details

Proposal Type ❓
Retire

Academic Unit Approval
05/10/2024

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Closure of a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma,

minor

Is there an impact to existing students? ❓
No

Rationale and Background for Change(s) ❓
There has been minimal uptake.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Conrad Grebel University College

Academic Unit ❓
Conrad Grebel University College

Field of Study ❓
Music

Faculty ❓
Faculty of Arts with Conrad Grebel University College

Undergraduate Credential Type ❓
Specialization

Program/Plan Name ❓
Music and Peace Specialization

Admissions

Specialization is available for students in the following majors ❓
- 3G-Music, 4G-Music, or H-Music

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓
- Before requesting admission to this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓
Yes

List of Invalid Combinations ❓
Music in Global Context Specialization

Average Requirement ❓
No

Graduation Requirements ❓
- Complete a total of 2.5 units.

Course Requirements (units) ❓

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete 1 of the following:
    - MUSIC335 - Perspectives in Music and Peace (0.50)
    - PACS335 - Perspectives in Music and Peace (0.50)

List 1

- Complete 1 of the following:
    - HIST232 - A History of Peace Movements (0.50)
    - LS271 - Conflict Resolution (0.50)
    - PACS201 - Roots of Conflict, Violence, and Peace (0.50)
    - PACS202 - Conflict Resolution (0.50)
    - PACS203 - A History of Peace Movements (0.50)

List 2

- Complete all of the following
    - Complete 1.5 additional units from courses in List 1 or List 2. See Additional Constraints.
    - Choose any of the following:
        - GSJ334 - Women and Music (0.50)
        - MUSIC231 - Music Cognition (0.50)
        - MUSIC334 - Women and Music (0.50)
        - MUSIC355 - Music and Culture Travel Course (0.50)
    - Complete no more than 1 from the following:
        - MUSIC232 - Music as a Global Phenomenon (0.50)
        - MUSIC233 - Musical Rhythms of the World (0.50)

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in **Cross-Listings Options** ❓
requirements?
All cross-listings to be displayed
Yes

Additional Constraints ❓

1. Students may only complete one course from any cross-listed set.
2. No one course may fulfil more than one requirement within the Specialization.

Notes ❓

- Visit the Department of Music website for further information.

Workflow Information

Workflow Path ❓	**Faculty/AFIW Path(s) for Workflow** ❓	**Senate Workflow**
Committee approvals	Conrad Grebel University College Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans

SPECIALIZATIONS LIST

❯ 4G-Music - Music (Bachelor of Arts - Four-Year General)	View Programs ❯
❯ 3G-Music - Music (Bachelor of Arts - Three-Year General)	View Programs ❯
❯ H-Music - Music (Bachelor of Arts - Honours)	View Programs ❯

Music in Global Context Specialization
Music in Global Context Specialization

Under Review | Fall 2025

Proposal Information

Status

Changes

~~Active~~**Retired**

Warning: All versions that start after the retired version will be deleted.

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular   expand ▲
Subcommittee

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes

- Effective Term and Year
- participants
- Admin Notes

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2023

Proposal Details

Proposal Type ❓
Retire

Academic Unit Approval
05/10/2024

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Closure of a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma,

minor

Is there an impact to existing students? ❓
No

Rationale and Background for Change(s) ❓
There has been minimal uptake. Furthermore, the new programming better encapsulates the significance of global perspectives in general music studies.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Conrad Grebel University College

Academic Unit ❓
Conrad Grebel University College

Field of Study ❓
Music

Faculty ❓
Faculty of Arts with Conrad Grebel University College

Undergraduate Credential Type ❓
Specialization

Program/Plan Name ❓
Music in Global Context Specialization

Admissions

Specialization is available for students in the following majors ❓
- 3G-Music, 4G-Music, or H-Music

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓
- Before requesting admission to this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓
Yes

List of Invalid Combinations ❓
Music & Peace Specialization

Average Requirement ❓
No

Graduation Requirements ❓
- Complete a total of 3.0 units.

Course Requirements (units) ❓

Course Requirements (units) ?

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ?

Required Courses

- Complete all of the following
    - Complete all the following:
        - MUSIC232 - Music as a Global Phenomenon   (0.50)
        - MUSIC233 - Musical Rhythms of the World   (0.50)
    - Complete 3 of the following:
        - GSJ334 - Women and Music   (0.50)
        - MUSIC231 - Music Cognition   (0.50)
        - MUSIC333 - Music and Landscape   (0.50)
        - MUSIC334 - Women and Music   (0.50)
        - MUSIC355 - Music and Culture Travel Course   (0.50)
        - MUSIC392 - Special Topics in Global Music   (0.50)
    - Complete 2 of the following:
        - MUSIC116 - Music Ensemble   (0.25)
        - MUSIC117 - Music Ensemble   (0.25)
        - MUSIC216 - Music Ensemble   (0.25)
        - MUSIC217 - Music Ensemble   (0.25)
        - MUSIC316 - Music Ensemble   (0.25)
        - MUSIC317 - Music Ensemble   (0.25)

Course Lists ?

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ?
All cross-listings to be displayed

Additional Constraints ?

1. Students may only complete one course from any cross-listed set.
2. To meet the ensemble course requirement, the courses must be specified as "World Music Ensemble"

2. To meet the ensemble course requirement, the courses must be specified as "World Music Ensemble".

Notes ❓

- Visit the Department of Music website for further information.

Workflow Information

Workflow Path ❓

Committee approvals

Faculty/AFIW Path(s) for Workflow ❓

Conrad Grebel University College
Faculty of Arts

Senate Workflow

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Dependencies

Dependent Courses and Programs/Plans

SPECIALIZATIONS LIST

⌄ 4G-Music - Music (Bachelor of Arts - Four-Year General)	View Programs ❯
⌄ 3G-Music - Music (Bachelor of Arts - Three-Year General)	View Programs ❯
⌄ H-Music - Music (Bachelor of Arts - Honours)	View Programs ❯

Digital & Public History Specialization
Digital and Public History Specialization

Under Review | Fall 2025

Proposal Information

Status

Changes

~~Active~~**Retired**

Warning: All versions that start after the retired version will be deleted.

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

Ashley Day

Kuali - Science

Changes

- Effective Term and Year
- Admin Notes

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2023

Proposal Details

Proposal Type ❓
Retire

Academic Unit Approval
04/19/2024

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Closure of a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma,

minor

Is there an impact to existing students? ❓

No

Rationale and Background for Change(s) ❓

The History Department proposes the immediate retirement of our Digital and Public History Specialization. The specialization was originally created in the mid-2010s when the History Department's faculty "bench strength" was very different than it is now. Unlike the other Specializations offered in the Department of History, which contain a wide variety of courses for students to choose from, the Digital and Public History Specialization only has five core courses, four of which are required to earn the specialization. Several of these courses in the Specialization have not been offered in the History Department for more than 6 years, and at least one of the required courses (HIST305: Historical Memory and National Identity) has never been taught before. This specialization is, for all intents and purposes, nonexistent, and should be deactivated as soon as possible. The History Department will eventually replace it with a new, social engagement-themed specialization that covers a broader suite of courses.

Supporting Documentation

General Program/Plan Information

Faculty ❓

Faculty of Arts

Academic Unit ❓

Department of History

Field of Study ❓

History

Faculty ❓

Faculty of Arts

Undergraduate Credential Type ❓

Specialization

Program/Plan Name ❓

Digital and Public History Specialization

Admissions

Specialization is available for students in the following majors ❓

- 3G-History, 4G-History, or H-History

Admissions Entry Point ❓

Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓

No

Average Requirement ❔
No

Graduation Requirements ❔
- Complete a total of 2.0 units.

Course Requirements (units) ❔

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❔

Required Courses

- Complete 4 of the following:
  - HIST202 - Introduction to Public History (0.50)
  - HIST203 - Methods of Public History (0.50)
  - HIST302 - Digital and Public History Project (0.50)
  - HIST303 - History Gone Digital: An Introduction to History with the Web (0.50)
  - HIST305 - Historical Memory and National Identity (0.50)

Course Lists ❔

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
No

Additional Constraints ❔
1. Students may request to have special topics courses, or courses taken on academic exchange, accepted to meet a specialization requirement. For details, consult the History academic advisor.

Notes ❔
- Visit the Department of History website for further information.

Workflow Information

Workflow Path ❔	Faculty/AFIW Path(s) for Workflow ❔	Senate Workflow
Committee approvals	Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans
SPECIALIZATIONS LIST
- ❯ 3G-History - History (Bachelor of Arts - Three-Year General) — View Programs ❯
- ❯ 4G-History - History (Bachelor of Arts - Four-Year General) — View Programs ❯
- ❯ H-History - History (Bachelor of Arts - Honours) — View Programs ❯

Composition Specialization
Composition Specialization
Under Review | Fall 2025

Proposal Information

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Effective Date and Career

Career   **Important!** ❓
Undergraduate

                                                    Effective Term and Year ❓
                                                    Fall 2025

Proposal Details

Proposal Type ❓   **Academic Unit Approval**
New   05/10/2024

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials
Yes

Co-operative System of Study and Requirements ❓
Not Applicable

Creating or Changing Invalid Combinations ❓   **Invalid Combinations Consultations**

Yes   All impacted areas are within MUSIC

Rationale and Background for New Program/Plan ❓

The new specializations: Composition Specialization, Performance Specialization, and Cultural Context and Analysis Specialization, provide clear guidance to students interested in pursuing particular areas. By formalizing a group of existing courses that concentrate in specific areas of music studies, this removes any ambiguity for advisors and for students who enter the program. This helps students and advisors identify academic goals and develop skills in their areas of interest early on in their music study. Furthermore, adding specializations to the new plan would allow students to show their particular area(s) of interest and excellence after completion of degree requirements to future employers or a graduate admissions committee. We received positive feedback in meetings with music students who have looked over the new plan and specializations. Overall, they have expressed excitement and the importance of being recognized for their work on their diplomas, which the specializations would clearly illustrate. Together, the new plan and specializations serve to better structure a student's progression through the music program in terms of preparing them to take upper-level courses in their third and fourth year.

Consultations (Departmental) ❓
No consultations necessary

Supporting Documentation

General Program/Plan Information

Faculty ❓
Conrad Grebel University College

Academic Unit ❓
Conrad Grebel University College

Field of Study ❓
Music

Faculty ❓
Faculty of Arts with Conrad Grebel University College

Undergraduate Credential Type ❓
Specialization

Program/Plan Name ❓
Composition Specialization

Admissions

Specialization is available for students in the following majors ❓
- 3G-Music, 4G-Music, or H-Music

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓

Yes

List of Invalid Combinations ❓

Church Music & Worship Diploma

Church Music & Worship MinorMusic Minor

Average Requirement ❓

No

Graduation Requirements ❓

- Complete a total of 3.5 units of MUSIC courses.

Course Requirements (units) ❓

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
    - Complete all the following:
        - MUSIC275 - Music and Technology (0.50)
        - MUSIC370 - Music Theory 3 (19th Century) (0.50)
        - MUSIC371 - Music Theory 4 (20th Century) (0.50)
        - MUSIC376 - Composition Seminar (0.50)
        - MUSIC392 - Special Topics in Global Music (0.50)
    - Complete 1.0 additional unit of MUSIC courses at the 300-level or above
    - The following cannot be used towards this academic plan:
        - MUSIC316 - Music Ensemble (0.25)
        - MUSIC317 - Music Ensemble (0.25)
        - MUSIC416 - Music Ensemble (0.25)
        - MUSIC417 - Music Ensemble (0.25)

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?

No

Additional Constraints ❓

Notes ❓

Workflow Information

Workflow Information

Workflow Path ❓

Committee approvals

Faculty/AFIW Path(s) for Workflow ❓

Conrad Grebel University College
Faculty of Arts

Senate Workflow

--

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

Cultural Context & Analysis Specialization
Cultural Context and Analysis Specialization

Under Review | Fall 2025

Proposal Information

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
>
> Mike Grivicic
>
> Diana Goncalves
>
> Kuali - Arts
>
> Kuali - Env
>
> Melanie Figueiredo
>
> Kuali - Math
>
> Kuali - Eng
>
> Kuali - Hlth
>
> Ashley Day
>
> Kuali - Science

Effective Date and Career

Career

Undergraduate

Important! ❓

Effective Term and Year ❓

Fall 2025

Proposal Details

Proposal Type ❓

New

Academic Unit Approval

05/10/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials

Yes

Co-operative System of Study and Requirements ❓

Not Applicable

Creating or Changing Invalid Combinations ❓

Invalid Combinations Consultations

Yes   All impacted areas are in MUSIC

Rationale and Background for New Program/Plan ❓

The new specializations: Composition Specialization, Performance Specialization, and Cultural Context and Analysis Specialization, provide clear guidance to students interested in pursuing particular areas. By formalizing a group of existing courses that concentrate in specific areas of music studies, this removes any ambiguity for advisors and for students who enter the program. This helps students and advisors identify academic goals and develop skills in their areas of interest early on in their music study. Furthermore, adding specializations to the new plan would allow students to show their particular area(s) of interest and excellence after completion of degree requirements to future employers or a graduate admissions committee. We received positive feedback in meetings with music students who have looked over the new plan and specializations. Overall, they have expressed excitement and the importance of being recognized for their work on their diplomas, which the specializations would clearly illustrate. Together, the new plan and specializations serve to better structure a student's progression through the music program in terms of preparing them to take upper-level courses in their third and fourth year.

Consultations (Departmental) ❓
No consultations necessary

Supporting Documentation

General Program/Plan Information

Faculty ❓
Conrad Grebel University College

Academic Unit ❓
Conrad Grebel University College

Field of Study ❓
Music

Faculty ❓
Faculty of Arts with Conrad Grebel University College

Undergraduate Credential Type ❓
Specialization

Program/Plan Name ❓
Cultural Context and Analysis Specialization

Admissions

Specialization is available for students in the following majors ❓
- 3G-Music, 4G-Music, or H-Music

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓

Yes

List of Invalid Combinations ❓

Church Music & Worship Diploma
Church Music & Worship MinorMusic Minor

Average Requirement ❓

No

Graduation Requirements ❓

- Complete at total of 3.5 units of MUSIC courses.
- Two terms of ensemble must be specified as Balinese Percussion Ensemble or equivalent offering of a non-Western music ensemble.

Course Requirements (units) ❓

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
    - Complete all the following:
        - MUSIC491 - Senior Research Project (0.50)
        - MUSIC492 - Senior Honours Thesis (0.50)
    - Complete 1 of the following:
        - MUSIC255 - The Romantic Century: Beethoven and Beyond (0.50)
        - MUSIC332 - Aesthetics of Music (0.50)
    - Complete 1 of the following:
        - MUSIC240 - Introduction to Jazz (0.50)
        - MUSIC246 - Soundtracks: Music in Film (0.50)
        - MUSIC260 - The Symphony (0.50)
        - MUSIC261 - Opera (0.50)
    - Complete 1 of the following:
        - CMW363 - The Church's Song (0.50)
        - CMW364 - Worship and its Music (0.50)
        - MUSIC361 - Art Song (0.50)
        - MUSIC362 - Piano Literature (0.50)
        - MUSIC363 - The Church's Song (0.50)
        - MUSIC364 - Worship and its Music (0.50)
        - RCS357 - The Church's Song (0.50)
        - RCS358 - Worship and its Music (0.50)
    - Complete 2 of the following:
        - GSJ334 - Women and Music (0.50)
        - MUSIC231 - Music Cognition (0.50)
        - MUSIC333 - Music and Landscape (0.50)
        - MUSIC334 - Women and Music (0.50)
        - MUSIC335 - Perspectives in Music and Peace (0.50)
        - MUSIC355 - Music and Culture Travel Course (0.50)
        - MUSIC392 - Special Topics in Global Music (0.50)

Course Lists ❷

Required Courses

No Rules

Are there cross-listed courses listed in **Cross-Listings Options ❷**
requirements?   All cross-listings to be displayed
Yes

Additional Constraints ❷

Students may only complete one course from any cross-listed set.

Notes ❷

Workflow Information

Workflow Path ❷	**Faculty/AFIW Path(s) for Workflow ❷**	**Senate Workflow**
Committee approvals	Conrad Grebel University College	--
	Faculty of Arts	

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

Performance Specialization
Performance Specialization

Under Review | Fall 2025

Proposal Information

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Effective Date and Career

Career

Undergraduate

Important! ❓

Effective Term and Year ❓

Fall 2025

Proposal Details

Proposal Type ❓

New

Academic Unit Approval

05/10/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials

Yes

Co-operative System of Study and Requirements ❓

Not Applicable

Creating or Changing Invalid Combinations ❓

Invalid Combinations Consultations

Yes	All impacted areas are within music

Rationale and Background for New Program/Plan ❓

The new specializations: Composition Specialization, Performance Specialization, and Cultural Context and Analysis Specialization, provide clear guidance to students interested in pursuing particular areas. By formalizing a group of existing courses that concentrate in specific areas of music studies, this removes any ambiguity for advisors and for students who enter the program. This helps students and advisors identify academic goals and develop skills in their areas of interest early on in their music study. Furthermore, adding specializations to the new plan would allow students to show their particular area(s) of interest and excellence after completion of degree requirements to future employers or a graduate admissions committee. We received positive feedback in meetings with music students who have looked over the new plan and specializations. Overall, they have expressed excitement and the importance of being recognized for their work on their diplomas, which the specializations would clearly illustrate. Together, the new plan and specializations serve to better structure a student's progression through the music program in terms of preparing them to take upper-level courses in their third and fourth year.

Consultations (Departmental) ❓

No consultations necessary

Supporting Documentation

General Program/Plan Information

Faculty ❓
Conrad Grebel University College

Academic Unit ❓
Conrad Grebel University College

Field of Study ❓
Music

Faculty ❓
Faculty of Arts with Conrad Grebel University College

Undergraduate Credential Type ❓
Specialization

Program/Plan Name ❓
Performance Specialization

Admissions

Specialization is available for students in the following majors ❓

- 3G-Music, 4G-Music, or H-Music

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓

- Demonstrate a level of performance equivalent to Grade Eight standing at the Royal Conservatory of Music of Toronto is expected for admission. This is determined through an audition. Non-Western musical instruments will also be considered at the discretion of the Department.
- Before requesting admission to this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓

Yes

List of Invalid Combinations ❓

Church Music & Worship Diploma

Church Music & Worship MinorMusic Minor

Average Requirement ❓

No

Graduation Requirements ❓

- Complete a total of 3.0 units of MUSIC courses.
- Demonstrate a level of performance on one instrument (or voice) equivalent to Grade Ten standing at the Royal Conservatory of Music of Toronto. Normally, this is attained through taking Music studio courses – MUSIC 226, MUSIC 227, MUSIC 326, MUSIC 327. Non-Western musical instruments will also be considered at the discretion of the Department.

Course Requirements (units) ❓

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
  - Complete all the following:
    - MUSIC322 - Conducting 2   (0.50)
    - MUSIC370 - Music Theory 3 (19th Century)   (0.50)
  - Complete 1 of the following:
    - MUSIC260 - The Symphony   (0.50)
    - MUSIC261 - Opera   (0.50)
  - Complete 1 of the following:
    - MUSIC361 - Art Song   (0.50)
    - MUSIC362 - Piano Literature   (0.50)
  - Complete 1.0 additional unit of MUSIC courses at the 300-level or above
  - The following cannot be used towards this academic plan:
    - MUSIC316 - Music Ensemble   (0.25)
    - MUSIC317 - Music Ensemble   (0.25)
    - MUSIC416 - Music Ensemble   (0.25)
    - MUSIC417 - Music Ensemble   (0.25)

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?

No

Additional Constraints ❓

Notes ❓

Workflow Information

Workflow Path ❓	Faculty/AFIW Path(s) for Workflow ❓	Senate Workflow
Committee approvals	Conrad Grebel University College Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

Financial Leadership Specialization
Enterprise Performance and Risk Specialization

Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular   expand ▲
Subcommittee
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Effective Term and Year
- Program/Plan Name
- Course Requirements (no units)

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2023

Proposal Details

Proposal Type ❓
Change

Academic Unit Approval

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate

diploma, minor

Is there an impact to existing students? ❓
No

Is the credential name changing?

Yes

Impact of Credential Name Change

The name change applies only to future students (current students may opt in)

Co-operative System of Study and Requirements ❓
No

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for Change(s) ❓

The changes in this specialization align with changing competencies for prospective accounting professionals interested in starting their careers in advisory roles or in a rotational program offered by large corporations and public sector organizations. Through the rotational programs, prospective accounting professionals gain pre-approved experience as full-time employees over a three-year period working in two to three different roles typically reporting to the enterprise's Chief Financial Officer (CFO).

The three mandatory courses provide foundational competencies – governance, performance management, and internal control – needed to shape decisions and deliver on an enterprise's strategic objectives. With an expanded list of optional courses, students may focus on specific areas of interest that align with emerging competency expectations for accounting and finance professionals, including business analytics, sustainability, and financing.

Consultations (Departmental) ❓

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Arts

Academic Unit ❓
School of Accounting and Finance

Field of Study ❓
Accounting and Financial Management

Faculty ❓
Faculty of Arts

Undergraduate Credential Type ❓
Specialization

Proposed
Program/Plan Name ❓
Enterprise Performance and Risk Specialization

Existing
Program/Plan Name ❓
Financial Leadership Specialization

Admissions

Specialization is available for students in the following majors ❓

- H-Accounting & Financial Management

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓
No

Average Requirement ❓
No

Graduation Requirements ❓
- Complete a total of 3.0 units.

Course Requirements (units) ❓

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
    - Complete all the following:
        - AFM434 - Corporate Governance and Risk Management (0.50)
        - ~~AFM478 - International Financial Management (0.50)~~
        - ~~BET450 - Leadership (0.50)~~
        - ~~BET460 - Business Negotiations (0.50)~~
        - **AFM452 - Internal Audit (0.50)**
        - **AFM482 - Performance Measurement and Organization Control (0.50)**
    - ~~Complete 1 of the following:~~
        - ~~AFM422 - Management of Financial Institutions (0.50)~~
        - ~~AFM470 - Financial Management of High Growth Companies (0.50)~~
        - ~~AFM477 - Mergers and Acquisitions (0.50)~~
    - Complete ~~1~~ **3** of the following:
        - **AFM276 - Financial Statement Analysis (0.50)**
        - **AFM322 - Derivative Securities (0.50)**
        - **AFM345 - Business Applications of Social Media Analytics (0.50)**
        - **AFM346 - Applications of Predictive Analytics in Accounting and Finance (0.50)**
        - **AFM347 - Cybersecurity (0.50)**
        - **AFM445 - Information Technology Assurance and Audit Analytics (0.50)**
        - **AFM451 - Audit Strategy (0.50)**
        - **AFM470 - Financial Management of High Growth Companies (0.50)**
        - **AFM477 - Mergers and Acquisitions (0.50)**
        - AFM485 - Approaches to Measuring Value (0.50)
        - ~~ENBUS310 - Introduction to Sustainable Finance (0.50)~~
        - ~~ENBUS407 - Corporate Sustainability Accounting and Reporting (0.50)~~
        - ~~ENVS220 - Ecological Economics (0.50)~~

- **SFM301 - Enterprise Carbon Accounting (0.50)**
  - **SFM310 - Sustainability in Capital Markets (0.50)**
  - **SFM311 - Social Regulation and Policy (0.50)**

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
No

Additional Constraints ❓

Notes ❓
- Visit the School of Accounting and Finance website for further information.

Workflow Information

Workflow Path ❓	Faculty/AFIW Path(s) for Workflow ❓	Senate Workflow
Committee approvals	Faculty of Arts	Senate Regular

Dependencies

Dependent Courses and Programs/Plans

SPECIALIZATIONS LIST

⌄ H-Accounting & Financial Management - Accounting and Financial Management (Bachelor of A… View Programs ❯

3G-Visual Culture
Visual Culture (Bachelor of Arts - Three-Year General)

Under Review　|　Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress

SUC Subcommittee, SUC Curricular Subcommittee　　　　expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Additional Constraints
- Course Lists
- Course Requirements (no units)
- participants
- Effective Term and Year
- Admin Notes

Collapse ▲

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2024

Proposal Details

Proposal Type ❓
Change

Academic Unit Approval

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Major changes to courses comprising a significant proportion of the program, where significant is defined as more than one-third of the courses

Is there an impact to existing students? ❓
No

Is the credential name changing?
No

Co-operative System of Study and Requirements ❓
No

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for Change(s) ❓
The renovation on our VCULT Plans presented here looks to address several issues with our current Visual Culture curricula. It has been several years since we have looked more closely at our VCULT plans. The impacts of COVID on student learning, as well as ongoing changes to our faculty complement, have made it clear that now is the time to address some of the changes we have been thinking about. The proposed changes and revisions will leave the name of our plans unchanged. They will continue to be known as Visual Culture Honours , Visual Culture Three Year General and Visual Culture Minor in a Global Context. We are looking to invigorate our existing course offerings in order to align the plan more closely with current art history and visual culture research, while also being

representative of a more global/cosmopolitan approach to teaching visual culture. We have discovered that by introducing more courses with a focus on museological, curatorial and art management , we will address an area of interest among both Visual Culture and Studio Art students who, upon graduation, often go on to work in these fields. The proposed changes will also make the program more self-sustaining, while offering a clear pedagogical focus, which will help students navigate the curriculum.

This proposal is the result of a year-long work with various stakeholders within our Department, AUO, Centre for Teaching Excellence and our students. The Department's Curriculum Committee has met several times over the last year to work on drafts of this plan as we carefully considered various issues that are central to the Visual Culture curriculum and the needs of our students, as well as to Fine Arts Department as a whole. Some of the principle considerations that we kept close throughout this process include: where our majors and minors in Visual Culture ultimately end up working after they graduate (they work in galleries and museums, art institutions, continue their education and become researchers and professors, and work in the non-profit sector); how the needs of Visual Culture majors intersect with the needs of our Studio Art majors and how we can make closer ties between these degrees; we have also taken a very close look at the current approved courses and have made edits to these courses in order to bring the offering in line with what visual culture, especially as it relates to art, new media and related visual practices, features in the courses. We decided to make sure that courses included on our list reflect current research and pedagogical approaches, and also strengthen the ties between our VCULT and FINE STUDIO plans. Our current faculty complement impacts the sustainability of our current plan and these changes have been informed by this reality.

We propose the following items:

1. Clean the current plan by taking removing some of the courses that have not been offered for a long time, or that are not directly related to the study of visuality. Our current plan lists many courses from many departments in the Faculty of Arts. While we highly value interdisciplinarity, too much choice and not enough focus might not be the best solution for our VCULT Majors and Minors. We seek to keep the interdisciplinary bent of our program, with a deeper focus on what we do best in Visual Arts−−emphasis on art, curating, arts management and visual studies. Currently our approved courses column contains more than 100 course options from16 different programs. This can be confusing to students when they are looking for courses in the calendar, and can complicate advising. It also waters-down the basic pedagogy of our program as students take too many different courses across different disciplines and are unable to find focus once they are writing their thesis in the 4th year of their studies. While keeping the interdisciplinary nature of Visual Culture, we will focus and reduce the overall list of approved courses in order to reflect current scholarship in visual culture, and ensure that the majority of our courses are offered within our Department. We will also prioritize the plans' sustainability, keeping in mind budgetary restraints, and most importantly, the needs and interests of our students.
2. Change all Visual Culture courses from FINE to VCULT. Currently some of our VCULT courses are designated as FINE, and this creates confusion in terms of advising, scheduling, and general information shared with students. Having all visual culture courses identified with the VCULT code will greatly improve the administration of the program and in fact help with its visibility within Fine Arts. It will also help students to know what to expect from courses.
3. Create new courses that will be needed for the focus of the program and that address some of the current gaps in the plan.
4. Strengthen our ties with the Studio Program for both our natural connections via art and art history, but also for more meaningful use of resources.
5. Finally, we will be able to provide more guidance to our students as they navigate the Visual Culture degree. Currently students are only required to take five core Visual Culture courses and can choose 11 more from among a large offering of various courses across the Faculty of Arts. A strong and clear core of VCULT courses will help students as they move from year 1 to year 4.

Admin note- The system will automatically update the associated course renumbering based on approved course proposals.

Consultations (Departmental) ❓

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Arts

Academic Unit ❓
Department of Fine Arts

Field of Study ❓
Visual Culture

Faculty ❓
Faculty of Arts

Undergraduate Credential Type ❓
Major

Program Type
Three-Year General

Degree ❓
Bachelor of Arts (Arts)

Program/Plan Name ❓
Visual Culture (Bachelor of Arts - Three-Year General)

Systems of Study

Online Degree/Diploma ❓

Regular

Admissions

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓
- Before declaring this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓
Yes

List of Invalid Combinations ❓
CS-Computational Fine Art Specialization
SE-Computational Fine Art Specialization

Average Requirement ❓
Yes

Minimum Average(s) Required ❓
- A minimum cumulative overall average of 60.0%.
- A minimum cumulative major average of 65.0%.

Graduation Requirements ❓
- See Bachelor of Arts degree-level requirements.
- Complete a total of 6.0 units in VCULT and approved courses.

Co-operative Education Program Requirements ❓

Course Requirements (units) ❓

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
  - Complete all the following:
    - **VCULT100 - World Cinema and Visual Culture (0.50)**
    - **VCULT101 - Art History and Visual Culture (0.50)**
    - VCULT200 - Visual Studies Across the Discipline (0.50)
    - **FINE209 - Global Modernisms: 1940-1970 (0.50)**
    - VCULT300 - Visual Culture in Theory (0.50)
    - **FINE319 - Contemporary Art (0.50)**
  - **Complete 1.5 additional units of VCULT approved courses at the 200-level**
  - ~~Complete 1 of the following:~~
    - ~~FINE101 - Art History and Visual Culture (0.50)~~
    - ~~VCULT101 - Art History and Visual Culture (0.50)~~
  - **Complete 1.5 additional units of VCULT approved courses at the 200- or 300-level**
  - ~~Complete 1 of the following:~~
    - ~~FINE102 - World Cinema and Visual Culture (0.50)~~
    - ~~VCULT100 - World Cinema and Visual Culture (0.50)~~

Course Lists ❓

Approved Courses List

- Complete all of the following
  - ~~Complete 4.0 additional units from the following lists of courses (see Additional Constraints)~~
  - ~~Choose any of the following:~~
    - ~~ANTH202 - Social and Cultural Anthropology (0.50)~~
    - ~~ANTH290 - Visual Anthropology (0.50)~~
    - ~~ANTH303 - Anthropology of Digital Media (0.50)~~
    - ~~ANTH348 - Anthropology of Tourism (0.50)~~
  - ~~Choose any of the following:~~
    - ~~ARCH225 - Theory and Design of the Contemporary Landscape (0.50)~~
    - ~~ARCH246 - Cultural Encounters 600-1600 (1.00)~~
    - ~~ARCH248 - Cultural Encounters 1600-1914 (1.00)~~
    - ~~ARCH342 - Modernisms: Local and Global (1.00)~~
    - ~~ARCH428 - Rome and the Campagna (Rome) (0.50)~~
    - ~~ARCH442 - Contemporary Architectural Theory (0.50)~~
    - ~~ARCH449 - The Development of Modern Italian Architecture (Rome) (0.50)~~
    - ~~ARCH520 - Special Topics in Urbanism and Landscape (0.50)~~
    - ~~ARCH540 - Special Topics in Architectural History and Theory (0.50)~~
  - ~~Choose any of the following:~~
    - ~~CHINA320R - Chinese in Mass Media (0.50)~~
  - Choose any of the following:
    - CLAS241 - Survey of Greek Art and Architecture (0.50)
    - CLAS242 - Survey of Roman Art and Architecture (0.50)
    - CLAS341 - Advanced Studies in Greek Art and Architecture (0.50)
    - CLAS342 - Advanced Studies in Roman Art and Architecture (0.50)
  - ~~Choose any of the following:~~
    - ~~COMMST228 - Public Communication (0.50)~~
    - ~~COMMST339 - Media, Images, and Communication (0.50)~~
    - ~~COMMST440 - Performative Inquiry and Practice (0.50)~~
  - ~~Choose any of the following:~~
    - ~~DAC201 - Designing Digital Media (0.50)~~
    - ~~DAC202 - Designing Digital Video (0.50)~~
    - ~~DAC246 - Design for Performance Media (0.50)~~

- ~~DAC278 - Performance Technologies~~ ~~(0.50)~~
  - Choose any of the following:
    - EASIA231R - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts (0.50)
    - EASIA275R - Religion and Japanese Film (0.50)
  - ~~Choose any of the following:~~
    - ~~ENGL203 - Designing Digital Media~~ ~~(0.50)~~
    - ~~ENGL204 - Designing Digital Video~~ ~~(0.50)~~
    - ~~ENGL275 - Fiction and Film~~ ~~(0.50)~~
    - ~~ENGL293 - Introduction to Digital Media Studies~~ ~~(0.50)~~
    - ~~ENGL294 - Introduction to Critical Game Studies~~ ~~(0.50)~~
    - ~~ENGL392A - Information Design~~ ~~(0.50)~~
    - ~~ENGL392B - Visual Rhetoric~~ ~~(0.50)~~
  - Choose any of the following:
    - ~~FINE112 - Modern Art: 1874-1945~~ ~~(0.50)~~
    - ~~FINE205 - Topics in Art History~~ ~~(0.50)~~
    - ~~FINE206 - Topics in Film Studies~~ ~~(0.50)~~
    - ~~FINE209 - Global Modernisms: 1940-1970~~ ~~(0.50)~~
    - ~~FINE210 - Art: 1780-1875~~ ~~(0.50)~~
    - ~~FINE212 - Renaissance Art: 1300-1500~~ ~~(0.50)~~
    - ~~FINE213 - Art of the 16th Century in Europe~~ ~~(0.50)~~
    - ~~FINE214 - Visual Culture of Medieval Europe~~ ~~(0.50)~~
    - ~~FINE215 - Art of the 17th Century in Europe~~ ~~(0.50)~~
    - FINE216 - Indigenous Visual Culture in Canada (0.50)
    - ~~FINE217 - Art of the 18th Century in Europe~~ ~~(0.50)~~
    - FINE241 - Survey of Greek Art and Architecture (0.50)
    - FINE242 - Survey of Roman Art and Architecture (0.50)
    - FINE243 - Topics in Fine Arts Experiential Learning (0.25)
    - FINE244 - History of Visual Media to 1910 (0.50)
    - FINE245 - History of Film and Visual Media from 1900 to Today (0.50)
    - FINE252 - Religion in Popular Film (0.50)
    - ~~FINE253 - Special Topics in Religion and Film~~ ~~(0.50)~~
    - FINE256 - Experimental Film (0.50)
    - FINE257 - Video, New Media and the Digital Turn (0.50)
    - ~~FINE258 - Aspects of the Cinemas of the Americas~~ ~~(0.50)~~

    - ~~FINE259 - Aspects of European Cinema~~ ~~(0.50)~~
    - ~~FINE260 - Italian Cinema and the Novel~~ ~~(0.50)~~
    - FINE262 - Global Queer Cinema (0.50)
    - FINE275 - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts (0.50)
    - FINE281 - Art and Gender (0.50)
    - FINE282 - Canadian Art from the 17th Century to 1940 (0.50)
    - FINE293 - Fine Arts Abroad (0.50)
    - ~~FINE305 - Topics in Art History~~ ~~(0.50)~~
    - ~~FINE306 - Topics in Film Studies~~ ~~(0.50)~~
    - ~~FINE319 - Contemporary Art~~ ~~(0.50)~~
    - FINE330 - Topics Course in Museums, Galleries, Curatorship (0.50)
    - FINE338 - Philosophy of Art (0.50)
    - FINE341 - Advanced Studies in Greek Art and Architecture (0.50)
    - FINE342 - Advanced Studies in Roman Art and Architecture (0.50)
    - FINE343 - Topics in Fine Arts Experiential Learning (0.25)
    - FINE344 - Fine Arts Internship (0.50)
    - ~~FINE359 - Topics in German Film~~ ~~(0.50)~~
    - ~~FINE362 - German Film Classics~~ ~~(0.50)~~
    - ~~FINE363 - German Filmmakers in Hollywood~~ ~~(0.50)~~
    - ~~FINE364 - German and Russian Film Pioneers~~ ~~(0.50)~~
    - ~~FINE368 - International Comics and Animation Film~~ ~~(0.50)~~
    - FINE393 - Fine Arts Abroad (0.50)
    - ~~FINE405 - Topics in Art History~~ ~~(0.50)~~
    - ~~FINE406 - Topics in Film Studies~~ ~~(0.50)~~

- ~~Choose any of the following:~~
    - ~~FR486 - Topics in French and Francophone Cultural Studies (0.50)~~
- Choose any of the following:
    - GER283 - The Holocaust and Film   (0.50)
    - ~~GER359 - Topics in German Film (0.50)~~
    - ~~GER362 - German Film Classics (0.50)~~
    - ~~GER363 - German Filmmakers in Hollywood (0.50)~~
    - ~~GER364 - German and Russian Film Pioneers (0.50)~~
- Choose any of the following:
    - ~~GSJ201 - Gender and Social Justice in Popular Culture (0.50)~~
    - GSJ262 - Global Queer Cinema   (0.50)
- Choose any of the following:
    - INDG216 - Indigenous Visual Culture in Canada   (0.50)
- ~~Choose any of the following:~~
    - ~~INTEG230 - The Museum Course: Preparation and Field Trip (0.25)~~
    - ~~INTEG320 - The Museum Course: Research and Design (0.50)~~
    - ~~INTEG321 - The Museum Course: Practicum and Presentation (0.75)~~
- ~~Choose any of the following:~~
    - ~~ITALST281 - Italian Cinema and the Novel (0.50)~~
- Choose any of the following:

    - JS233 - The Holocaust and Film   (0.50)
- ~~Choose any of the following:~~
    - ~~MUSIC246 - Soundtracks: Music in Film (0.50)~~
    - ~~MUSIC333 - Music and Landscape (0.50)~~
- ~~Choose any of the following:~~
    - ~~PACS312 - Quest for Peace in Literature and Film (0.50)~~
- Choose any of the following:
    - PHIL331 - Philosophy of Art   (0.50)
- ~~Choose any of the following:~~
    - ~~PSCI254 - The Political Documentary (0.50)~~
- ~~Choose any of the following:~~
    - ~~REES364 - German and Russian Film Pioneers (0.50)~~
- Choose any of the following:
    - ~~RCS225 - Sacred Beauty: Religion and the Arts (0.50)~~
    - RCS270 - Religion in Popular Film   (0.50)
    - ~~RCS271 - Special Topics in Religion and Film (0.50)~~
    - RCS272 - The Holocaust and Film   (0.50)
    - RCS275 - Religion and Japanese Film   (0.50)
    - ~~RCS279 - Religion and Popular Culture (0.50)~~
- Choose any of the following:
    - SI230R - Islamic Visual Culture: Art, Architecture, and Aesthetics   (0.50)
    - SI231R - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts   (0.50)
- ~~Choose any of the following:~~
    - ~~SPAN410 - Visual Culture in the Contemporary Hispanic World (0.50)~~
- ~~Choose any of the following:~~
    - ~~THPERF200 - Theatre and Performance in Context (0.50)~~
    - ~~THPERF246 - Design for Performance Media (0.50)~~
    - ~~THPERF278 - Performance Technologies (0.50)~~
    - ~~THPERF379 - Mixed Reality Design (0.50)~~
    - ~~THPERF440 - Performative Inquiry and Practice (0.50)~~
- **Choose any of the following:**

- **Choose any of the following:**
  - **VCULT201 - Global Histories of Art 1500-1800 C.E.   (0.50)**
  - **VCULT205 - Topics in Visual Culture   (0.50)**
  - **VCULT208 - Global Modern Art: 1800-1940   (0.50)**
  - **VCULT305 - Topics in Visual Culture   (0.50)**
- **Choose any DAC course, to a maximum of 0.5 unit**
- Choose any FINE ~~studio~~ course, to a maximum of 1.0 unit
- ~~Choose any DAC course~~

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Proposed
Additional Constraints ❓
1. Students may only complete one course from any cross-listed set.
2. No one course may fulfil more than one requirement within the major.

Existing
Additional Constraints ❓
1. Students may only complete one course from any cross-listed set.
2. No one course may fulfil more than one requirement within the major.
3. Consult the Visual Culture co-ordinator in Fine Arts before enrolling in FR486, ARCH, DAC, and INTEG courses.

Notes ❓
- Visit the Department of Fine Arts website for further information

Specializations

Specializations for this Major ❓
No

Workflow Information

Change to Undergraduate Communication Requirement
No

Workflow Path ❓	Faculty/AFIW Path(s) for Workflow ❓	Senate Workflow
Committee approvals	Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans

PREREQUISITES

⌄ FINE 243 - Topics in Fine Arts Experiential Learning	View Courses ❯
⌄ FINE 302 - Analysis and Research	View Courses ❯
⌄ FINE 304 - Topics in Studio Practice	View Courses ❯
⌄ FINE 305 - Topics in Art History	View Courses ❯
⌄ FINE 306 - Topics in Film Studies	View Courses ❯
⌄ FINE 309 - Advanced Topics in Two-Dimensional Media	View Courses ❯
⌄ FINE 312 - Advanced Topics in Three-Dimensional Media	View Courses ❯
⌄ FINE 315 - Advanced Topics in Expanded Media	View Courses ❯
⌄ FINE 327 - Open Studio	View Courses ❯
⌄ FINE 332 - History of Art Academies	View Courses ❯
⌄ FINE 343 - Topics in Fine Arts Experiential Learning	View Courses ❯
⌄ FINE 344 - Fine Arts Internship	View Courses ❯
⌄ FINE 402 - Directed Study	View Courses ❯
⌄ FINE 405 - Topics in Art History	View Courses ❯
⌄ FINE 406 - Topics in Film Studies	View Courses ❯

H-Visual Culture
Visual Culture (Bachelor of Arts - Honours)
Under Review | Fall 2025

Proposal Information

Status

Active

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular   expand ▲
Subcommittee

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
>
> Mike Grivicic
>
> Diana Goncalves
>
> Kuali - Arts
>
> Kuali - Env
>
> Melanie Figueiredo
>
> Kuali - Math
>
> Kuali - Eng
>
> Kuali - Hlth
>
> Ashley Day
>
> Kuali - Science

Changes

- Additional Constraints
- Course Lists
- Course Requirements (no units)
- participants
- Effective Term and Year
- Admin Notes

Collapse ▲

Effective Date and Career

Career

Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2024

Proposal Details

Proposal Type ❓   **Academic Unit Approval**
Change

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Major changes to courses comprising a significant proportion of the program, where significant is defined as more than one-third of the courses

Is there an impact to existing students? ❓
No

Is the credential name changing?
No

Co-operative System of Study and Requirements ❓
No

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for Change(s) ❓
The renovation on our VCULT Plans presented here looks to address several issues with our current Visual Culture curricula. It has been several years since we have looked more closely at our VCULT plans. The impacts of COVID on student learning, as well as ongoing changes to our faculty complement, have made it clear that now is the time to address some of the changes we have been thinking about. The proposed changes and revisions will leave the name of our plans unchanged. They will continue to be known as Visual Culture Honours , Visual Culture Three Year General and Visual Culture Minor in a Global Context. We are looking to invigorate our existing course offerings in order to align the plan more closely with current art history and visual culture research, while also being

representative of a more global/cosmopolitan approach to teaching visual culture. We have discovered that by introducing more courses with a focus on museological, curatorial and art management , we will address an area of interest among both Visual Culture and Studio Art students who, upon graduation, often go on to work in these fields. The proposed changes will also make the program more self-sustaining, while offering a clear pedagogical focus, which will help students navigate the curriculum.

This proposal is the result of a year-long work with various stakeholders within our Department, AUO, Centre for Teaching Excellence and our students. The Department's Curriculum Committee has met several times over the last year to work on drafts of this plan as we carefully considered various issues that are central to the Visual Culture curriculum and the needs of our students, as well as to Fine Arts Department as a whole. Some of the principle considerations that we kept close throughout this process include: where our majors and minors in Visual Culture ultimately end up working after they graduate (they work in galleries and museums, art institutions, continue their education and become researchers and professors, and work in the non-profit sector); how the needs of Visual Culture majors intersect with the needs of our Studio Art majors and how we can make closer ties between these degrees; we have also taken a very close look at the current approved courses and have made edits to these courses in order to bring the offering in line with what visual culture, especially as it relates to art, new media and related visual practices, features in the courses. We decided to make sure that courses included on our list reflect current research and pedagogical approaches, and also strengthen the ties between our VCULT and FINE STUDIO plans. Our current faculty complement impacts the sustainability of our current plan and these changes have been informed by this reality.

We propose the following items:

1. Clean the current plan by taking removing some of the courses that have not been offered for a long time, or that are not directly related to the study of visuality. Our current plan lists many courses from many departments in the Faculty of Arts. While we highly value interdisciplinarity, too much choice and not enough focus might not be the best solution for our VCULT Majors and Minors. We seek to keep the interdisciplinary bent of our program, with a deeper focus on what we do best in Visual Arts−−emphasis on art, curating, arts management and visual studies. Currently our approved courses column contains more than 100 course options from16 different programs. This can be confusing to students when they are looking for courses in the calendar, and can complicate advising. It also waters-down the basic pedagogy of our program as students take too many different courses across different disciplines and are unable to find focus once they are writing their thesis in the 4th year of their studies. While keeping the interdisciplinary nature of Visual Culture, we will focus and reduce the overall list of approved courses in order to reflect current scholarship in visual culture, and ensure that the majority of our courses are offered within our Department. We will also prioritize the plans' sustainability, keeping in mind budgetary restraints, and most importantly, the needs and interests of our students.

2. Change all Visual Culture courses from FINE to VCULT. Currently some of our VCULT courses are designated as FINE, and this creates confusion in terms of advising, scheduling, and general information shared with students. Having all visual culture courses identified with the VCULT code will greatly improve the administration of the program and in fact help with its visibility within Fine Arts. It will also help students to know what to expect from courses.

3. Create new courses that will be needed for the focus of the program and that address some of the current gaps in the plan.

4. Strengthen our ties with the Studio Program for both our natural connections via art and art history, but also for more meaningful use of resources.

5. Finally, we will be able to provide more guidance to our students as they navigate the Visual Culture degree. Currently students are only required to take five core Visual Culture courses and can choose 11 more from among a large offering of various courses across the Faculty of Arts. A strong and clear core of VCULT courses will help students as they move from year 1 to year 4.

Admin note- The system will automatically update the associated course renumbering based on approved course proposals.

Consultations (Departmental) ❓

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Arts

Academic Unit ❓
Department of Fine Arts

Field of Study ❓
Visual Culture

Faculty ❓
Faculty of Arts

Undergraduate Credential Type ❓
Major

Program Type
Honours

Degree ❓
Bachelor of Arts (Arts)

Program/Plan Name ❓
Visual Culture (Bachelor of Arts - Honours)

Systems of Study
Co-operative

Online Degree/Diploma ❓

Regular

Admissions

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓
- Before declaring this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓
Yes

List of Invalid Combinations ❓
CS-Computational Fine Art Specialization
CS-Computational Fine Art Specialization

Average Requirement ❓
Yes

Minimum Average(s) Required ❓
- A minimum cumulative overall average of 60.0%.
- A minimum cumulative major average of 70.0%.

Graduation Requirements ❓
- See Bachelor of Arts degree-level requirements.
- Complete a total of 8.0 units in VCULT and approved courses.

Co-operative Education Program Requirements ❓
For students in the co-operative system of study, see Bachelor of Arts co-operative education program requirements.

Course Requirements (units) ❓

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
    - Complete all the following:
        - **VCULT100 - World Cinema and Visual Culture   (0.50)**
        - **VCULT101 - Art History and Visual Culture   (0.50)**
        - VCULT200 - Visual Studies Across the Discipline   (0.50)
        - **FINE209 - Global Modernisms: 1940-1970   (0.50)**
        - VCULT300 - Visual Culture in Theory   (0.50)
        - **FINE319 - Contemporary Art   (0.50)**
        - VCULT400 - Visual Culture Seminar   (0.50)
    - ~~Complete 1 of the following:~~
        - ~~FINE101 - Art History and Visual Culture   (0.50)~~
        - ~~VCULT101 - Art History and Visual Culture   (0.50)~~
    - **Complete 2.0 additional units of VCULT approved courses at the 200-level**
    - **Complete 0.5 additional unit of VCULT approved courses at the 300-level**
    - ~~Complete 1 of the following:~~
        - ~~FINE102 - World Cinema and Visual Culture   (0.50)~~
        - ~~VCULT100 - World Cinema and Visual Culture   (0.50)~~
    - **Complete 2.0 additional units of VCULT approved courses at the 200-level or above**

Course Lists ❓

Approved Courses List

- Complete all of the following
    - ~~Complete 5.5 additional units from the following lists of courses (see Additional Constraints)~~
    - ~~Choose any of the following:~~
        - ~~ANTH202 - Social and Cultural Anthropology   (0.50)~~
        - ~~ANTH290 - Visual Anthropology   (0.50)~~
        - ~~ANTH303 - Anthropology of Digital Media   (0.50)~~
        - ~~ANTH348 - Anthropology of Tourism   (0.50)~~
    - ~~Choose any of the following:~~
        - ~~ARCH225 - Theory and Design of the Contemporary Landscape   (0.50)~~
        - ~~ARCH246 - Cultural Encounters 600-1600   (1.00)~~
        - ~~ARCH248 - Cultural Encounters 1600-1914   (1.00)~~
        - ~~ARCH342 - Modernisms: Local and Global   (1.00)~~
        - ~~ARCH428 - Rome and the Campagna (Rome)   (0.50)~~
        - ~~ARCH442 - Contemporary Architectural Theory   (0.50)~~
        - ~~ARCH446 - Italian Urban History (Rome)   (0.50)~~
        - ~~ARCH449 - The Development of Modern Italian Architecture (Rome)   (0.50)~~
        - ~~ARCH520 - Special Topics in Urbanism and Landscape   (0.50)~~
        - ~~ARCH540 - Special Topics in Architectural History and Theory   (0.50)~~
    - ~~Choose any of the following:~~
        - ~~CHINA320R - Chinese in Mass Media   (0.50)~~
    - Choose any of the following:
        - CLAS241 - Survey of Greek Art and Architecture   (0.50)
        - CLAS242 - Survey of Roman Art and Architecture   (0.50)
        - CLAS341 - Advanced Studies in Greek Art and Architecture   (0.50)
        - CLAS342 - Advanced Studies in Roman Art and Architecture   (0.50)
    - ~~Choose any of the following:~~
        - ~~COMMST228 - Public Communication   (0.50)~~
        - ~~COMMST339 - Media, Images, and Communication   (0.50)~~
        - ~~COMMST440 - Performative Inquiry and Practice   (0.50)~~
    - ~~Choose any of the following:~~

- - ~~DAC201 - Designing Digital Media~~ (0.50)
    - ~~DAC202 - Designing Digital Video~~ (0.50)
    - ~~DAC246 - Design for Performance Media~~ (0.50)
    - ~~DAC278 - Performance Technologies~~ (0.50)
  - Choose any of the following:
    - EASIA231R - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts (0.50)
    - EASIA275R - Religion and Japanese Film (0.50)
  - ~~Choose any of the following:~~
    - ~~ENGL203 - Designing Digital Media~~ (0.50)
    - ~~ENGL204 - Designing Digital Video~~ (0.50)
    - ~~ENGL275 - Fiction and Film~~ (0.50)
    - ~~ENGL293 - Introduction to Digital Media Studies~~ (0.50)
    - ~~ENGL294 - Introduction to Critical Game Studies~~ (0.50)
    - ~~ENGL392A - Information Design~~ (0.50)
    - ~~ENGL392B - Visual Rhetoric~~ (0.50)
  - Choose any of the following:
    - ~~FINE112 - Modern Art: 1874-1945~~ (0.50)
    - ~~FINE205 - Topics in Art History~~ (0.50)
    - ~~FINE206 - Topics in Film Studies~~ (0.50)
    - ~~FINE209 - Global Modernisms: 1940-1970~~ (0.50)
    - ~~FINE210 - Art: 1780-1875~~ (0.50)
    - ~~FINE212 - Renaissance Art: 1300-1500~~ (0.50)
    - ~~FINE213 - Art of the 16th Century in Europe~~ (0.50)
    - ~~FINE214 - Visual Culture of Medieval Europe~~ (0.50)
    - ~~FINE215 - Art of the 17th Century in Europe~~ (0.50)
    - FINE216 - Indigenous Visual Culture in Canada (0.50)
    - ~~FINE217 - Art of the 18th Century in Europe~~ (0.50)
    - FINE241 - Survey of Greek Art and Architecture (0.50)
    - FINE242 - Survey of Roman Art and Architecture (0.50)
    - FINE243 - Topics in Fine Arts Experiential Learning (0.25)
    - FINE244 - History of Visual Media to 1910 (0.50)
    - FINE245 - History of Film and Visual Media from 1900 to Today (0.50)
    - FINE252 - Religion in Popular Film (0.50)
    - ~~FINE253 - Special Topics in Religion and Film~~ (0.50)
    - FINE256 - Experimental Film (0.50)
    - FINE257 - Video, New Media and the Digital Turn (0.50)
    - ~~FINE258 - Aspects of the Cinemas of the Americas~~ (0.50)
    - ~~FINE259 - Aspects of European Cinema~~ (0.50)
    - ~~FINE260 - Italian Cinema and the Novel~~ (0.50)
    - FINE262 - Global Queer Cinema (0.50)
    - FINE275 - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts (0.50)
    - FINE281 - Art and Gender (0.50)
    - FINE282 - Canadian Art from the 17th Century to 1940 (0.50)
    - FINE293 - Fine Arts Abroad (0.50)
    - ~~FINE305 - Topics in Art History~~ (0.50)
    - ~~FINE306 - Topics in Film Studies~~ (0.50)
    - ~~FINE319 - Contemporary Art~~ (0.50)
    - FINE330 - Topics Course in Museums, Galleries, Curatorship (0.50)
    - FINE338 - Philosophy of Art (0.50)
    - FINE341 - Advanced Studies in Greek Art and Architecture (0.50)
    - FINE342 - Advanced Studies in Roman Art and Architecture (0.50)
    - FINE343 - Topics in Fine Arts Experiential Learning (0.25)
    - FINE344 - Fine Arts Internship (0.50)
    - ~~FINE359 - Topics in German Film~~ (0.50)
    - ~~FINE362 - German Film Classics~~ (0.50)
    - ~~FINE363 - German Filmmakers in Hollywood~~ (0.50)
    - ~~FINE364 - German and Russian Film Pioneers~~ (0.50)
    - ~~FINE368 - International Comics and Animation Film~~ (0.50)

- - - FINE393 - Fine Arts Abroad (0.50)
    - ~~FINE405 - Topics in Art History~~ ~~(0.50)~~
    - ~~FINE406 - Topics in Film Studies~~ ~~(0.50)~~
  - ~~Choose any of the following:~~
    - - ~~FR486 - Topics in French and Francophone Cultural Studies~~ ~~(0.50)~~
  - Choose any of the following:
    - - GER283 - The Holocaust and Film (0.50)
      - ~~GER359 - Topics in German Film~~ ~~(0.50)~~
      - ~~GER362 - German Film Classics~~ ~~(0.50)~~
      - ~~GER363 - German Filmmakers in Hollywood~~ ~~(0.50)~~
      - ~~GER364 - German and Russian Film Pioneers~~ ~~(0.50)~~
  - Choose any of the following:
    - - ~~GSJ201 - Gender and Social Justice in Popular Culture~~ ~~(0.50)~~
      - GSJ262 - Global Queer Cinema (0.50)
  - Choose any of the following:
    - - INDG216 - Indigenous Visual Culture in Canada (0.50)
  - ~~Choose any of the following:~~
    - - ~~INTEG230 - The Museum Course: Preparation and Field Trip~~ ~~(0.25)~~
      - ~~INTEG320 - The Museum Course: Research and Design~~ ~~(0.50)~~
      - ~~INTEG321 - The Museum Course: Practicum and Presentation~~ ~~(0.75)~~
  - ~~Choose any of the following:~~
    - - ~~ITALST281 - Italian Cinema and the Novel~~ ~~(0.50)~~
  - Choose any of the following:
    - - JS233 - The Holocaust and Film (0.50)
  - ~~Choose any of the following:~~
    - - ~~MUSIC246 - Soundtracks: Music in Film~~ ~~(0.50)~~
      - ~~MUSIC333 - Music and Landscape~~ ~~(0.50)~~
  - ~~Choose any of the following:~~
    - - ~~PACS312 - Quest for Peace in Literature and Film~~ ~~(0.50)~~
  - Choose any of the following:
    - - PHIL331 - Philosophy of Art (0.50)
  - ~~Choose any of the following:~~
    - - ~~PSCI254 - The Political Documentary~~ ~~(0.50)~~
  - ~~Choose any of the following:~~
    - - ~~REES364 - German and Russian Film Pioneers~~ ~~(0.50)~~
  - Choose any of the following:
    - - ~~RCS225 - Sacred Beauty: Religion and the Arts~~ ~~(0.50)~~
      - RCS270 - Religion in Popular Film (0.50)
      - ~~RCS271 - Special Topics in Religion and Film~~ ~~(0.50)~~
      - RCS272 - The Holocaust and Film (0.50)
      - RCS275 - Religion and Japanese Film (0.50)
      - ~~RCS279 - Religion and Popular Culture~~ ~~(0.50)~~
  - Choose any of the following:
    - - SI230R - Islamic Visual Culture: Art, Architecture, and Aesthetics (0.50)
      - SI231R - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts (0.50)
  - ~~Choose any of the following:~~
    - - ~~SPAN410 - Visual Culture in the Contemporary Hispanic World~~ ~~(0.50)~~
  - ~~Choose any of the following:~~
    - - ~~THPERF200 - Theatre and Performance in Context~~ ~~(0.50)~~
      - ~~THPERF246 - Design for Performance Media~~ ~~(0.50)~~
      - ~~THPERF278 - Performance Technologies~~ ~~(0.50)~~

- - - ~~THPERF379 - Mixed Reality Design~~ ~~(0.50)~~
      - ~~THPERF440 - Performative Inquiry and Practice~~ ~~(0.50)~~
  - Choose any of the following:
    - **VCULT201 - Global Histories of Art 1500-1800 C.E.   (0.50)**
    - **VCULT204 - Art Institutions   (0.50)**
    - **VCULT205 - Topics in Visual Culture   (0.50)**
    - **VCULT208 - Global Modern Art: 1800-1940   (0.50)**
    - **VCULT305 - Topics in Visual Culture   (0.50)**
    - VCULT401 - Advanced Visual Culture Seminar   (0.50)
    - **VCULT405 - Topics in Visual Culture   (0.50)**
  - **Choose any DAC course, to a maximum of 1.0 unit**
  - Choose any FINE ~~studio~~ course, to a maximum of 2.0 units
  - ~~Choose any DAC course~~

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Proposed
Additional Constraints ❓

1. Students may only complete one course from any cross-listed set.
2. No one course may fulfil more than one requirement within the major.

Existing
Additional Constraints ❓

1. Students may only complete one course from any cross-listed set.
2. No one course may fulfil more than one requirement within the major.
3. Consult the Visual Culture co-ordinator in Fine Arts before enrolling in FR486, ARCH, DAC, and INTEG courses.

Notes ❓

- Visit the Department of Fine Arts website for further information

Specializations

Specializations for this Major ❓
No

Workflow Information

Change to Undergraduate Communication Requirement
No

Workflow Path ❓	**Faculty/AFIW Path(s) for Workflow ❓**	**Senate Workflow**
Committee approvals	Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans

PREREQUISITES

⌄ VCULT 400 - Visual Culture Seminar	View Courses ❯
⌄ FINE 243 - Topics in Fine Arts Experiential Learning	View Courses ❯
⌄ FINE 302 - Analysis and Research	View Courses ❯
⌄ FINE 304 - Topics in Studio Practice	View Courses ❯
⌄ FINE 305 - Topics in Art History	View Courses ❯
⌄ FINE 306 - Topics in Film Studies	View Courses ❯
⌄ FINE 309 - Advanced Topics in Two-Dimensional Media	View Courses ❯
⌄ FINE 312 - Advanced Topics in Three-Dimensional Media	View Courses ❯
⌄ FINE 315 - Advanced Topics in Expanded Media	View Courses ❯
⌄ FINE 327 - Open Studio	View Courses ❯
⌄ FINE 332 - History of Art Academies	View Courses ❯
⌄ FINE 343 - Topics in Fine Arts Experiential Learning	View Courses ❯
⌄ FINE 344 - Fine Arts Internship	View Courses ❯
⌄ FINE 402 - Directed Study	View Courses ❯
⌄ FINE 405 - Topics in Art History	View Courses ❯
⌄ FINE 406 - Topics in Film Studies	View Courses ❯

Visual Culture in a Global Context Minor
Visual Culture in a Global Context Minor

Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Course Lists
- Course Requirements (no units)
- participants
- Additional Constraints
- Effective Term and Year
- Admin Notes

Collapse ▲

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2024

Proposal Details

Proposal Type ❓
Change

Academic Unit Approval

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Major changes to courses comprising a significant proportion of the program, where significant is defined as more than one-third of the courses

Is there an impact to existing students? ❓
No

Is the credential name changing?
No

Co-operative System of Study and Requirements ❓
No

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for Change(s) ❓
The renovation on our VCULT Plans presented here looks to address several issues with our current Visual Culture curricula. It has been several years since we have looked more closely at our VCULT plans. The impacts of COVID on student learning, as well as ongoing changes to our faculty complement, have made it clear that now is the time to address some of the changes we have been thinking about. The proposed changes and revisions will leave the name of our plans unchanged. They will continue to be known as Visual Culture Honours , Visual Culture Three Year General and Visual Culture Minor in a Global Context. We are looking to invigorate our existing course offerings in order to align the plan more closely with current art history and visual culture research, while also being

representative of a more global/cosmopolitan approach to teaching visual culture. We have discovered that by introducing more courses with a focus on museological, curatorial and art management , we will address an area of interest among both Visual Culture and Studio Art students who, upon graduation, often go on to work in these fields. The proposed changes will also make the program more self-sustaining, while offering a clear pedagogical focus, which will help students navigate the curriculum.

This proposal is the result of a year-long work with various stakeholders within our Department, AUO, Centre for Teaching Excellence and our students. The Department's Curriculum Committee has met several times over the last year to work on drafts of this plan as we carefully considered various issues that are central to the Visual Culture curriculum and the needs of our students, as well as to Fine Arts Department as a whole. Some of the principle considerations that we kept close throughout this process include: where our majors and minors in Visual Culture ultimately end up working after they graduate (they work in galleries and museums, art institutions, continue their education and become researchers and professors, and work in the non-profit sector); how the needs of Visual Culture majors intersect with the needs of our Studio Art majors and how we can make closer ties between these degrees; we have also taken a very close look at the current approved courses and have made edits to these courses in order to bring the offering in line with what visual culture, especially as it relates to art, new media and related visual practices, features in the courses. We decided to make sure that courses included on our list reflect current research and pedagogical approaches, and also strengthen the ties between our VCULT and FINE STUDIO plans. Our current faculty complement impacts the sustainability of our current plan and these changes have been informed by this reality.

We propose the following items:

1. Clean the current plan by taking removing some of the courses that have not been offered for a long time, or that are not directly related to the study of visuality. Our current plan lists many courses from many departments in the Faculty of Arts. While we highly value interdisciplinarity, too much choice and not enough focus might not be the best solution for our VCULT Majors and Minors. We seek to keep the interdisciplinary bent of our program, with a deeper focus on what we do best in Visual Arts––emphasis on art, curating, arts management and visual studies. Currently our approved courses column contains more than 100 course options from16 different programs. This can be confusing to students when they are looking for courses in the calendar, and can complicate advising. It also waters-down the basic pedagogy of our program as students take too many different courses across different disciplines and are unable to find focus once they are writing their thesis in the 4th year of their studies. While keeping the interdisciplinary nature of Visual Culture, we will focus and reduce the overall list of approved courses in order to reflect current scholarship in visual culture, and ensure that the majority of our courses are offered within our Department. We will also prioritize the plans' sustainability, keeping in mind budgetary restraints, and most importantly, the needs and interests of our students.

2. Change all Visual Culture courses from FINE to VCULT. Currently some of our VCULT courses are designated as FINE, and this creates confusion in terms of advising, scheduling, and general information shared with students. Having all visual culture courses identified with the VCULT code will greatly improve the administration of the program and in fact help with its visibility within Fine Arts. It will also help students to know what to expect from courses.

3. Create new courses that will be needed for the focus of the program and that address some of the current gaps in the plan.

4. Strengthen our ties with the Studio Program for both our natural connections via art and art history, but also for more meaningful use of resources.

5. Finally, we will be able to provide more guidance to our students as they navigate the Visual Culture degree. Currently students are only required to take five core Visual Culture courses and can choose 11 more from among a large offering of various courses across the Faculty of Arts. A strong and clear core of VCULT courses will help students as they move from year 1 to year 4.

Admin note- The system will automatically update the associated course renumbering based on approved course proposals.

Consultations (Departmental) ❓

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Arts

Academic Unit ❓
Department of Fine Arts

Field of Study ❓
Visual Culture

Faculty ❓
Faculty of Arts

Undergraduate Credential Type ❓
Minor

Program/Plan Name ❓
Visual Culture in a Global Context Minor

Admissions

Admissions Entry Point ❓

Declare Plan

Declaration Audience ❓

This credential is open to students enrolled in any degree program.

Declaration Requirements ❓

- Before declaring this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓

Yes

List of Invalid Combinations ❓

CS-Computational Fine Art Specialization

CS-Computational Fine Art Specialization

Average Requirement ❓

Yes

Minimum Average(s) Required ❓

- A minimum cumulative minor average of 65.0%.

Graduation Requirements ❓

- Complete a total of 4.0 units in VCULT and approved courses.

Course Requirements (units) ❓

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
    - Complete all the following:
        - VCULT200 - Visual Studies Across the Discipline   (0.50)
        - VCULT300 - Visual Culture in Theory   (0.50)
    - Complete 1 of the following:
        - ~~FINE101 - Art History and Visual Culture~~   (0.50)
        - ~~FINE102 - World Cinema and Visual Culture~~   (0.50)
        - VCULT100 - World Cinema and Visual Culture   (0.50)
        - VCULT101 - Art History and Visual Culture   (0.50)

Course Lists ❓

Approved Courses List

- Complete all of the following
    - Complete 2.5 additional units from the following lists of courses (see Additional Constraints)
    - ~~Choose any of the following:~~
        - ~~ANTH202 - Social and Cultural Anthropology~~   (0.50)
        - ~~ANTH290 - Visual Anthropology~~   (0.50)
        - ~~ANTH303 - Anthropology of Digital Media~~   (0.50)

- ~~ANTH348 - Anthropology of Tourism~~ (0.50)
  - ~~Choose any of the following:~~
    - ~~ARCH225 - Theory and Design of the Contemporary Landscape~~ (0.50)
    - ~~ARCH246 - Cultural Encounters 600-1600~~ (1.00)
    - ~~ARCH248 - Cultural Encounters 1600-1914~~ (1.00)
    - ~~ARCH342 - Modernisms: Local and Global~~ (1.00)
    - ~~ARCH428 - Rome and the Campagna (Rome)~~ (0.50)
    - ~~ARCH442 - Contemporary Architectural Theory~~ (0.50)
    - ~~ARCH446 - Italian Urban History (Rome)~~ (0.50)
    - ~~ARCH449 - The Development of Modern Italian Architecture (Rome)~~ (0.50)
    - ~~ARCH520 - Special Topics in Urbanism and Landscape~~ (0.50)
    - ~~ARCH540 - Special Topics in Architectural History and Theory~~ (0.50)
  - ~~Choose any of the following:~~
    - ~~CHINA320R - Chinese in Mass Media~~ (0.50)
  - Choose any of the following:
    - CLAS241 - Survey of Greek Art and Architecture (0.50)
    - CLAS242 - Survey of Roman Art and Architecture (0.50)
    - CLAS341 - Advanced Studies in Greek Art and Architecture (0.50)
    - CLAS342 - Advanced Studies in Roman Art and Architecture (0.50)
  - ~~Choose any of the following:~~
    - ~~COMMST228 - Public Communication~~ (0.50)
    - ~~COMMST329 - Designing Digital Presentations~~ (0.50)
    - ~~COMMST339 - Media, Images, and Communication~~ (0.50)
    - ~~COMMST440 - Performative Inquiry and Practice~~ (0.50)
  - ~~Choose any of the following:~~
    - ~~DAC201 - Designing Digital Media~~ (0.50)
    - ~~DAC202 - Designing Digital Video~~ (0.50)
    - ~~DAC246 - Design for Performance Media~~ (0.50)
    - ~~DAC278 - Performance Technologies~~ (0.50)
  - Choose any of the following:
    - EASIA231R - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts (0.50)
    - EASIA275R - Religion and Japanese Film (0.50)
  - ~~Choose any of the following:~~
    - ~~ENGL203 - Designing Digital Media~~ (0.50)
    - ~~ENGL204 - Designing Digital Video~~ (0.50)
    - ~~ENGL293 - Introduction to Digital Media Studies~~ (0.50)
    - ~~ENGL294 - Introduction to Critical Game Studies~~ (0.50)
    - ~~ENGL392A - Information Design~~ (0.50)
    - ~~ENGL392B - Visual Rhetoric~~ (0.50)
  - Choose any of the following:
    - ~~FINE112 - Modern Art: 1874-1945~~ (0.50)
    - ~~FINE205 - Topics in Art History~~ (0.50)
    - ~~FINE206 - Topics in Film Studies~~ (0.50)
    - FINE209 - Global Modernisms: 1940-1970 (0.50)
    - ~~FINE210 - Art: 1780-1875~~ (0.50)
    - ~~FINE212 - Renaissance Art: 1300-1500~~ (0.50)
    - ~~FINE213 - Art of the 16th Century in Europe~~ (0.50)
    - ~~FINE214 - Visual Culture of Medieval Europe~~ (0.50)
    - ~~FINE215 - Art of the 17th Century in Europe~~ (0.50)
    - FINE216 - Indigenous Visual Culture in Canada (0.50)
    - ~~FINE217 - Art of the 18th Century in Europe~~ (0.50)
    - FINE241 - Survey of Greek Art and Architecture (0.50)
    - FINE242 - Survey of Roman Art and Architecture (0.50)
    - FINE243 - Topics in Fine Arts Experiential Learning (0.25)
    - FINE244 - History of Visual Media to 1910 (0.50)
    - FINE245 - History of Film and Visual Media from 1900 to Today (0.50)
    - ~~FINE275 - Religion in Popular Film~~ (0.50)

- FINE252 - Religion in Popular Film   (0.50)
    - ~~FINE253 - Special Topics in Religion and Film~~   (0.50)
    - FINE256 - Experimental Film   (0.50)
    - FINE257 - Video, New Media and the Digital Turn   (0.50)
    - ~~FINE258 - Aspects of the Cinemas of the Americas~~   (0.50)
    - ~~FINE259 - Aspects of European Cinema~~   (0.50)
    - ~~FINE260 - Italian Cinema and the Novel~~   (0.50)
    - FINE262 - Global Queer Cinema   (0.50)
    - FINE275 - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts   (0.50)
    - FINE281 - Art and Gender   (0.50)
    - FINE282 - Canadian Art from the 17th Century to 1940   (0.50)
    - FINE293 - Fine Arts Abroad   (0.50)
    - ~~FINE305 - Topics in Art History~~   (0.50)
    - ~~FINE306 - Topics in Film Studies~~   (0.50)
    - FINE319 - Contemporary Art   (0.50)
    - FINE330 - Topics Course in Museums, Galleries, Curatorship   (0.50)
    - FINE338 - Philosophy of Art   (0.50)
    - FINE341 - Advanced Studies in Greek Art and Architecture   (0.50)
    - FINE342 - Advanced Studies in Roman Art and Architecture   (0.50)
    - FINE343 - Topics in Fine Arts Experiential Learning   (0.25)
    - FINE344 - Fine Arts Internship   (0.50)
    - ~~FINE359 - Topics in German Film~~   (0.50)
    - ~~FINE362 - German Film Classics~~   (0.50)
    - ~~FINE363 - German Filmmakers in Hollywood~~   (0.50)
    - ~~FINE364 - German and Russian Film Pioneers~~   (0.50)
    - ~~FINE368 - International Comics and Animation Film~~   (0.50)
    - FINE393 - Fine Arts Abroad   (0.50)
    - ~~FINE405 - Topics in Art History~~   (0.50)
    - ~~FINE406 - Topics in Film Studies~~   (0.50)
  - ~~Choose any of the following:~~
    - ~~FR365 - French Language Theatre~~   (0.50)
    - ~~FR486 - Topics in French and Francophone Cultural Studies~~   (0.50)
  - Choose any of the following:
    - GBDA101 - Introduction to Digital Media Design   (0.50)
    - GBDA201 - Digital Media Project 1   (0.50)
    - GBDA202 - Digital Media Project 2   (0.50)
  - Choose any of the following:
    - GER283 - The Holocaust and Film   (0.50)
    - ~~GER359 - Topics in German Film~~   (0.50)
    - ~~GER362 - German Film Classics~~   (0.50)
    - ~~GER363 - German Filmmakers in Hollywood~~   (0.50)
    - ~~GER364 - German and Russian Film Pioneers~~   (0.50)
  - Choose any of the following:
    - ~~GSJ201 - Gender and Social Justice in Popular Culture~~   (0.50)
    - GSJ262 - Global Queer Cinema   (0.50)
  - Choose any of the following:
    - INDG216 - Indigenous Visual Culture in Canada   (0.50)
  - ~~Choose any of the following:~~
    - ~~INTEG230 - The Museum Course: Preparation and Field Trip~~   (0.25)
    - ~~INTEG320 - The Museum Course: Research and Design~~   (0.50)
    - ~~INTEG321 - The Museum Course: Practicum and Presentation~~   (0.75)
  - ~~Choose any of the following:~~
    - ~~ITALST281 - Italian Cinema and the Novel~~   (0.50)
  - Choose any of the following:
    - JS233 - The Holocaust and Film   (0.50)
  - ~~Choose any of the following:~~

- - ~~MUSIC246 - Soundtracks: Music in Film~~ (0.50)
    - ~~MUSIC333 - Music and Landscape~~ (0.50)
  - ~~Choose any of the following:~~
    - ~~PACS312 - Quest for Peace in Literature and Film~~ (0.50)
  - Choose any of the following:
    - PHIL331 - Philosophy of Art (0.50)
  - ~~Choose any of the following:~~
    - ~~PSCI254 - The Political Documentary~~ (0.50)
  - ~~Choose any of the following:~~
    - ~~REES364 - German and Russian Film Pioneers~~ (0.50)
  - Choose any of the following:
    - ~~RCS225 - Sacred Beauty: Religion and the Arts~~ (0.50)
    - RCS270 - Religion in Popular Film (0.50)
    - ~~RCS271 - Special Topics in Religion and Film~~ (0.50)
    - RCS272 - The Holocaust and Film (0.50)
    - RCS275 - Religion and Japanese Film (0.50)
    - ~~RCS279 - Religion and Popular Culture~~ (0.50)
  - Choose any of the following:
    - SI230R - Islamic Visual Culture: Art, Architecture, and Aesthetics (0.50)
    - SI231R - Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts (0.50)
  - ~~Choose any of the following:~~
    - ~~SPAN410 - Visual Culture in the Contemporary Hispanic World~~ (0.50)
  - ~~Choose any of the following:~~
    - ~~THPERF200 - Theatre and Performance in Context~~ (0.50)
    - ~~THPERF246 - Design for Performance Media~~ (0.50)
    - ~~THPERF278 - Performance Technologies~~ (0.50)
    - ~~THPERF379 - Mixed Reality Design~~ (0.50)
    - ~~THPERF440 - Performative Inquiry and Practice~~ (0.50)
  - **Choose any of the following:**
    - **VCULT201 - Global Histories of Art 1500-1800 C.E. (0.50)**
    - **VCULT204 - Art Institutions (0.50)**
    - **VCULT205 - Topics in Visual Culture (0.50)**
    - **VCULT208 - Global Modern Art: 1800-1940 (0.50)**
    - **VCULT305 - Topics in Visual Culture (0.50)**
  - Choose any FINE ~~studio~~ course, to a maximum of 1.0 unit
  - Choose any DAC course, **to a maximum of 0.5 unit**

**Are there cross-listed courses listed in Cross-Listings Options ❓
requirements?**   All cross-listings to be displayed
Yes

Proposed
Additional Constraints ❓
1. Students may only complete one course from any cross-listed set.
2. No one course may fulfil more than one requirement within the minor.

Existing
Additional Constraints ❓
1. Students may only complete one course from any cross-listed set.
2. No one course may fulfil more than one requirement within the minor.
3. Consult the Visual Culture co-ordinator in Fine Arts before enrolling in FR486, ARCH, DAC, and INTEG courses.

Notes ❓
- Visit the Department of Fine Arts website for further information

- Visit the Department of Fine Arts website for further information

Undergraduate Plan Guidelines

Adherence to Academic Plan Guidelines ❓
Yes

Workflow Information

Workflow Path ❓	**Faculty/AFIW Path(s) for Workflow** ❓	**Senate Workflow**
Committee approvals	Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans
PREREQUISITES
⌄ FINE 243 - Topics in Fine Arts Experiential Learning   View Courses ❯

International Studies Minor
Global Affairs Minor

Revision | Under Review | Fall 2025

Proposal Information

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

Ashley Day

Kuali - Science

Changes

- Field of Study
- Program/Plan Name
- Additional Constraints
- Course Lists
- Course Requirements (no units)
- participants

Collapse ▲

Effective Date and Career

Career

Undergraduate

Important! ❓

Effective Term and Year ❓

Fall 2025

Proposal Details

Proposal Type ❓

Change

Academic Unit Approval

08/26/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Change course/program requirements

Is there an impact to existing students? ❓

Is there an impact to existing students? ❓
No

Is the credential name changing?	**Impact of Credential Name Change**
Yes	The name change applies only to future students (current students may opt in)

Co-operative System of Study and Requirements ❓
Not Applicable

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for Change(s) ❓

The Global Affairs minor is intended to be an applied minor which will prepare students for interdisciplinary graduate programs or for careers in global affairs in the public sector (provincially/federally); NGO sector; or internationally at institutions of global governance. The minor will focus on topics such as humanitarianism, peace and security, international development, trade, foreign policy and democracy-promotion.

The rationale for this major revision of the existing International Studies minor is to reinvigorate the minor in keeping with the latest pedagogical innovations at the University of Waterloo and its commitments to inter-disciplinary and experiential education. We also want to provide students with an applied learning experience that will expand their global knowledge and develop transferable skills to prepare them for a career in global affairs both in Canada and abroad.

We are shifting away from the word "international" as it refers to the nation-state as the unit of analysis. Instead, we want to be able to recognize the salience of non-state actors and other civil society actors to global process, institutions and developments. Second, since this is an applied minor that will prepare students for a career as a practitioner of global affairs, we have chosen to rely on the way the Canadian government, describes the work of Global Affairs Canada.

The University of Waterloo has embedded in its Strategic Plan 2020-2025, Future Ready Talent Framework and Degree Level Expectations the commitment to developing talent for a complex future. This priority entails:

- Empowering students to pursue flexible learning pathways.
- Embrace bold pedagogical approaches that teach students durable, transferable skills and resilience.
- Stimulate deep learning and develop competencies that will benefit students outside the classroom.

We would like to highlight three features of this minor that will boost enrollments and attract students from all six faculties across the university.

Interdisciplinary Learning: Course-based interdisciplinary learning is a goal the University is striving to achieve. Interest in the approach is high, but logistical and curricular issues make coordination difficult. The Global Affairs minor, by curating a list of courses that respond to the demands of global affairs - a field that is inherently inter-disciplinary - will provide students with a unique learning opportunity.

Experiential learning is a key degree-level expectation at UW. The capstone course GA400 is designed to support a students' willingness to pursue their curiosity about the global challenges confronting us and to learn from real-world experience. Students will be encouraged to design their own learning experience related to issues of global significance—research project, civic engagement, internship etc. They will be further challenged to identify and define how that experience can be used to develop skills and knowledge.

While providing a flexible pathway through the minor, we will provide students with a *cohort experience* that commences in GA200 and culminates in the capstone GA400 course.

RCS (Religion, Culture, Spirituality) has been added to the Languages and Cultures requirement. This follows the recent move of this subject code from the Arts Breath Requirements "Humanities" category to the "Languages and

Cultures" category.

Consultations (Departmental) ❓

These minor revisions were first introduced and voted upon in the department in Winter 2024. The Undergraduate Committee further honed the rationale for the proposed changes and approved them on August 26, 2024. We have consulted with the associate chairs of any department that contributed courses to the list of approved elective courses. These consultations took place during the week of September 16-20, 2024.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Arts

Academic Unit ❓
Department of Political Science

Proposed
Field of Study ❓
Global Affairs

Faculty ❓
Faculty of Arts

Existing
Field of Study ❓
International Studies

Undergraduate Credential Type ❓
Minor

Proposed
Program/Plan Name ❓
Global Affairs Minor

Existing
Program/Plan Name ❓
International Studies Minor

Admissions

Admissions Entry Point ❓
Declare Plan

Declaration Audience ❓
This credential is open to students enrolled in any degree program.

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❷

No

Average Requirement ❷   **Minimum Average(s) Required** ❷

Yes   • A minimum cumulative minor average of 65.0%.

Graduation Requirements ❷

• Complete a total of 4.0 units

Course Requirements (units) ❷

Required Courses

<div style="text-align:center">

0

Units to Complete

</div>

No Rules

Course Requirements (no units) ❷

Required Courses

- Complete all of the following
  - ~~Complete 1 of the following:~~
    - ~~INTST101 - Introduction to International Studies   (0.50)~~
    - ~~PSCI150 - Introduction to Global Politics   (0.50)~~
  - **Complete all the following:**
    - **GA200 - Introduction to Global Affairs   (0.50)**
    - **GA400 - Capstone in Global Affairs   (0.50)**
  - Complete 1 of the following:
    - ~~LS366 - Global Governance   (0.50)~~
    - PSCI281 - Introduction to International Relations   (0.50)
    - ~~PSCI387 - Globalization   (0.50)~~
    - ~~PSCI389 - Global Governance   (0.50)~~
    - **PSCI282 - Foreign Policy   (0.50)**
    - **PSCI283 - International Political Economy   (0.50)**
  - Complete 1.0 unit of courses in the same subject from any of the following language and culture subject codes: ARABIC, ASL, CHINA, CI, CROAT, DUTCH, EASIA, FR, GER, GRK, ITAL, ITALST, JAPAN, JS, KOREA, LAT, MOHAWK, PORT, **RCS,** REES, RUSS, SI, SPAN

Course Lists ❷

Approved Courses List

- Complete all of the following
  - Complete ~~21.0~~5 units from the following lists of courses (see Additional Constraints)
  - Choose any of the following:
    - ~~AFM121 - Introduction to Global Financial Markets   (0.50)~~
    - ~~AFM333 - International Business   (0.50)~~
    - ~~AFM334 - International Study Experience   (0.50)~~
    - ~~AFM434 - Corporate Governance and Risk Management   (0.50)~~
    - ~~AFM478 - International Financial Management   (0.50)~~
    - ~~ARBUS301 - International Business   (0.50)~~
    - **ANTH447 - Global Health and Medical Anthropology   (0.50)**
  - Choose any of the following:
    - ~~ANTH202 - Social and Cultural Anthropology   (0.50)~~
    - ~~ANTH347 - Medical Anthropology   (0.50)~~
    - ~~ANTH348 - Anthropology of Tourism   (0.50)~~
    - ~~ANTH465 - Borders, Boundaries, and Crossings   (0.50)~~

- **ARTS450 - Global Engagement Seminar (0.50)**

  - Choose any of the following:

    - ~~APPLS301 - Language, Culture, and Identity~~ (0.50)
    - ~~GER301 - Language, Culture, and Identity~~ (0.50)
    - **BLKST304 - Pan-African Global Politics (0.50)**
    - **PSCI304 - Pan-African Global Politics (0.50)**

  - Choose any of the following:

    - ~~ARBUS301 - International Business~~ (0.50)
    - ~~AFM333 - International Business~~ (0.50)
    - **EASIA277R - International Relations of East Asia (0.50)**
    - **EASIA302R - Chinese Foreign Policy Since 1949 (0.50)**
    - **PSCI277 - International Relations of East Asia (0.50)**
    - **PSCI385 - Chinese Foreign Policy Since 1949 (0.50)**

  - Choose any of the following:

    - ~~COMMST226 - Introduction to Race, Culture, and Communication~~ (0.50)
    - **ECON207 - Economic Growth and Development 1 (0.50)**
    - **ECON231 - Introduction to International Economics (0.50)**
    - **ECON332 - International Finance (0.50)**
    - **ECON436 - International Trade (0.50)**

  - Choose any of the following:

    - ~~ECON231 - Introduction to International Economics~~ (0.50)
    - ~~ECON332 - International Finance~~ (0.50)
    - ~~ECON436 - International Trade~~ (0.50)
    - **ERS222 - War and the Environment (0.50)**
    - **ERS404 - Global Environmental Governance (0.50)**
    - **ERS462 - Global Food and Agricultural Politics (0.50)**
    - **GEOG462 - Global Food and Agricultural Politics (0.50)**
    - **PSCI432 - Global Environmental Governance (0.50)**
    - **PSCI488 - Global Food and Agricultural Politics (0.50)**

  - **Choose any of the following:**

    - **ERS404 - Global Environmental Governance (0.50)**
    - **ERS462 - Global Food and Agricultural Politics (0.50)**
    - **GEOG462 - Global Food and Agricultural Politics (0.50)**
    - **HIST369 - The Politics of Decolonization (0.50)**
    - **PSCI150 - Introduction to Global Politics (0.50)**
    - **PSCI252 - Global South (0.50)**
    - **PSCI257 - Introduction to Middle East Politics (0.50)**
    - **PSCI281 - Introduction to International Relations (0.50)**
    - **PSCI282 - Foreign Policy (0.50)**
    - **PSCI283 - International Political Economy (0.50)**
    - **PSCI284 - Introduction to Security Studies (0.50)**
    - **PSCI355 - Russia and its Neighbours (0.50)**
    - **PSCI359 - Politics of South Asia (0.50)**
    - **PSCI368 - Global Discourses on Colonialism (0.50)**
    - **PSCI369 - The Politics of Decolonization (0.50)**
    - **PSCI375 - Transnational Migration (0.50)**

    - **PSCI380 - Political Economy of International Trade (0.50)**
    - **PSCI382 - Politics of Canadian Foreign Policy (0.50)**
    - **PSCI384 - Technology and International Security (0.50)**
    - **PSCI387 - Globalization (0.50)**
    - **PSCI389 - Global Governance (0.50)**
    - **PSCI404 - Globalization, International Business, and Development (0.50)**
    - **PSCI408 - The Politics of Global Money and Finance (0.50)**
    - **PSCI420 - Gender and Global Politics (0.50)**
    - **PSCI432 - Global Environmental Governance (0.50)**
    - **PSCI439 - Global Social Policy (0.50)**
    - **PSCI479 - International Political Economy of Asia (0.50)**
    - **PSCI480 - China and Global Governance (0.50)**

- PSCI481 - Interstate War   (0.50)
- PSCI482 - Advanced Issues in Security Studies   (0.50)
- PSCI485 - Selected Topics in International Political Economy   (0.50)
- PSCI486 - Special Topics in International Diplomacy   (0.50)
- PSCI488 - Global Food and Agricultural Politics   (0.50)

- **Choose any of the following:**

  - **ERS462 - Global Food and Agricultural Politics   (0.50)**
  - **GEOG202 - Geography of the Global Economy   (0.50)**
  - **GEOG203 - Environment and Development in a Global Perspective   (0.50)**
  - **GEOG225 - Global Environment and Health   (0.50)**
  - **GEOG426 - Geographies of Development   (0.50)**
  - **GEOG462 - Global Food and Agricultural Politics   (0.50)**
  - **PSCI488 - Global Food and Agricultural Politics   (0.50)**

- Choose any of the following:

  - ~~ENGL240R - Migration, Diaspora, and Exile in Muslim Narratives   (0.50)~~
  - ~~ENGL280 - Literatures of Migration   (0.50)~~
  - ~~ENGL290 - Global Shakespeare   (0.50)~~
  - ~~ENGL291 - Global Literatures   (0.50)~~
  - ~~ENGL463 - Postcolonial Literatures   (0.50)~~
  - ~~GSJ463 - Postcolonial Literatures   (0.50)~~
  - ~~SI240R - Migration, Diaspora, and Exile in Muslim Narratives   (0.50)~~
  - **GA390 - Special Topics in Global Affairs   (0.50)**
  - **GA490 - Special Topics in Global Affairs   (0.50)**

- ~~Choose any of the following:~~

  - ~~ERS404 - Global Environmental Governance   (0.50)~~
  - ~~ERS462 - Global Food and Agricultural Politics   (0.50)~~
  - ~~GEOG462 - Global Food and Agricultural Politics   (0.50)~~
  - ~~PSCI432 - Global Environmental Governance   (0.50)~~
  - ~~PSCI488 - Global Food and Agricultural Politics   (0.50)~~

- Choose any of the following:

  - ~~FINE102 - World Cinema and Visual Culture   (0.50)~~
  - ~~VCULT100 - World Cinema and Visual Culture   (0.50)~~
  - **GSJ331 - Gender in War & Peace   (0.50)**
  - **GSJ401 - Global Health   (0.50)**
  - **HLTH401 - Global Health   (0.50)**

  - **PACS321 - Gender in War & Peace   (0.50)**

- **Choose any of the following:**

  - **GSJ331 - Gender in War & Peace   (0.50)**
  - **HIST232 - A History of Peace Movements   (0.50)**
  - **PACS203 - A History of Peace Movements   (0.50)**
  - **PACS318 - Peacebuilding in Divided Societies   (0.50)**
  - **PACS321 - Gender in War & Peace   (0.50)**
  - **PACS325 - Refugees and Forced Migration   (0.50)**

- Choose any of the following:

  - ~~GSJ261 - Gender and the Great Religions   (0.50)~~
  - ~~GSJ320 - Sex and the World Religions   (0.50)~~
  - ~~GSJ331 - Gender in War & Peace   (0.50)~~
  - ~~GSJ401 - Global Health   (0.50)~~
  - ~~GSJ463 - Postcolonial Literatures   (0.50)~~
  - ~~ENGL463 - Postcolonial Literatures   (0.50)~~
  - ~~HLTH401 - Global Health   (0.50)~~
  - ~~PACS321 - Gender in War & Peace   (0.50)~~
  - ~~RCS284 - Gender and the Great Religions   (0.50)~~
  - ~~RCS325 - Sex and the World Religions   (0.50)~~
  - **HIST101 - Modern Global History   (0.50)**
  - **HIST232 - A History of Peace Movements   (0.50)**
  - **HIST268 - A Global History of Empires   (0.50)**
  - **HIST271 - Global Indigenous Issues   (0.50)**
  - **HIST275 - The Modern World in Historical Perspective   (0.50)**

- HIST275 - The Modern World in Historical Perspective (0.50)
- HIST311 - International Relations, 1890-1951 (0.50)
- HIST315 - U.S. and the World (0.50)
- HIST369 - The Politics of Decolonization (0.50)
- HIST389 - Canada in World Affairs (0.50)
- PACS203 - A History of Peace Movements (0.50)
- PSCI369 - The Politics of Decolonization (0.50)

○ Choose any of the following:

- GEOG202 - Geography of the Global Economy (0.50)
- GEOG203 - Environment and Development in a Global Perspective (0.50)
- GEOG462 - Global Food and Agricultural Politics (0.50)
- ERS462 - Global Food and Agricultural Politics (0.50)
- PSCI488 - Global Food and Agricultural Politics (0.50)
- HRTS301 - Human Rights and the United Nations (0.50)
- HRTS305 - Indigenous Rights in Global Context (0.50)
- INDG305 - Indigenous Rights in Global Context (0.50)

○ Choose any of the following:

- HIST232 - A History of Peace Movements (0.50)
- HIST268 - A Global History of Empires (0.50)
- HIST271 - Global Indigenous Issues (0.50)
- HIST275 - The Modern World in Historical Perspective (0.50)
- HIST311 - International Relations, 1890-1951 (0.50)
- HIST369 - The Politics of Decolonization (0.50)
- PACS203 - A History of Peace Movements (0.50)
- PSCI369 - The Politics of Decolonization (0.50)

○ Choose any of the following:

- HLTH401 - Global Health (0.50)
- GSJ401 - Global Health (0.50)
- LS352 - Human Rights (0.50)
- LS425 - Crossing Borders: Law and Global Deviance (0.50)
- LS426 - Criminology of Mobility (0.50)
- LS461 - Transnational Organized Crime (0.50)
- PHIL328 - Human Rights (0.50)
- PSCI375 - Transnational Migration (0.50)
- SOC270 - International Migration (0.50)
- SOC425 - Crossing Borders: Law and Global Deviance (0.50)
- SOC426 - Criminology of Mobility (0.50)
- SOC461 - Transnational Organized Crime (0.50)

○ Choose any of the following:

- HRTS301 - Human Rights and the United Nations (0.50)
- HRTS305 - Indigenous Rights in Global Context (0.50)
- INDG305 - Indigenous Rights in Global Context (0.50)

○ Choose any of the following:

- LS352 - Human Rights (0.50)
- LS425 - Crossing Borders: Law and Global Deviance (0.50)
- LS461 - Transnational Organized Crime (0.50)
- PHIL328 - Human Rights (0.50)
- PSCI375 - Transnational Migration (0.50)
- SOC425 - Crossing Borders: Law and Global Deviance (0.50)
- SOC461 - Transnational Organized Crime (0.50)

○ Choose any of the following:

- MUSIC232 - Music as a Global Phenomenon (0.50)
- MUSIC392 - Special Topics in Global Music (0.50)

○ Choose any of the following:

- PACS203 - A History of Peace Movements (0.50)
- PACS316 - Violence, Non-Violence, and War (0.50)
- PACS321 - Gender in War & Peace (0.50)
- PACS325 - Refugees and Forced Migration (0.50)

- PACS326 - Religion and Peacebuilding (0.50)
- PACS328 - Fair Trade (0.50)
- GSJ331 - Gender in War & Peace (0.50)
- HIST232 - A History of Peace Movements (0.50)
- PHIL329 - Violence, Non-Violence, and War (0.50)
- RCS380 - Religion and Peacebuilding (0.50)

- Choose any of the following:

  - PHIL227 - Culture and Ethics (0.50)
  - PHIL328 - Human Rights (0.50)
  - PHIL329 - Violence, Non-Violence, and War (0.50)
  - INDEV300 - Culture and Ethics (0.50)
  - LS352 - Human Rights (0.50)
  - PACS316 - Violence, Non-Violence, and War (0.50)

- Choose any of the following:

  - PSCI252 - Global South (0.50)
  - PSCI282 - Foreign Policy (0.50)
  - PSCI283 - International Political Economy (0.50)
  - PSCI369 - The Politics of Decolonization (0.50)
  - PSCI375 - Transnational Migration (0.50)
  - PSCI380 - Political Economy of International Trade (0.50)
  - PSCI384 - Technology and International Security (0.50)
  - PSCI404 - Globalization, International Business, and Development (0.50)
  - PSCI420 - Gender and Global Politics (0.50)
  - PSCI432 - Global Environmental Governance (0.50)
  - PSCI439 - Global Social Policy (0.50)
  - PSCI481 - Interstate War (0.50)
  - PSCI482 - Advanced Issues in Security Studies (0.50)
  - PSCI485 - Selected Topics in International Political Economy (0.50)
  - PSCI486 - Special Topics in International Diplomacy (0.50)
  - PSCI487 - International Relations Theory (0.50)
  - PSCI488 - Global Food and Agricultural Politics (0.50)
  - ERS404 - Global Environmental Governance (0.50)
  - ERS462 - Global Food and Agricultural Politics (0.50)
  - GEOG462 - Global Food and Agricultural Politics (0.50)
  - HIST369 - The Politics of Decolonization (0.50)
  - LS365 - Transnational Migration (0.50)

- Choose any of the following:

  - RCS121 - Evil (0.50)
  - RCS220 - Religion and Politics (0.50)
  - RCS221 - Islam, the West, and the Modern World (0.50)
  - RCS283 - Religion and Ethics (0.50)
  - RCS284 - Gender and the Great Religions (0.50)
  - RCS325 - Sex and the World Religions (0.50)
  - RCS380 - Religion and Peacebuilding (0.50)
  - RCS383 - Justice, Peace, and Development (0.50)
  - GSJ261 - Gender and the Great Religions (0.50)
  - GSJ320 - Sex and the World Religions (0.50)
  - PACS326 - Religion and Peacebuilding (0.50)
  - PSCI253 - Religion and Politics (0.50)
  - SI221R - Islam, the West, and the Modern World (0.50)

- Choose any of the following:

  - SCI201 - Global Warming and Climate Change (0.50)

- Choose any of the following:

  - SDS215R - Education and Social Development from a Global Perspective (0.50)
  - SDS288R - International Organizations (0.50)
  - SDS323R - International Perspectives in Community Organization (0.50)
  - SDS330R - International Public Policy (0.50)
  - SDS388R - Globalization and Social Development (0.50)
  - SDS405R - Cosmopolitanism and Social Development (0.50)

- - SOCWK322R - International Perspectives in Community Organization (0.50)
  - Choose any of the following:
    - SOC270 - International Migration (0.50)
    - SOC425 - Crossing Borders: Law and Global Deviance (0.50)
    - SOC461 - Transnational Organized Crime (0.50)
    - LS425 - Crossing Borders: Law and Global Deviance (0.50)
    - LS461 - Transnational Organized Crime (0.50)
  - Choose any of the following:
    - SI121R - Islam in the World (0.50)
    - SI221R - Islam, the West, and the Modern World (0.50)
    - SI240R - Migration, Diaspora, and Exile in Muslim Narratives (0.50)
    - ENGL240R - Migration, Diaspora, and Exile in Muslim Narratives (0.50)
    - RCS221 - Islam, the West, and the Modern World (0.50)

Are there cross-listed courses listed in **Cross-Listings Options** ❓
requirements?   All cross-listings to be displayed
Yes

Proposed
Additional Constraints ❓
1. Students may only complete one course from any cross-listed set.
2. For the approved courses requirement:
   1. A maximum of 0.5 unit can be taken from the same grouping.

Existing
Additional Constraints ❓
1. Students may only complete one course from any cross-listed set.
2. For the approved courses requirement:
   1. A minimum of 1.0 unit must be taken at the the 200-level or above.
   2. A maximum of 1.0 unit can be taken from the same grouping.
3. It is possible to have a course not currently listed count towards their approved courses requirement, provided that the desired course has substantial global content. In this case, however, students must have the prior written approval of the Department of Political Science.

Notes ❓
- Visit the Political Science website for further information.

Undergraduate Plan Guidelines

Adherence to Academic Plan Guidelines ❓
Yes

Workflow Information

Workflow Path ❓	**Faculty/AFIW Path(s) for Workflow** ❓	**Senate Workflow**
Committee approvals	Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

Degree Reqs: BA (Arts)
Bachelor of Arts Degree Requirements (Arts)
Under Review | Fall 2025

Proposal Information

Status

Active

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular   expand ▲
Subcommittee

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes

- Effective Term and Year
- Degree Requirements
- participants
- Program/Plan Name
- Admin Notes

Effective Date and Career

Career

Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2023

Proposal Details

Proposal Type ❓
Change

Academic Unit Approval

Quality Assurance Designation ❓
Minor Modification

Is there an impact to existing students? ❓
No

Is the credential name changing?
Yes

Impact of Credential Name Change
The name change applies to all students (current and future)

Name Change: Current Student Consultations ❓
No

Name Change: Summary of Current Student Consultations ❓
Consultations not applicable. The name change is only to add "(Arts)" to the title so it appears as the other calendar pages of this type do.

Co-operative System of Study and Requirements ❓
No

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for Change(s) ❓

Undergraduate Communication Requirement Changes
- Text edits related to the introduction of the new courses ARTS160 and ARTS160E and and confirming practices to ensure students complete the Undergraduate Communications Requirement.

Breadth Requirements Changes
- Note 4 is updated to reflect the change in courses required to complete the Undergraduate Communication Requirement.
- Subjects added: INNOV (Innovation), effective 01 September 2024, GA (Global Affairs), effective 01 September 2025.
- Move RCS to the Language and Cultures requirement list (previously in the Humanities requirement list). Rational provided by the Religious Studies Department states this move reflects the scope of approaches their field of study offers. This also connects to the change of their subject-indicator from RS (Religious Studies) to RSC (Religion, Culture, Spirituality), approved at SUC June 2024.
- The change of subject code from SMF (Sexuality, Marriage, and Family Studies) to SRF (Sexualities, Relationships, and Families), approved at SUC June 2024, is also reflected here.

Title Change
The name change is only to add "(Arts)" to the title so it appears as the other calendar pages of this type do.

Consultations (Departmental) ❓

Supporting Documentation

General Program/Plan Information

Faculty ❓

Faculty of Arts

Academic Unit ❓

Dean of Arts Office

Field of Study ❓

Degree Requirements

Faculty ❓

Faculty of Arts

Undergraduate Credential Type ❓

Degree Requirements

Proposed
Program/Plan Name ❓

Bachelor of Arts Degree Requirements (Arts)

Existing
Program/Plan Name ❓

Bachelor of Arts Degree Requirements

Admissions

Admissions Entry Point ❓

Direct Entry

Admission Requirements: Minimum Requirements ❓

Requirements Information

Invalid Combinations ❓

No

Average Requirement ❓

Yes

Minimum Average(s) Required ❓

- A minimum cumulative overall average of 60.0%.
- See major for required major average.

Proposed
Degree Requirements ❓

Unit Requirements

- Three-Year General degrees: Complete a total of 15.0 units, with a minimum of 8.0 units at the 200-level or above.

- Four-Year General degrees: Complete a total of 20.0 units.
    - Liberal Studies major: A minimum of 12.5 units must be at the 200-level or above.
    - All other Arts majors: A minimum of 8.0 units must be at the 200-level or above.
- Honours degrees: Complete a total of 20.0 units.
    - Liberal Studies major: A minimum of 12.5 units must be at the 200-level or above.
    - All other Arts majors: A minimum of 8.0 units must be at the 200-level or above.

Breadth Requirements

All Bachelor of Arts (BA) students must meet the BA Breadth Requirements:

Requirement	Units Required	Subject Codes
Fine, Performing, and Communication Arts	0.5 unit	COMMST, DAC, FINE, MUSIC, THPERF, VCULT
Humanities	1.0 unit	CLAS, ENGL, HIST, MEDVL, PHIL
Languages and Cultures	1.0 unit	ARABIC, ASL, CHINA, CI, CROAT, DUTCH, EASIA, FR, GER, GRK, ITAL, ITALST, JAPAN, JS, KOREA, LAT, MOHAWK, PORT, RCS, REES, RUSS, SI, SPAN
Social Sciences	2.0 units	ANTH, ECON, PSCI, PSYCH, SDS, SOC
Transdisciplinary Studies	0.5 unit	AFM, APPLS, ARBUS, ARTS, BLKST, BUS, CDNST, CMW, GA, GBDA, GSJ, HHUM, HRM, HRTS, HUMSC, INDG, INDENT, INNOV, INTST, LS, MENN, MGMT, PACS, SFM, SRF, SOCWK. Also any course taken in another University of Waterloo faculty.

Additional Constraints and Notes

1. Language courses accepted as transfer credits (e.g., LANG) may be counted towards the Languages and Cultures requirement.
2. No more than 1.0 unit in the same discipline may count towards the Social Sciences requirement.
3. Cross-listed courses may be designated to fulfil any one requirement. For example, a student registered in PACS203/HIST232 may receive credit for either the Transdisciplinary Studies requirement or the Humanities requirement, but not for both.
4. The Arts Undergraduate Communication Requirement courses (ARTS160 or ARTS160E) do not fulfil any of the breadth requirements.
5. Professional Development (PD) courses do not fulfil any of the breadth requirements.
6. Renamed subject codes will count towards the same requirement that they applied to when they were active. For example, COMMST was SPCOM and courses taken under the SPCOM subject code will count towards the Fine, Performing, and Communication Arts requirement. See previous Calendars.
7. For students enrolled in an Arts degree program prior to September 2008, refer to the Group A and B requirements. Those students who wish instead to adhere to the new Breadth Requirements (effective September 2008) may do so by submitting a petition.

Undergraduate Communication Requirement

All Bachelor of Arts students must meet the Undergraduate Communication Requirement by successfully completing an Arts First course, either ARTS160 or ARTS160E. The Arts First program fosters the development of foundational competencies in inquiry, communication, and analysis in students' first year to support their success.

Additional Constraints and Notes

1. Students are expected to complete ARTS160 or ARTS160E by the end of their 1B term. Failure to complete this course the end of 2B term will result in a hold placed on the student's account, preventing self-enrolment in courses for the following term.
2. In the event of a second failed attempt at ARTS160 or ARTS160E, students may submit a petition to the Arts Examinations and Standings Committee requesting permission for a third attempt.
3. The completion of the Undergraduate Communication Requirement in the student's previous University of Waterloo home faculty shall satisfy this requirement.
4. Students transferring to Arts at the University of Waterloo from other universities may request an exemption

from ARTS160 or ARTS160E with proof of the appropriate equivalent.

5. ARTS160 or ARTS160E does not fulfil any of the Bachelor of Arts Breadth Requirements.

6. Students enrolled in a Faculty of Arts plan prior to the September 2025 Calendar who have not completed their Undergraduate Communication Requirement should consult the requirements for the Undergraduate Communication Requirement as outlined in the Calendar of their plan year. Normally, students who have successfully completed one of ARTS130 or ARTS140 may complete their Undergraduate Communication Requirement by completing ARTS160 or ARTS160E. Students who have successfully completed neither ARTS130 nor ARTS140 should consult their academic advisor about their options.

Existing
Degree Requirements ❓

Unit Requirements

- Three-Year General degrees: Complete a total of 15.0 units, with a minimum of 8.0 units at the 200-level or above.
- Four-Year General degrees: Complete a total of 20.0 units.
  - Liberal Studies major: A minimum of 12.5 units must be at the 200-level or above.
  - All other Arts majors: A minimum of 8.0 units must be at the 200-level or above.
- Honours degrees: Complete a total of 20.0 units.
  - Liberal Studies major: A minimum of 12.5 units must be at the 200-level or above.
  - All other Arts majors: A minimum of 8.0 units must be at the 200-level or above.

Breadth Requirements

All Bachelor of Arts (BA) students must meet the BA Breadth Requirements:

Requirement	Units Required	Subject Codes
Fine, Performing, and Communication Arts	0.5 unit	COMMST, DAC, FINE, MUSIC, THPERF, VCULT
Humanities	1.0 unit	CLAS, ENGL, HIST, MEDVL, PHIL, RS
Languages and Cultures	1.0 unit	ARABIC, ASL, CHINA, CI, CROAT, DUTCH, EASIA, FR, GER, GRK, ITAL, ITALST, JAPAN, JS, KOREA, LAT, MOHAWK, PORT, REES, RUSS, SI, SPAN
Social Sciences	2.0 units	ANTH, ECON, PSCI, PSYCH, SDS, SOC
Transdisciplinary Studies	0.5 unit	AFM, APPLS, ARBUS, ARTS, BLKST, BUS, CDNST, CMW, GBDA, GSJ, HHUM, HRM, HRTS, HUMSC, INDG, INDENT, INTST, LS, MENN, MGMT, PACS, SFM, SMF, SOCWK. Also any course taken in another University of Waterloo faculty.

Additional Constraints and Notes

1. Language courses accepted as transfer credits (e.g., LANG) may be counted towards the Languages and Cultures requirement.

2. No more than 1.0 unit in the same discipline may count towards the Social Sciences requirement.

3. Cross-listed courses may be designated to fulfil any one requirement. For example, a student registered in PACS203/HIST232 may receive credit for either the Transdisciplinary Studies requirement or the Humanities requirement, but not for both.

4. The Arts Undergraduate Communication Requirement courses (ARTS130 and ARTS140) do not fulfil any of the breadth requirements.

5. Professional Development (PD) courses do not fulfil any of the breadth requirements.

6. Renamed subject codes will count towards the same requirement that they applied to when they were active. For example, COMMST was SPCOM and courses taken under the SPCOM subject code will count towards the Fine, Performing, and Communication Arts requirement. See previous Calendars.

7. For students enrolled in an Arts degree program prior to September 2008, refer to the Group A and B requirements. Those students who wish instead to adhere to the new Breadth Requirements (effective September 2008) may do so by submitting a petition.

Undergraduate Communication Requirement

Undergraduate Communication Requirement

All Bachelor of Arts students must meet the Undergraduate Communication Requirement by successfully completing Arts First courses, ARTS130 and ARTS140. The Arts First program fosters the development of foundational competencies in inquiry, communication, and analysis in students' first year to support their success.

Additional Constraints and Notes

1. Students are expected to complete ARTS130 or ARTS140 by the end of their 2A term. It is expected that one course be taken in fall term and the other in winter term. Both courses cannot be taken in the same term. Failure to complete these courses by the end of 3A term will result in a hold placed on the student's account, preventing self-enrolment in courses for the following term.
2. In the event of a second failed attempt at ARTS130 or ARTS140, students may submit a petition requesting permission for a third attempt.
3. The completion of the Undergraduate Communication Requirement in the student's previous University of Waterloo home faculty shall satisfy this requirement.
4. Students transferring to Arts at the University of Waterloo from other universities may request an exemption from one or both of ARTS130 and ARTS140 with proof of the appropriate equivalent.
5. Students enrolled in a Faculty of Arts plan prior to the September 2018 Calendar should consult the English Language Proficiency Requirement as outlined in the Calendar of their plan year.

Co-operative Education Program Requirements ❓

For Bachelor of Arts students in Honours Arts co-op or Honours Arts and Busines co-op.
1. Complete a minimum of four work terms:
    1. A minimum of three must be standard work terms.
2. Complete a minimum of four Professional Development (PD) courses:
    1. PD1: Must be taken in an academic term prior to the first work term.
    2. PD12: Must be taken during the first work term.
    3. Two additional PD courses: To be taken during each work term until the requirement is complete.

Additional Constraints and Notes

1. Co-operative plans are open only to full-time students.
2. Students with more than 6.5 units completed, including post-secondary transfer credits and credits completed outside the Faculty of Arts, are not eligible to transfer from a regular plan to a co-op plan within the Faculty of Arts. Students who have already successfully completed one or more work terms regardless of faculty may be considered for an exception to this rule – such exceptions will be determined by the admitting program.
3. Students seeking to complete a BA in the Faculty of Arts as a second degree having already completed a

    bachelor's degree in any discipline at the University of Waterloo or elsewhere are not eligible for admission to a co-op plan.

Legend for Study/Work Sequences Chart

Key	Description
F,W,S	Terms: F=September-December; W=January-April; S=May-August
1,2,3,4 plus A or B	Academic year and term.
WT	Scheduled work term.
off	Neither an academic term nor a work term.

Study/Work Sequences Chart

Plan	F	W	S	F	W	S	F	W	S	F	W	S	F	W
Arts and Business; Honours Arts co-op majors of Economics, English, Fine Arts, Mathematical Economics	1A	1B	off	2A	WT	2B	WT	3A	WT	3B	WT	WT	4A	4B

Honours Arts co-op plans (excluding majors in Economics, English, Fine Arts, Mathematical Economics)	1A	1B	off	2A	2B	WT	3A	WT	3B	WT	4A	WT	WT	4B

Course Requirements (units) ❓

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

No Rules

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
No

Additional Constraints ❓

Notes ❓

Workflow Information

Change to Undergraduate Communication Requirement
Yes

Workflow Path ❓	**Faculty/AFIW Path(s) for Workflow ❓**	**Senate Workflow**
Committee approvals	Faculty of Arts	--

Dependencies

Dependent Courses and Programs/Plans
There are no dependencies

UG-AR-Assessments: Scheduling Parameters
Assessments: Scheduling Parameters

Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular   expand ▲
Subcommittee
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Regulation Details
- Effective Term and Year

Effective Date & Career

Career
Undergraduate

IMPORTANT!

> Proposed
> **Effective Term and Year**
> Fall 2025

> Existing
> **Effective Term and Year**
> Fall 2024

Proposal Details

Proposal Type
Change

Rationale and Background
There is existing precedent in other faculties in university for large class multi-section Saturday midterms. Holding Saturday or Sunday exams would support the increasing challenges with scheduling tests during week days. We are also including Sunday to consider potential conflicts in terms of Religious Observances. This option would only be pursued as a final resort and the primary objective would be to schedule midterms from Monday-Friday.

,

Approved at Arts Academic Regulations Committee on September 16, 2024.

Supporting Documentation

General Regulation Information

Type of Regulation
University-wide

Regulation Grouping
Academic Regulations

Regulation Page Name
Assessments: Scheduling Parameters

Description
Formal lecture period. Scheduled pauses. Guidelines for tests during the formal lecture period.

Regulation Details

Proposed
Regulation Details ❓

Scheduled Pauses in the Academic Term

Scheduled pauses are study days, reading weeks, and public holidays recognized by the University.

Instructors are not permitted to administer, and students are not required to sit for examinations, tests, or lectures during a scheduled pause. There are to be no compulsory academic events (e.g., classes, labs, tutorials, seminars, exams). Deadlines for assignments are not permitted during a scheduled pause.
While exceptions may exist (e.g., clinical rotations, field trips, Year Four Optometry and Pharmacy courses) the scheduled pauses apply to both undergraduate and graduate students.

Study Days and Reading Weeks

Study days and reading weeks are designated periods where normal class schedules and academic requirements are suspended for a specified period of time. The dates are published in the Important Dates & Deadlines. Student services such as student advising support, Health Services, Counselling Services, the library, and residences continue to provide service.

Study Days

There are one or two study days each term, between the end of the Formal Lecture Period and the beginning of the Final Examination Period. No classes are to be held during study days, except where classes are rescheduled as the result of a campus-wide emergency closure.

Reading Week

Reading weeks occur in the fall and winter terms; they start with the Saturday before the public holidays of Thanksgiving Day and Family Day and end on the following Sunday.

The Formal Lecture Period

Each term, the formal period during which lectures take place is defined by the Important Dates & Deadlines (classes begin to classes end).

The normal teaching day at the University of Waterloo extends from 8:30 a.m. to 10:00 p.m., Monday to Friday. Student assignments and tests – assessments of knowledge, skills, and/or judgment – may be scheduled by instructors throughout the Formal Lecture Period except that major term tests may not be held in the last five teaching days of this period. Major term tests are those which account for more than 25 per cent of the final course grade. Exceptions must be approved in advance by the instructor's department chair and the associate dean (undergraduate) of the faculty concerned.

Faculty of Science Laboratory Courses

Senate approval has been given to the Faculty of Science to hold final examinations during the latter part of the Formal Lecture Period in laboratory courses which may require laboratory facilities.

Guidelines on Tests During the Formal Lecture Period

Instructors are encouraged to hold tests during the regularly scheduled class times for their courses. If instructors hold a test outside of the normal course meeting times that creates a legitimate conflict for students, the regularly scheduled event takes precedence, and the instructors must provide an alternative, mutually agreeable time for the student to write the test.

The date and time of tests must be included on the course outline. This time and date cannot be subsequently changed unless there is an extreme circumstance and unanimous consent from the class.

Material included on a test should be introduced sufficiently in advance of the test date to allow students reasonable time to seek clarification or greater understanding of concepts. Normally, this period will be a minimum of two working days.

The parameters for scheduling tests are as follows:

1. Tests are held during the Formal Lecture Period from 8:30 a.m. to 10:00 p.m., Monday through Friday, inclusive.
2. The faculties of Mathematics and Science may schedule Saturday tests for large, multiple-section courses in the fall and winter terms, if those tests are approved by the appropriate associate dean, scheduled using test slots, and announced to students during the first week of classes via published course outlines.
3. The School of Accounting and Finance may schedule Saturday or Sunday tests for large, multiple-section courses in the fall, winter, or spring terms, if those tests are approved by the appropriate associate dean, scheduled using test slots, and announced to students during the first week of classes via published course outlines.

Tests are not permitted outside of these parameters.

Instructors are encouraged to avoid requiring students to sit for tests during the time when co-operative work-term employment interviews are scheduled. Whenever possible, students are encouraged to avoid scheduling co-operative work-term employment interviews that conflict with tests. Attendance at co-operative work-term employment interviews is not considered to be a valid reason to miss a test.

In instances where students have adjacent tests or when students have more than two tests in a given day, these students should request academic consideration from instructors within one week of the notification that caused the conflict. See academic considerations and accommodations for guidance on when academic consideration may be granted and potential options for academic consideration.

Existing
Regulation Details ❓

Scheduled Pauses in the Academic Term

Scheduled pauses are study days, reading weeks, and public holidays recognized by the University.

Instructors are not permitted to administer, and students are not required to sit for examinations, tests, or lectures during a scheduled pause. There are to be no compulsory academic events (e.g., classes, labs, tutorials, seminars,

exams). Deadlines for assignments are not permitted during a scheduled pause.

While exceptions may exist (e.g., clinical rotations, field trips, Year Four Optometry and Pharmacy courses) the scheduled pauses apply to both undergraduate and graduate students.

Study Days and Reading Weeks

Study days and reading weeks are designated periods where normal class schedules and academic requirements are suspended for a specified period of time. The dates are published in the Important Dates & Deadlines. Student services such as student advising support, Health Services, Counselling Services, the library, and residences continue to provide service.

Study Days

There are one or two study days each term, between the end of the Formal Lecture Period and the beginning of the Final Examination Period. No classes are to be held during study days, except where classes are rescheduled as the result of a campus-wide emergency closure.

Reading Week

Reading weeks occur in the fall and winter terms; they start with the Saturday before the public holidays of Thanksgiving Day and Family Day and end on the following Sunday.

The Formal Lecture Period

Each term, the formal period during which lectures take place is defined by the Important Dates & Deadlines (classes begin to classes end).

The normal teaching day at the University of Waterloo extends from 8:30 a.m. to 10:00 p.m., Monday to Friday. Student assignments and tests – assessments of knowledge, skills, and/or judgment – may be scheduled by instructors throughout the Formal Lecture Period except that major term tests may not be held in the last five teaching days of this period. Major term tests are those which account for more than 25 per cent of the final course grade. Exceptions must be approved in advance by the instructor's department chair and the associate dean (undergraduate) of the faculty concerned.

Faculty of Science Laboratory Courses

Senate approval has been given to the Faculty of Science to hold final examinations during the latter part of the Formal Lecture Period in laboratory courses which may require laboratory facilities.

Guidelines on Tests During the Formal Lecture Period

Instructors are encouraged to hold tests during the regularly scheduled class times for their courses. If instructors hold a test outside of the normal course meeting times that creates a legitimate conflict for students, the regularly scheduled event takes precedence, and the instructors must provide an alternative, mutually agreeable time for the student to write the test.

The date and time of tests must be included on the course outline. This time and date cannot be subsequently changed unless there is an extreme circumstance and unanimous consent from the class.

Material included on a test should be introduced sufficiently in advance of the test date to allow students reasonable time to seek clarification or greater understanding of concepts. Normally, this period will be a minimum of two working days.

The parameters for scheduling tests are as follows:

1. Tests are held during the Formal Lecture Period from 8:30 a.m. to 10:00 p.m., Monday through Friday, inclusive.
2. The faculties of Mathematics and Science may schedule Saturday tests for large, multiple-section courses in the fall and winter terms, if those tests are approved by the appropriate associate dean, scheduled using test slots, and announced to students during the first week of classes via published course outlines.

Tests are not permitted outside of these parameters.

Instructors are encouraged to avoid requiring students to sit for tests during the time when co-operative work-term employment interviews are scheduled. Whenever possible, students are encouraged to avoid scheduling co-operative work-term employment interviews that conflict with tests. Attendance at co-operative work-term employment interviews is not considered to be a valid reason to miss a test.

In instances where students have adjacent tests or when students have more than two tests in a given day, these students should request academic consideration from instructors within one week of the notification that caused the conflict. See academic considerations and accommodations for guidance on when academic consideration may be granted and potential options for academic consideration.

Workflow Information

Change to Undergraduate Communication Requirement
No

Workflow Path	Faculty/AFIW Path(s) for Workflow	Senate Workflow
Committee approvals	Faculty of Arts	--

UG-ARTS-Courses and Classes
Arts: Courses and Classes

Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular   expand ▲
Subcommittee
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Admin Notes
- Regulation Details
- Effective Term and Year
- participants

Effective Date & Career

Career
Undergraduate

IMPORTANT!

Proposed
Effective Term and Year
Fall 2025

Existing
Effective Term and Year
Fall 2023

Proposal Details

Proposal Type
Change

Rationale and Background
The text is being edited to clarify the rules of repeated courses for different student groups, specifically post- and non-degree students.

Approved at Arts Academic Regulations Committee on October 21, 2024.

Supporting Documentation

General Regulation Information

Type of Regulation
Faculty-specific

Faculty
Faculty of Arts

Regulation Grouping
Regulations for Faculty of Arts Students

Regulation Page Name
Arts: Courses and Classes

Description
cross-listed courses, repeated courses, taking graduate-level courses, course load

Regulation Details

Proposed
Regulation Details ❓

Cross-Listed Courses

Cross-listed courses are considered to be equivalent in content. Students should be aware that all courses taken under a subject which was cross-listed with a course within the student's plan of the Undergraduate Calendar they are following (requirement term) are included in the plan average. See Averages and Academic Standings for how averages are calculated.

Similarly, students enrolled in a course which is cross-listed should be aware that the course will automatically fulfil a Bachelor of Arts Breadth Requirement for either the subject in which they are registered or the cross-listed subject, but not both. For example, a student registered in PACS203/HIST232 may receive credit for either the Transdisciplinary Studies requirement or the Humanities requirement, but not for both.

Repeated Courses

Failed Courses

- For all students, a **failed** course may be repeated only once unless further repetition is approved by the student's academic advisor.

Passed Courses

- For students enrolled in degree or non-degree studies, a **passed** course may not be repeated except under exceptional circumstances, and then only once and only under all the following conditions:
    1. if the student's academic advisor recommends the repetition;
    2. if, in the event that the course in question is not within the student's major, the academic unit offering the course also recommends the repetition; and
    3. if the Arts Examinations and Standings Committee approves the petition for repetition of the course in advance of registration for the repetition.
- For students enrolled in post-degree studies, a **passed** course may be repeated if the student's academic advisor recommends the repetition.

When a course is repeated, both grades are included in the calculation of a student's averages. Only one of the two attempts will count for credit towards the degree.

In rare cases when a student repeats a successfully completed course that has subsequently been cleared (given credit but grade does not count in average), the second instance will not receive credit and will normally not count in the student's averages.

Enrolment in Graduate Courses

Graduate courses may be counted towards an undergraduate degree in Arts. Students must obtain approval from the departmental undergraduate and graduate associate chairs to enrol in a graduate course. Normally, graduate courses counted towards an undergraduate degree cannot be used to satisfy graduate degree requirements.

The following regulations govern undergraduate students who take graduate courses:

- If the graduate course is not intended to be part of the undergraduate degree requirements, it will be designated as NACC (no credit given, not in average) so that the course may be later counted towards a graduate degree.
- Any student who wants a graduate course to count towards their undergraduate degree requirements must petition the Arts Examinations and Standings Committee. As part of the petition, the student should provide an explanation of why they are enrolling in the course.

Course Load

1. Full-time students in the Faculty of Arts will normally carry a maximum five-course load (2.5 academic course units) in a term. Students are reminded that course weights can vary.
2. Three or four courses also constitutes a full-time course load but will impact the timeline for progression.
3. Students enrolled in up to 1.0 academic course unit (e.g., one or two courses of 0.5 academic course unit) in a given term are considered to be in part-time studies. Students may enrol part-time in most general and honours academic plans in Arts. Courses taken on a part-time basis may be scheduled in either the day or evening, or online (see the University of Waterloo Centre for Extended Learning). **No distinction** is made between part-time and full-time students as to admission, degree requirements, or grading practices.
4. Students may take six courses (3.0 academic course units) by permission of their academic advisor provided that they have a minimum overall average, based on a minimum of 10 successfully completed courses (5.0 academic course units), of 75%.
5. If a student has courses with INC (incomplete course work) grades on their record, the total unit weight of those courses and the courses enrolled for the current term may not normally exceed 3.0 academic course units. A student may obtain permission from an academic advisor to exceed this limit if an INC will not be completed in the current term because the course is not offered.
6. Students in the Faculty of Arts who wish to enrol in courses in other faculties are expected to balance Arts and non-Arts courses, choosing the majority of courses in the Faculty of Arts. Students who continually overload on non-Arts courses may risk jeopardizing academic progression.
7. In the spring term and summer session, the combined total course load shall not exceed the normal course load permitted in one term.
8. Non-degree students may take no more than 10 academic course units at the University of Waterloo without permission of the Arts Examinations and Standings Committee.
9. Exceptions to these regulations may be sought by petition to the Arts Examinations and Standings Committee.

Existing
Regulation Details ❓

Cross-Listed Courses

Cross-listed courses are considered to be equivalent in content. Students should be aware that all courses taken under a subject which was cross-listed with a course within the student's plan of the Undergraduate Calendar they are following (requirement term) are included in the plan average. See Averages and Academic Standings for how averages are calculated.

Similarly, students enrolled in a course which is cross-listed should be aware that the course will automatically fulfil a Bachelor of Arts Breadth Requirement for either the subject in which they are registered or the cross-listed

subject, but not both. For example, a student registered in PACS203/HIST232 may receive credit for either the Transdisciplinary Studies requirement or the Humanities requirement, but not for both.

Repeated Courses

- A **failed** course may be repeated only once unless further repetition is approved by the student's academic advisor.
- A **passed** course may not be repeated except under exceptional circumstances, and then only once and only under all the following conditions:
    1. if the student's academic advisor recommends the repetition;
    2. if, in the event that the course in question is not within the student's major, the academic unit offering the course also recommends the repetition; and
    3. if the Arts Examinations and Standings Committee approves the petition for repetition of the course in advance of registration for the repetition.

When a course is repeated, both grades are included in the calculation of a student's averages. Only one of the two attempts will count for credit towards the degree.

In rare cases when a student repeats a successfully completed course that has subsequently been cleared (given credit but grade does not count in average), the second instance will not receive credit and will normally not count in the student's averages.

Enrolment in Graduate Courses

Graduate courses may be counted towards an undergraduate degree in Arts. Students must obtain approval from the departmental undergraduate and graduate associate chairs to enrol in a graduate course. Normally, graduate courses counted towards an undergraduate degree cannot be used to satisfy graduate degree requirements.

The following regulations govern undergraduate students who take graduate courses:

- If the graduate course is not intended to be part of the undergraduate degree requirements, it will be designated as NACC (no credit given, not in average) so that the course may be later counted towards a graduate degree.
- Any student who wants a graduate course to count towards their undergraduate degree requirements must petition the Arts Examinations and Standings Committee. As part of the petition, the student should provide an explanation of why they are enrolling in the course.

Course Load

1. Full-time students in the Faculty of Arts will normally carry a maximum five-course load (2.5 academic course units) in a term. Students are reminded that course weights can vary.
2. Three or four courses also constitutes a full-time course load but will impact the timeline for progression.
3. Students enrolled in up to 1.0 academic course unit (e.g., one or two courses of 0.5 academic course unit) in a given term are considered to be in part-time studies. Students may enrol part-time in most general and honours academic plans in Arts. Courses taken on a part-time basis may be scheduled in either the day or evening, or online (see the University of Waterloo Centre for Extended Learning). **No distinction** is made between part-time and full-time students as to admission, degree requirements, or grading practices.
4. Students may take six courses (3.0 academic course units) by permission of their academic advisor provided that they have a minimum overall average, based on a minimum of 10 successfully completed courses (5.0 academic course units), of 75%.
5. If a student has courses with INC (incomplete course work) grades on their record, the total unit weight of those courses and the courses enrolled for the current term may not normally exceed 3.0 academic course units. A student may obtain permission from an academic advisor to exceed this limit if an INC will not be completed in the current term because the course is not offered.
6. Students in the Faculty of Arts who wish to enrol in courses in other faculties are expected to balance Arts and non-Arts courses, choosing the majority of courses in the Faculty of Arts. Students who continually overload on non-Arts courses may risk jeopardizing academic progression.
7. In the spring term and summer session, the combined total course load shall not exceed the normal course load permitted in one term.
8. Non-degree students may take no more than 10 academic course units at the University of Waterloo without permission of the Arts Examinations and Standings Committee.
9. Exceptions to these regulations may be sought by petition to the Arts Examinations and Standings

Committee.

Workflow Information

Change to Undergraduate Communication Requirement
No

Workflow Path	Faculty/AFIW Path(s) for Workflow	Senate Workflow
Committee approvals	Faculty of Arts	--

For Approval   **Open Session**

To:	Senate
From:	Senate Undergraduate Council
Presenter(s):	David DeVidi Associate Vice-President, Academic
Date of Meeting:	March 3, 2025
Agenda Item:	**7.2 Senate Undergraduate Council: Faculty of Engineering – Major Modifications**

Recommendation/Motion

1. That Senate approve the new Diploma in Society, Technology and Values, effective September 1, 2025, as presented.

2. That Senate approve the two new specializations and major plan modifications within Environmental Engineering, effective September 1, 2025, as presented.

3. That Senate approve the regulation changes for Averages and Academic Standings, and Courses and Classes for the Faculty of Engineering, effective September 1, 2025, as presented.

Summary

Senate Undergraduate Council met on January 28, 2025 and agreed to forward the above items to Senate for approval as part of the regular agenda.

Proposal/Rationale

1. Diploma in Society, Technology and Values

   The six-course STV Option existed since the inception of CSTV in the 1980s, and STV courses have filled regularly for decades, but on average only one student completes the program per year. A self-study in 2016 revealed that low enrollment in the Option is due to three factors:

   a. The requirements of the STV Option are too onerous. In particular, Requirement D—either STV 400, an independent-study research course, or adding a significant STV element to a 4th-year thesis or project—was identified by students and reviewers as excessive and a roadblock to completing the Option.

   b. Most students who enroll in STV courses are Engineering undergraduates (approximately 70%), but Engineering students typically do not have enough

non-technical electives to meet Option requirements without overloading their schedule by enrolling in extra classes.

c. Outside of Engineering, student awareness is low of CSTV, its courses, and the Option.

Furthermore, in 2018, the University Senate approved new guidelines for academic plans, where "Options are only available to students within their home faculty", which does not fit the mandate of CSTV, whereas Diplomas are available to all students, including those with non-degree or post-degree status. An Option has a minimum of six courses; a Diploma has a minimum of four.

Costs to implement the diploma are minimal. The Director of CSTV would be expected to address all student inquiries and approve undergraduate graduations, with minimal overhead to the Centre's administrative home in the Department of Systems Design Engineering.

2. Environmental Engineering Specializations and Plan Modifications [*Modelling & Data Analytics Specialization (new)*, *Sustainable Cities Specialization (new)*, *Energy Specialization (modification)*, *Hydrology Specialization (modification)*, *Pollution & Treatment Control Specialization (modification)*]

The modification of the specializations was recognized by the ENVE faculty and others in the department as a key tool to improve the coherence of program messaging for recruitment, increase student satisfaction with the program, and better train a new generation of environmental engineering students that will be tasked with a wide range of potential problems in comparison with past practice. We have tried to craft specializations that align with Canadian Engineering Grand Challenges, UN Sustainable Development goals, the expertise of our faculty, and the types of careers in research and practice that we feel are most likely to be in demand in the future. The specializations will give the students distinct and important skills that, when combined with the core fundamentals that all ENVE students take, will make them more specifically prepared to take on important environmental challenges.

Mission – To design and build urban areas that are sustainable in the face of climate change. Increasingly we live on an urban planet and this mission is essential for the creation of healthy inclusive cities and the redevelopment of existing spaces for a resilient future.

Canadian Engineering Grand Challenge– *Safe and sustainable cities* – Priorities includes transportation challenge due to climate and low density of Canada, resilience to climate change and other stresses, planning and design to meet sustainability and resilience objectives. Change needed in the "ways that engineers participate in the planning of urban infrastructure and development of urban technologies".

SDG 11 – Make cities and human settlements inclusive, safe, resilient, and sustainable. Promote sustainable land-use planning and management. Promote the integrated provision of environmental infrastructure: water, sanitation, drainage, and solid waste management. Promote sustainable energy and transport systems in human settlements. Promote human settlements planning and management in disaster prone areas.

What makes this environmental engineering? – Integrated understanding of environmental engineering systems (water, waste, air) that are designed to manage water, air, and soil in cities.

Differentiation from other Env. Eng. – More emphasis on civil engineering systems in cities including buildings and transportation. Cross-disciplinary training in urban planning with some exposure to landscape planning and decision making in cities.

3. Regulation changes: Averages and Academic Standings, Courses and Classes

When the UG calendar moved to Kuali, all regulation pages were reorganized. We realized that many of our rules were difficult to follow and confusing to students and advising staff that required the rules to make academic progression decisions. This version of the regulations is structured to provide consistency between the Engineering and Architecture rules. Definitions have been added, standings are consistent and rules are clear and re-ordered to provide an easy guide for advisors and students to determine academic standings.

The rules have been presented and discussed over several months - FOPS, FUGS, APC, EFC. There have been multiple version of the rules that have been circulated to these committees, to the Examinations and Promotions Committee (who adjudicate petitions), and and the UG advising staff who utilize the rules on a regular basis. The proposal was brought to EngSoc for feedback.

Jurisdictional Information

As provided for in Senate Bylaw 2, section 5.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

b. Make recommendations to Senate with respect to new undergraduate programs/plans, the deletion of undergraduate programs/plans, and major changes to undergraduate programs/plans.

Governance Path

Engineering Faculty Council: 11/19/2024

Senate Undergraduate Council: 01/28/2025

Documentation Provided

Appendix: Proposed Changes – Faculty of Engineering

CM Program Code
Diploma in Society, Technology and Values

Under Review | Fall 2025

Proposal Information

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

>   Tim Weber-Kraljevski
>   Mike Grivicic
>   Diana Goncalves
>   Kuali - Arts
>   Kuali - Env
>   Melanie Figueiredo
>   Kuali - Math
>   Kuali - Eng
>   Kuali - Hlth
>   Ashley Day
>   Kuali - Science

Effective Date and Career

Career
Undergraduate

Important! ❓

Effective Term and Year ❓
Fall 2025

Proposal Details

Proposal Type ❓
New

Academic Unit Approval
09/07/2023

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Other

Recruitment Materials

Yes

Co-operative System of Study and Requirements ❓

No

Creating or Changing Invalid Combinations ❓

No

Rationale and Background for New Program/Plan ❷

Background & Proposal

The six-course STV Option existed since the inception of CSTV in the 1980s, and STV courses have filled regularly for decades, but on average only one student completes the program per year. A self-study in 2016 revealed that low enrollment in the Option is due to three factors:

1. The requirements of the STV Option are too onerous. In particular, Requirement D—either STV 400, an independent-study research course, or adding a significant STV element to a 4th-year thesis or project—was identified by students and reviewers as excessive and a roadblock to completing the Option.
2. Most students who enroll in STV courses are Engineering undergraduates (approximately 70%), but Engineering students typically do not have enough non-technical electives to meet Option requirements without overloading their schedule by enrolling in extra classes.
3. Outside of Engineering, student awareness is low of CSTV, its courses, and the Option.

Furthermore, in 2018, the University Senate approved new guidelines for academic plans, where "Options are only available to students within their home faculty", which does not fit the mandate of CSTV, whereas Diplomas are available to all students, including those with non-degree or post-degree status. An Option has a minimum of six courses; a Diploma has a minimum of four.

Costs to implement the diploma are minimal. The Director of CSTV would be expected to address all student inquiries and approve undergraduate graduations, with minimal overhead to the Centre's administrative home in the Department of Systems Design Engineering.

Diploma Description

A student who completes the Diploma will have demonstrated competence in a set of skills:

- the ability to view the role of technology in society from a variety of critical perspectives;
- the ability to analyze technology-society problems and solutions, in collaboration with peers from other academic programs;
- the ability to communicate views on society-technology interactions effectively, both orally and in written form.

STV courses and the STV Diploma support the University's aim to produce graduates from all faculties who are more fully aware of the complex relationships that technology has with contemporary society. STV Diploma students will have an analytical skillset to allow them to thrive in the new AI- and technology-driven environment of the 21st century.

The Diploma enhances any major or minor undergraduate program, and distinguishes the University of Waterloo by providing an academic plan related to critical thinking about technology and society accessible to most Engineering undergraduates without course overloading. At this time, we do not believe a similar program for engineering undergraduates exists at Laurier, Guelph, Western, McMaster, York, McGill, Toronto, Ryerson or Carleton. Although several universities have comparable Science, Technology and Society (STS) Minors, these typically require 8 or more courses, which is inaccessible to most Engineering undergrads. The Knowledge Integration program has an STS specialization, which is similar to the proposed diploma, but is only available to its own students.

The three lists are structured as follows:

1. Fundamentals
2. Critical Theory and Ethics
3. Critical Thinking: Issues and Applications

Consultations (Departmental) ❓

To address these concerns from 2016 and 2018 noted above, in 2019 CSTV drafted a new Diploma plan of four courses built from STV courses, relevant Engineering core and technical elective courses, and STV-like courses from across campus drawing most heavily on Arts and Environment. The D requirement was also removed. The new plan was circulated at the Engineering FOPS undergrad committee, but events of the pandemic overtook any changes.

In May 2023, the new CSTV Advisory Committee (made up of stakeholder faculty members in Engineering, Arts, the Affiliated Colleges and a local NGO) met and reviewed the plan, and a draft was presented at the June 2023 SYDE department meeting. Based on feedback, over the summer of 2023, CSTV revised the Diploma, which was presented for voting at the September 2023 SYDE departtment meeting and approved unanimously.

The Diploma was presented for discussion and feedback at UOps in April 2024. There were minor questions, but no objections. There were minor revisions to courses in List B and C.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Engineering

Academic Unit ❓
Dean of Engineering Office

Field of Study ❓
Society, Technology and Values

Faculty ❓
Faculty of Engineering

Undergraduate Credential Type ❓
Diploma

Program/Plan Name ❓
Diploma in Society, Technology and Values

Online Degree/Diploma ❓

Admissions

Admissions Entry Point ❓
Both

Admission Requirements: Minimum Requirements ❓

Declaration Audience ❓

This credential is open to students enrolled in degree programs or any non- or post-degree academic plan.

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓
No

Average Requirement ❓   **Minimum Average(s) Required** ❓
Yes   - A minimum cumulative diploma average of 70.0%.

Graduation Requirements ❓
- Complete a total of 2.0 units.

Course Requirements (units) ❓

Required Courses

<div align="center">

2

Units to Complete

</div>

- Complete all of the following
    - Complete 2 of the following:
        - STV100 - Society, Technology and Values: Introduction   (0.50)
        - STV202 - Design and Society   (0.50)
        - STV205 - Cybernetics and Society   (0.50)
        - STV208 - Artificial Intelligence and Society: Impact, Ethics, and Equity   (0.50)
        - STV210 - The Computing Society   (0.50)
        - HIST212 - The Computing Society   (0.50)
    - Complete 1 of the following:
        - BME381 - Biomedical Engineering Ethics   (0.50)
        - CIVE491 - Engineering Law and Ethics   (0.50)
        - ENGL320 - History and Theory of Pre-Internet Media   (0.50)
        - ENVE391 - Law and Ethics for Environmental and Geological Engineers   (0.50)
        - GEOE391 - Law and Ethics for Environmental and Geological Engineers   (0.50)
        - ENVS105 - Environmental Sustainability and Ethics   (0.50)
        - GBDA306 - Ethics and Values in Design   (0.50)
        - PHIL215 - Professional and Business Ethics   (0.50)
        - PHIL224 - Environmental Ethics   (0.50)
        - PHIL226 - Biomedical Ethics   (0.50)
        - PHIL228 - Ethics and Artificial Intelligence   (0.50)
        - PHIL259 - Philosophy of Technology   (0.50)
        - PHIL315 - Ethics and the Engineering Profession   (0.50)
        - SOC232 - Technology and Social Change   (0.50)
        - SOC246 - Mass Communication   (0.50)
        - STV302 - Information Technology and Society   (0.50)
        - STV304 - Technology in Canadian Society   (0.50)
        - STV305 - Technology, Society and the Modern City   (0.50)
        - STV306 - Biotechnology and Society   (0.50)
    - Complete 1 of the following:
        - AE101 - History of the Built Environment   (0.50)
        - ANTH106 - Technologies of Being Human   (0.50)
        - ANTH303 - Anthropology of Digital Media   (0.50)
        - ARCH142 - Introduction to Cultural History   (0.50)
        - CS492 - The Social Implications of Computing   (0.50)
        - ECE458 - Computer Security   (0.50)
        - ENGL108D - Digital Lives   (0.50)
        - ENGL208B - Science Fiction   (0.50)
        - ENGL294 - Introduction to Critical Game Studies   (0.50)
        - ENGL295 - Social Media   (0.50)
        - ERS215 - Environmental and Sustainability Assessment 1   (0.50)
        - ERS270 - Introduction to Sustainable Agroecosystems   (0.50)
        - ERS294 - The Sacred Earth: Religion and Ecology   (0.50)
        - ERS372 - First Nations and the Environment   (0.50)
        - GBDA303 - Data and Society   (0.50)
        - HIST203 - Methods of Public History   (0.50)
        - HIST216 - From Gutenberg to Zuckerberg: A (Long) History of the Internet   (0.50)

- INDEV262 - Introduction to Global Emerging Cities   (0.50)
- INTEG121 - Collaboration, Design Thinking, and Problem Solving   (0.50)
- LS213 - Surveillance Studies   (0.50)
- LS329 - Security and Governance   (0.50)
- MSE442 - Impact of Information Systems on Organizations and Society   (0.50)
- NE109 - Societal and Environmental Impacts of Nanotechnology   (0.50)
- PACS201 - Roots of Conflict, Violence, and Peace   (0.50)
- PACS315 - Engineering and Peace   (0.50)
- RS285 - The Sacred Earth: Religion and Ecology   (0.50)
- SCI200 - Energy - Its Development, Use, and Issues   (0.50)
- SCI252 - Quantum Mechanics for Everyone   (0.50)
- SCI267 - Introduction to the Philosophy of Science   (0.50)
- SOC213 - Surveillance Studies   (0.50)
- SOC329 - Security and Governance   (0.50)
- SYDE261 - Design, Systems, and Society   (0.50)

Grand Total Units: 2

Course Requirements (no units) ❷

Required Courses

No Rules

Course Lists ❷

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❷
All cross-listings to be displayed

Additional Constraints ❷

Notes ❷
1. Exceptions to the requirements and electives listed above require prior approval from the Centre for Society, Technology and Values director.

Undergraduate Plan Guidelines

Adherence to Academic Plan Guidelines ❷
Yes

Workflow Information

Workflow Path ❓

Committee approvals

Faculty/AFIW Path(s) for Workflow ❓

Faculty of Engineering

Senate Workflow

--

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

Energy Specialization
Energy and Climate Change Specialization
Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Effective Term and Year
- Program/Plan Name
- Additional Constraints
- Course Lists
- Course Requirements (no units)
- Graduation Requirements
- participants

Collapse ▲

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2023

Proposal Details

Proposal Type ❷

Change

Academic Unit Approval

09/19/2024

Quality Assurance Designation ❷

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Is there an impact to existing students? ❷

No

Is the credential name changing?

Yes

Impact of Credential Name Change

The name change applies only to future students (current students may opt in)

Co-operative System of Study and Requirements ❷

Not Applicable

Creating or Changing Invalid Combinations ❷

No

Rationale and Background for Change(s) ❓

The modification of the specializations was recognized by the ENVE faculty and others in the department as a key tool to improve the coherence of program messaging for recruitment, increase student satisfaction with the program, and better train a new generation of environmental engineering students that will be tasked with a wide range of potential problems in comparison with past practice. We have tried to craft specializations that align with Canadian Engineering Grand Challenges, UN Sustainable Development goals, the expertise of our faculty, and the types of careers in research and practice that we feel are most likely to be in demand in the future. The specializations will give the students distinct and important skills that, when combined with the core fundamentals that all ENVE students take, will make them more specifically prepared to take on important environmental challenges.

Mission - To better understand air quality and atmospheric processes in a world where our current energy use is driving climate change. To better design the built environment to enhance resilience, climate change adaptation and sustainability in the face of climate change within a context of environmental, economic, and social constraints and resilience.
Canadian Engineering Grand Challenge – *Affordable and Sustainable Energy* (technoeconomic analysis of the eco-efficiency of environmental actions, access to new energy sources in remote areas, lower carbon footprint of energy services in denser populated areas, high quality and promising technologies)
SDG 7 – "ensure access to affordable, reliable, sustainable and modern energy for all". **SDG 13** – "reduction of global greenhouse gas emissions and addressing adaptation to the adverse impacts of climate change"
What makes this environmental engineering? – Energy use and efficiency, understanding of air quality and emissions, sustainability of energy systems in the built environment in different regions, including the use of energy and how human systems create emissions of GHG and other pollutants, air pollution control design.
What makes this a specialization? – Deeper understanding of climate change atmospheric processes and energy systems, energy of buildings/communities, social considerations and environmental impacts of energy systems.

Consultations (Departmental) ❓

Changes were reviewed by the Environment and Water Resources group and finalized on Aug 1, 2024. Input received was addressed.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Engineering

Academic Unit ❓
Department of Civil and Environmental Engineering

Field of Study ❓
Environmental Engineering

Faculty ❓
Faculty of Engineering

Undergraduate Credential Type ❓
Specialization

Proposed
Program/Plan Name ❓
Energy and Climate Change Specialization

Existing
Program/Plan Name ❓
Energy Specialization

Admissions

Specialization is available for students in the following majors ❓

- H-Environmental Engineering

Admissions Entry Point ❓

Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓

No

Average Requirement ❓

Yes

Minimum Average(s) Required ❓

- A minimum average of 60.0% in the specialization courses.

Proposed
Graduation Requirements ❓
• Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.

Existing
Graduation Requirements ❓
• Complete a total of four courses according to the requirements below.

Course Requirements (units) ❓

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- ~~Complete 4 of the following:~~
  - ~~AE572 - Building Energy Analysis (0.50)~~
  - ~~AE573 - HVAC Systems, Equipment, and Energy Efficiency (0.50)~~
  - ~~CIVE507 - Building Science and Technology (0.50)~~
  - ~~GEOG409 - Energy Balance Climatology (1.00)~~
  - ~~ME354 - Thermodynamics 2 (0.50)~~
  - ~~ME452 - HVAC Load Analysis and Design Fundamentals (0.50)~~
  - ~~ME459 - Energy Conversion (0.50)~~
  - ~~ME572 - Building Energy Analysis (0.50)~~
  - ~~ME573 - HVAC Systems, Equipment, and Energy Efficiency (0.50)~~

- **Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.**

List 1

- **Complete 2 of the following:**
  - **AE572 - Building Energy Analysis (0.50)**
  - **AE573 - HVAC Systems, Equipment, and Energy Efficiency (0.50)**
  - **AE585 - Air Quality Engineering and Impacts (0.50)**
  - **CIVE507 - Building Science and Technology (0.50)**
  - **ENVE585 - Air Quality Engineering and Impacts (0.50)**
  - **ME572 - Building Energy Analysis (0.50)**
  - **ME573 - HVAC Systems, Equipment, and Energy Efficiency (0.50)**

List 2

- **Complete all of the following**
  - **The remaining 3 courses can be from List 1 or 2.**
  - **Choose any of the following:**
    - **GEOG207 - Climate Change Fundamentals (0.50)**
    - **CHE514 - Fundamentals of Petroleum Production (0.50)**
    - **CHE571 - Industrial Ecology (0.50)**
    - **CHE572 - Air Pollution Control (0.50)**
    - **ME571 - Clean Air Technologies (0.50)**
    - **ME354 - Thermodynamics 2 (0.50)**
    - **ME452 - HVAC Load Analysis and Design Fundamentals (0.50)**
    - **ME459 - Energy Conversion (0.50)**
    - **GEOG304 - Carbon in the Biosphere (0.50)**
    - **GEOG408 - Earth's Future Climates (1.00)**
    - **GEOG409 - Energy Balance Climatology (1.00)**

Course Lists ❓

~~Required Courses~~

- **Complete all of the following**

Required Courses

- **Complete all of the following**

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Proposed
Additional Constraints ❓

1. Special topics courses ENVE495 and ENVE497 may be eligible to count towards the specialization requirements depending on the course topic, and with approval from the Civil and Environmental Engineering associate chair, undergraduate studies.

Existing
Additional Constraints ❓

Notes ❓

Workflow Information

Workflow Path ❓
Committee approvals

Faculty/AFIW Path(s) for Workflow ❓
Faculty of Engineering

Senate Workflow
--

Dependencies

Dependent Courses and Programs/Plans
SPECIALIZATIONS LIST
⌄ H-Environmental Engineering - Environmental Engineering (Bachelor of Applied Science - Honours)   View Programs ❯

Hydrology Specialization
Water Resources Specialization

Under Review | Fall 2025

Proposal Information

Status

Active

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes

- Effective Term and Year
- Program/Plan Name
- Additional Constraints
- Course Lists
- Course Requirements (no units)
- Graduation Requirements
- participants
- Course Requirements (units)

Collapse ▲

Effective Date and Career

Career

Undergraduate

Important! ❷

Proposed
Effective Term and Year ❷
Fall 2025

Existing
Effective Term and Year ❷
Fall 2023

Proposal Details

Proposal Type ❷

Change

Academic Unit Approval

09/19/2024

Quality Assurance Designation ❷

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Is there an impact to existing students? ❷

No

Is the credential name changing?

Yes

Impact of Credential Name Change

The name change applies only to future students (current students may opt in)

Co-operative System of Study and Requirements ❷

Not Applicable

Creating or Changing Invalid Combinations ❷

No

Rationale and Background for Change(s) ❓

The modification of the specializations was recognized by the ENVE faculty and others in the department as a key tool to improve the coherence of program messaging for recruitment, increase student satisfaction with the program, and better train a new generation of environmental engineering students that will be tasked with a wide range of potential problems in comparison with past practice. We have tried to craft specializations that align with Canadian Engineering Grand Challenges, UN Sustainable Development goals, the expertise of our faculty, and the types of careers in research and practice that we feel are most likely to be in demand in the future. The specializations will give the students distinct and important skills that, when combined with the core fundamentals that all ENVE students take, will make them more specifically prepared to take on important environmental challenges.

Mission - To design resilient water resource systems and civil infrastructure in a world with a growing population but changing and uncertain water distribution and climate. To plan for extremes including disaster response, floods, and droughts, water quantity and availability. Do we have enough water in the right place? How do we source it sustainably? How can adapt to climate change?

Canadian Engineering Grand Challenge – *Resilient infrastructure* (flooding, aging infrastructure, climate risks); *Safe water in our communities* (climate change impact on droughts, glacier depletion, northern Canada challenges, transboundary transfers)

SDG 9 - *Disaster risk reduction* (floods, droughts, resilient infrastructure, exposure of vulnerable populations); **SDG 11** *Sustainable Cities and Human Settlements* (environmental infrastructure including water supply and drainage)

What makes this environmental engineering? Hydrologic and hydraulic analysis, design of critical environmental infrastructure - source water management, urban water system design, hydrologic modelling.

What makes this a specialization? Deeper understanding of science of physical processes of water, water in human and natural environments, water quantity analysis, spatial analysis including geographical information systems (GIS) and remote sensing, conflict resolution for scarce resources

Consultations (Departmental) ❓

Changes were reviewed by the Environment and Water Resources group and finalized on Aug 1, 2024. Input received was addressed.

Supporting Documentation

General Program/Plan Information

Faculty ❓

Faculty of Engineering

Field of Study ❓

Environmental Engineering

Undergraduate Credential Type ❓

Specialization

Academic Unit ❓

Department of Civil and Environmental Engineering

Faculty ❓

Faculty of Engineering

Proposed
Program/Plan Name ❷
Water Resources Specialization

Existing
Program/Plan Name ❷
Hydrology Specialization

Admissions

Specialization is available for students in the following majors ❷

- H-Environmental Engineering

Admissions Entry Point ❷

Declare Plan

Declaration Requirements ❷

Requirements Information

Invalid Combinations ❷

No

Average Requirement ❷   **Minimum Average(s) Required** ❷

Yes   - A minimum average of 60.0% in the specialization courses.

Proposed
Graduation Requirements ❷
• Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.

Existing
Graduation Requirements ❷
• Complete a total of four courses according to the requirements below.

Course Requirements (units) ❷

Required Courses

0

Units to Complete

- **Complete all of the following**

Course Requirements (no units) ❓

Required Courses

- ~~Complete 4 of the following:~~
    - ~~BIOL462 - Applied Wetland Science~~ ~~(0.50)~~
    - ~~BIOL470 - Methods of Aquatic Ecology~~ ~~(0.50)~~
    - ~~CIVE583 - Design of Urban Water Systems~~ ~~(0.50)~~
    - ~~EARTH439 - Flow and Transport Through Fractured Rocks~~ ~~(0.50)~~
    - ~~EARTH444 - Applied Wetland Science~~ ~~(0.50)~~
    - ~~EARTH459 - Chemical Hydrogeology~~ ~~(0.50)~~
    - ~~ENVE573 - Contaminant Transport~~ ~~(0.50)~~
    - ~~ENVE583 - Design of Urban Water Systems~~ ~~(0.50)~~
    - ~~GEOG209 - Hydroclimatology~~ ~~(0.50)~~
    - ~~GEOG305 - Fluvial Geomorphology~~ ~~(0.50)~~
    - ~~GEOG371 - Advanced Remote Sensing Techniques~~ ~~(0.50)~~
    - ~~GEOG381 - Advanced Geographic Information Systems~~ ~~(0.50)~~
    - ~~GEOG453 - Urban Stormwater Management~~ ~~(0.50)~~
    - ~~PLAN381 - Advanced Geographic Information Systems~~ ~~(0.50)~~
    - ~~PLAN453 - Urban Stormwater Management~~ ~~(0.50)~~
    - ~~SYDE532 - Introduction to Complex Systems~~ ~~(0.50)~~
    - ~~SYDE533 - Conflict Resolution~~ ~~(0.50)~~
- **Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below**

List 1

- **Complete 2 of the following:**
    - **CIVE583 - Design of Urban Water Systems** **(0.50)**
    - **ENVE383 - Advanced Hydrology and Hydraulics** **(0.50)**
    - **ENVE481 - Open Channel Hydraulics** **(0.50)**
    - **ENVE583 - Design of Urban Water Systems** **(0.50)**

List 2

- **Complete all of the following**
    - **The remaining 3 courses can be from List 1 or 2.**
    - **Choose any of the following:**
        - **ENVE573 - Contaminant Transport** **(0.50)**
        - **EARTH458 - Physical Hydrogeology** **(0.50)**
        - **EARTH458L - Field Methods in Hydrogeology** **(0.25)**
        - **BIOL462 - Applied Wetland Science** **(0.50)**
        - **EARTH444 - Applied Wetland Science** **(0.50)**
        - **EARTH459 - Chemical Hydrogeology** **(0.50)**
        - **GEOG305 - Fluvial Geomorphology** **(0.50)**
        - **GEOG371 - Advanced Remote Sensing Techniques** **(0.50)**
        - **GEOG381 - Advanced Geographic Information Systems** **(0.50)**
        - **PLAN381 - Advanced Geographic Information Systems** **(0.50)**
        - **GEOG453 - Urban Stormwater Management** **(0.50)**
        - **PLAN453 - Urban Stormwater Management** **(0.50)**
        - **SYDE532 - Introduction to Complex Systems** **(0.50)**

- **SYDE533 - Conflict Resolution** (0.50)

Course Lists ❓

Required Courses

- **Complete all of the following**

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Proposed
Additional Constraints ❓
1. Special topics courses ENVE495 and ENVE497 may be eligible to count towards the specialization requirements depending on the course topic, and with approval from the Civil and Environmental Engineering associate chair, undergraduate studies.   2. EARTH458 and EARTH458L must be taken together and count as one course towards the specialization requirements.

Existing
Additional Constraints ❓

Notes ❓

Workflow Information

Workflow Path ❓
Committee approvals

Faculty/AFIW Path(s) for Workflow ❓
Faculty of Engineering

Senate Workflow
--

Dependencies

Dependent Courses and Programs/Plans
SPECIALIZATIONS LIST
⌄ H-Environmental Engineering - Environmental Engineering (Bachelor of Applied Science - Honours)   View Programs ❯

Modelling & Data Analytics Specialization
Modelling and Data Analytics Specialization

Under Review | Fall 2025

Proposal Information

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Effective Date and Career

Career

Undergraduate

Important! ❓

Effective Term and Year ❓

Fall 2025

Proposal Details

Proposal Type ❓

New

Academic Unit Approval

09/19/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials

Yes

Co-operative System of Study and Requirements ❓

Not Applicable

Creating or Changing Invalid Combinations ❓

No

Rationale and Background for New Program/Plan ❓

The modification of the specializations was recognized by the ENVE faculty and others in the department as a key tool to improve the coherence of program messaging for recruitment, increase student satisfaction with the program, and better train a new generation of environmental engineering students that will be tasked with a wide range of potential problems in comparison with past practice. We have tried to craft specializations that align with Canadian Engineering Grand Challenges, UN Sustainable Development goals, the expertise of our faculty, and the types of careers in research and practice that we feel are most likely to be in demand in the future. The specializations will give the students distinct and important skills that, when combined with the core fundamentals that all ENVE students take, will make them more specifically prepared to take on important environmental challenges.

Mission - To build and interpret the complex models needed to understand environmental processes and design sustainable engineered systems To collect and analyze the wide range of data that is available for monitoring environmental processes and systems.

Canadian Engineering Grand Challenge – *Resilient Infrastructure* (need for a serious approach to data collection, management and analytics, real time data collection and 'smart' infrastructure); *Affordable and Sustainable Energy* (need for innovative technological solutions), *Safe Water in Our Communities* (need for improved data collection and management, turn 'big data' into 'useful data', integration of data streams and decision making, improve access to information), *Safe and Sustainable Cities* (need for technological stewardship to ensure it contributes to society, innovative infrastructure planning and design)

Sustainable Development Goals - not explicit

What makes this environmental engineering? – Modelling and big data underpin many of the Grand Challenges that are linked with Environmental Engineering. There is a need to ensure our grads are ready to apply new and fast developing techniques in machine learning and artificial intelligence to these problems. Numerical and analytic models, applied modelling courses for environmental processes, diffusion and advection transport of pollutants, environmental data analysis are just some of the active fields of practice and research that they will be able to better contribute to.

What makes this a specialization? – Strength in coding and big data, optimization, machine learning, image processing.

Consultations (Departmental) ❓

Changes were reviewed by the Environment and Water Resources group and finalized on Aug 1, 2024. Input received was addressed.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Engineering

Academic Unit ❓
Department of Civil and Environmental Engineering

Field of Study ❓
Environmental Engineering

Faculty ❓
Faculty of Engineering

Undergraduate Credential Type ❓
Specialization

Program/Plan Name ❓
Modelling and Data Analytics Specialization

Admissions

Specialization is available for students in the following majors ❓

- H-Environmental Engineering

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓
No

Average Requirement ❓
Yes

Minimum Average(s) Required ❓

- A minimum average of 60.0% in the specialization courses.

Graduation Requirements ❓

- Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.

Course Requirements (units) ❓

Required Courses

0
Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.

List 1

- Complete 2 of the following:
    - AE585 - Air Quality Engineering and Impacts　(0.50)
    - ENVE573 - Contaminant Transport　(0.50)
    - ENVE583 - Design of Urban Water Systems　(0.50)
    - ENVE585 - Air Quality Engineering and Impacts　(0.50)

List 2

- Complete all of the following
    - The remaining 3 courses can be from List 1 or 2.
    - Choose any of the following:
        - MSE245 - Databases and Software Design　(0.50)
        - MSE332 - Fundamentals of Optimization　(0.50)
        - MSE452 - Decision Making Under Uncertainty　(0.50)
        - MSE446 - Introduction to Machine Learning　(0.50)
        - SYDE252 - Linear Systems and Signals　(0.50)
        - SYDE522 - Foundations of Artificial Intelligence　(0.50)
        - CIVE422 - Finite Element Analysis　(0.50)
        - SYDE223 - Data Structures and Algorithms　(0.50)
        - MSE240 - Algorithms and Data Structures　(0.50)
        - SYDE334 - Applied Statistics　(0.50)
        - SYDE411 - Optimization and Numerical Methods　(0.50)
        - CHE521 - Process Optimization　(0.50)
        - SYDE599 - Special Topics in Systems Design Engineering　(0.50)

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Additional Constraints ❓

1. Special topics courses ENVE495 and ENVE497 may be eligible to count towards the specialization requirements depending on the course topic, and with approval from the Civil and Environmental Engineering associate chair, undergraduate studies.

Notes ❷

Workflow Information

Workflow Path ❷

Committee approvals

Faculty/AFIW Path(s) for Workflow ❷

Faculty of Engineering

Senate Workflow

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Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

Pollution Treatment & Control Specialization
Pollution and Restoration Specialization

Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Program/Plan Name
- Course Requirements (no units)
- Graduation Requirements
- participants
- Effective Term and Year
- Are there cross-listed courses listed in requirements?
- Notes
- Additional Constraints
- Cross-Listings Options

Collapse ▲

Effective Date and Career

Career
Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2024

Proposal Details

Proposal Type ❓
Change

Academic Unit Approval
09/19/2024

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Is there an impact to existing students? ❓
No

Is the credential name changing?
Yes

Impact of Credential Name Change
The name change applies only to future students (current students may opt in)

Co-operative System of Study and Requirements ❓
Not Applicable

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for Change(s) ❓

The modification of the specializations was recognized by the ENVE faculty and others in the department as a key tool to improve the coherence of program messaging for recruitment, increase student satisfaction with the program, and better train a new generation of environmental engineering students that will be tasked with a wide range of potential problems in comparison with past practice. We have tried to craft specializations that align with Canadian Engineering Grand Challenges, UN Sustainable Development goals, the expertise of our faculty, and the types of careers in research and practice that we feel are most likely to be in demand in the future. The specializations will give the students distinct and important skills that, when combined with the core fundamentals that all ENVE students take, will make them more specifically prepared to take on important environmental challenges.

Mission – To design and build systems for pollution control, treatment, management, and restoration of natural resources. To ensure long-term prosperity while safeguarding the natural environment by enabling a sustainable circular economy of resilient green and grey infrastructure, waste prevention, end-of-life processing, and resource recovery.

Canadian Engineering Grand Challenge – *Safe Water in Our Communities* – Priority areas include climate change, proactive approach to vulnerability assessment, empowerment of communities and operators, adaptive water treatment technologies, source water protection plans. *Sustainable Industrialization* - circular economy where waste becomes input, waste suppression, recycling, life cycle analysis including both energy and water.

SDG 6 – "overexploitation, pollution, and climate change have led to severe water stress" "2/2 billion people lack access to safely managed drinking water, and 4.2 billion people lack safely managed sanitation." **SDG 12** "reduce the negative impacts of urban activities and of chemicals which are hazardous for human health and the environment". Environmentally sound management of hazardous and radioactive wastes, management of solid wastes and sewage. **SDG 13** – "addressing adaptation to the adverse impacts of climate change"

What makes this environmental engineering? – Reflects all the ways that people want to interact with the natural world around them, recognizing that there are tradeoffs. Treatment processes, waste management, recycling/recovery of materials . Designing strategies for resilience and adaptation.

What makes this a specialization? – Deep expertise in chemical and biological processes for air and water characterization, management, and treatment on natural and built landscapes. Includes restoration and techno-ecological nature-based solutions for resilience in a changing climate.

Consultations (Departmental) ❓

Changes were reviewed by the Environment and Water Resources group and finalized on Aug 1, 2024. Input received was addressed.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Engineering

Academic Unit ❓
Department of Civil and Environmental Engineering

Field of Study ❓
Environmental Engineering

Faculty ❓
Faculty of Engineering

Undergraduate Credential Type ❷

Specialization

Proposed
Program/Plan Name ❷
Pollution and Restoration Specialization

Existing
Program/Plan Name ❷
Pollution Treatment and Control Specialization

Admissions

Specialization is available for students in the following majors ❷

- H-Environmental Engineering

Admissions Entry Point ❷

Declare Plan

Declaration Requirements ❷

Requirements Information

Invalid Combinations ❷

No

Average Requirement ❷

Yes

Minimum Average(s) Required ❷

- A minimum average of 60.0% in the specialization courses.

Proposed
Graduation Requirements ❷
• Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.

Existing
Graduation Requirements ❷
• Complete a total of four courses according to the requirements below.

Course Requirements (units) ❷

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- ~~Complete 4 of the following:~~
    - ~~CHE361 - Bioprocess Engineering (0.50)~~
    - ~~CHE571 - Industrial Ecology (0.50)~~
    - ~~CHE572 - Air Pollution Control (0.50)~~
    - ~~CHE574 - Industrial Wastewater Pollution Control (0.50)~~
    - ~~ENVE573 - Contaminant Transport (0.50)~~
    - ~~ENVE577 - Engineering for Solid Waste Management (0.50)~~
    - ~~ME571 - Clean Air Technologies (0.50)~~

- **Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.**

List 1

- **Complete all the following:**
    - **ENVE573 - Contaminant Transport (0.50)**
    - **ENVE577 - Engineering for Solid Waste Management (0.50)**

List 2

- **Complete 3 of the following:**
    - **ENVE585 - Air Quality Engineering and Impacts (0.50)**
    - **CHE572 - Air Pollution Control (0.50)**
    - **CHE574 - Industrial Wastewater Pollution Control (0.50)**
    - **BIOL462 - Applied Wetland Science (0.50)**
    - **EARTH444 - Applied Wetland Science (0.50)**
    - **EARTH459 - Chemical Hydrogeology (0.50)**
    - **BIOL470 - Methods of Aquatic Ecology (0.50)**
    - **GEOG304 - Carbon in the Biosphere (0.50)**
    - **AE585 - Air Quality Engineering and Impacts (0.50)**

Course Lists ❓

Required Courses

No Rules

Proposed	Proposed
Are there cross-listed courses listed in requirements? Yes	**Cross-Listings Options** ❓ All cross-listings to be displayed
	Existing
Existing	**Cross-Listings Options** ❓
Are there cross-listed courses listed in requirements? No	_

Proposed
Additional Constraints ❓

1. Special topics courses ENVE495 and ENVE497 may be eligible to count towards the specialization requirements depending on the course topic, and with approval from the Civil and Environmental Engineering associate chair, undergraduate studies.

Existing
Additional Constraints ❓

Proposed
Notes ❓

Existing
Notes ❓

Workflow Information

Workflow Path ❓

Committee approvals

Faculty/AFIW Path(s) for Workflow ❓

Faculty of Engineering

Senate Workflow

--

Dependencies

Dependent Courses and Programs/Plans

SPECIALIZATIONS LIST

❯ H-Environmental Engineering - Environmental Engineering (Bachelor of Applied Science - Honours)   View Programs ❯

Sustainable Cities Specialization
Sustainable Cities Specialization

Under Review | Fall 2025

Proposal Information

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Effective Date and Career

Career
Undergraduate

Important! ❓

Effective Term and Year ❓
Fall 2025

Proposal Details

Proposal Type ❓
New

Academic Unit Approval
09/19/2024

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials

Yes

Co-operative System of Study and Requirements ❓

Not Applicable

Creating or Changing Invalid Combinations ❓

No

Rationale and Background for New Program/Plan ❓

The modification of the specializations was recognized by the ENVE faculty and others in the department as a key tool to improve the coherence of program messaging for recruitment, increase student satisfaction with the program, and better train a new generation of environmental engineering students that will be tasked with a wide range of potential problems in comparison with past practice. We have tried to craft specializations that align with Canadian Engineering Grand Challenges, UN Sustainable Development goals, the expertise of our faculty, and the types of careers in research and practice that we feel are most likely to be in demand in the future. The specializations will give the students distinct and important skills that, when combined with the core fundamentals that all ENVE students take, will make them more specifically prepared to take on important environmental challenges.

Mission – To design and build urban areas that are sustainable in the face of climate change. Increasingly we live on an urban planet and this mission is essential for the creation of healthy inclusive cities and the redevelopment of existing spaces for a resilient future.

Canadian Engineering Grand Challenge– *Safe and sustainable cities* – Priorities includes transportation challenge due to climate and low density of Canada, resilience to climate change and other stresses, planning and design to meet sustainability and resilience objectives. Change needed in the "ways that engineers participate in the planning of urban infrastructure and development of urban technologies".

SDG 11 – Make cities and human settlements inclusive, safe, resilient, and sustainable. Promote sustainable land-use planning and management. Promote the integrated provision of environmental infrastructure: water, sanitation, drainage, and solid waste management. Promote sustainable energy and transport systems in human settlements. Promote human settlements planning and management in disaster prone areas.

What makes this environmental engineering? – Integrated understanding of environmental engineering systems (water, waste, air) that are designed to manage water, air, and soil in cities.

Differentiation from other Env. Eng. – More emphasis on civil engineering systems in cities including buildings and transportation. Cross-disciplinary training in urban planning with some exposure to landscape planning and decision making in cities.

Consultations (Departmental) ❓

Changes were reviewed by the Environment and Water Resources group and finalized on Aug 1, 2024. Input received was addressed.

Supporting Documentation

General Program/Plan Information

Faculty ❓

Faculty of Engineering

Field of Study ❓

Environmental Engineering

Undergraduate Credential Type ❓

Specialization

Program/Plan Name ❓

Sustainable Cities Specialization

Academic Unit ❓

Department of Civil and Environmental Engineering

Faculty ❓

Faculty of Engineering

Admissions

Specialization is available for students in the following majors ❓

- H-Environmental Engineering

Admissions Entry Point ❓

Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓

No

Average Requirement ❓

Yes

Minimum Average(s) Required ❓

- A minimum average of 60.0% in the specialization courses.

Graduation Requirements ❓

- Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.

Course Requirements (units) ❓

Required Courses

No Rules

0

Units to Complete

Course Requirements (no units) ❓

Required Courses

- Complete a minimum of five courses totaling 2.5 units or greater according to the requirements below.

List 1

- Complete 2 of the following:
    - AE572 - Building Energy Analysis   (0.50)
    - CIVE440 - Transit Planning and Operations   (0.50)
    - ENVE577 - Engineering for Solid Waste Management   (0.50)
    - ENVE583 - Design of Urban Water Systems   (0.50)

List 2

- Complete all of the following
    - The remaining 3 courses can be from List 1 or 2.
    - Choose any of the following:
        - CIVE484 - Physical Infrastructure Planning   (0.50)
        - PLAN484 - Physical Infrastructure Planning   (0.50)
        - PLAN100 - Urbanization Today: Introduction to Cities and Regions   (0.50)
        - PLAN240 - Environmental Planning and Policy   (0.50)
        - PLAN261 - Urban and Metropolitan Planning and Development   (0.50)
        - PLAN349 - Urban Form and Spatial Structure   (0.50)
        - PLAN341 - Ecology and Conservation for Planning   (0.50)
        - GEOG368 - Ecology and Conservation for Planning   (0.50)
        - PLAN419 - Planning Climate Change and Community   (0.50)
        - PLAN440 - Urban Services   (0.50)
        - PLAN483 - Land Development Planning   (0.50)
        - ERS215 - Environmental and Sustainability Assessment 1   (0.50)
        - ERS320 - Economics and Sustainability   (0.50)
        - STV305 - Technology, Society and the Modern City   (0.50)

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Additional Constraints ❓

1. Special topics courses ENVE495 and ENVE497 may be eligible to count towards the specialization requirements depending on the course topic, and with approval from the Civil and Environmental Engineering associate chair, undergraduate studies.

Notes ❷

Workflow Information

Workflow Path ❷

Committee approvals

Faculty/AFIW Path(s) for Workflow ❷

Faculty of Engineering

Senate Workflow

--

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

UG-ENG-Averages & Standings
Engineering: Averages and Academic Standings

Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
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> Kuali - Arts
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> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Regulation Details
- participants
- Effective Term and Year

Effective Date & Career

Career
Undergraduate

IMPORTANT!

Proposed
Effective Term and Year
Fall 2025

Existing
Effective Term and Year
Fall 2024

Proposal Details

Proposal Type
Change

Rationale and Background
When we moved the UG calendar to Kuali, all regulation pages were reorganized. We realized that many of our rules were difficult to follow and confusing to students and advising staff that required the rules to make academic progression decisions. This version of the regulations is structured to provide consistency between the Engineering and Architecture rules. Definitions have been added, standings are consistent and rules are clear and re-ordered to provide an easy guide for advisors and students to determine academic standings.

The rules have been presented and discussed over several months - FOPS, FUGS, APC, EFC. There have been multiple version of the rules that have been circulated to these committees, to the Examinations and Promotions Committee (who adjudicate petitions), and and the UG advising staff who utilize the rules on a regular basis. The proposal was brought to EngSoc for feedback.

The attached document lists the changes made and includes a Q&A section that summarizes some questions that have been raised about the rules throughout their development.

Supporting Documentation
- 2024 Engineering Regulations Proposal Supporting Information.pdf

General Regulation Information

Type of Regulation
Faculty-specific

Faculty
Faculty of Engineering

Regulation Grouping
Regulations for Faculty of Engineering Students

Regulation Page Name
Engineering: Averages and Academic Standings

Description
Standings and promotion rules. Academic decisions and rules. For all engineering and Architecture programs.

Regulation Details
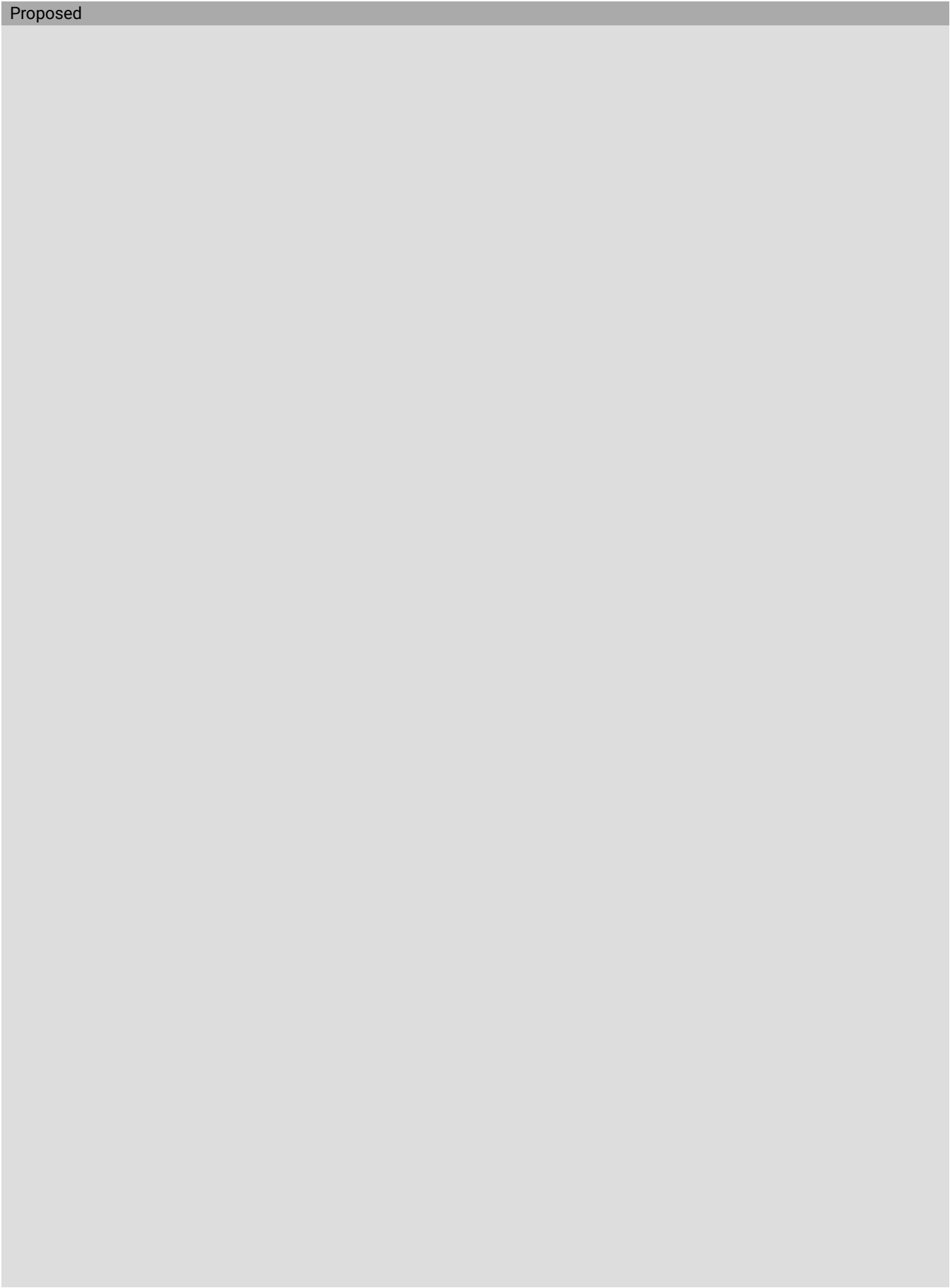
Proposed

Regulation Details ❷

References to Engineering includes students enrolled in either the Bachelor of Applied Science (BASc) or the Bachelor of Software Engineering (BSE) degree. References to Architecture includes students enrolled in the Bachelor of Architectural Studies (BAS) degree. The Engineering Examinations & Promotions Committee (E&P) has the authority to apply an academic standing if there is a scenario that is not covered in these regulations.

Definitions

See also Glossary of Terms.

- **Associate chair:** (BASc and BSE students) References to the associate chair are to be interpreted as either the undergraduate associate chair, program director, director of first-year engineering, or one of their designates, depending on the major and academic level.
- **Associate director:** (BAS students) Refers to the associate director, School of Architecture.
- **Required courses:** Required courses are listed in the level-by-level major requirements.
- **Approved electives:** Approved electives are Complementary Studies Electives, Natural Science Electives, Technical Electives, or other electives, as listed in the major requirements.
- **Studio courses:** (BAS students) Refers to 1.5-unit courses that are taken by BAS students for each level of study (i.e., ARCH192, ARCH193, ARCH292, ARCH293, ARCH392, ARCH393, ARCH492, ARCH493).
- **Full load:** A full load academic term is one in which a student is enrolled in, at minimum, the number of units specified in the major requirements for their academic level.
- **Elective reduced load:** (BASc and BSE students) An elective reduced load academic term is one in which a student is enrolled in at least 2.0 units but less than a full load.
- **Partial load:** (BASc and BSE students) A partial load academic term is one in which a student is enrolled in less than 2.0 units and is therefore completing the academic level in multiple parts.
- **Interpreted course grade:** See the Grading Systems and Processes section of the Calendar.
- **Term Average (TAV):** The TAV is the average of all grades in a term using the weight of the course, the status of the course and the interpreted course grade.
- **Cumulative Average (CAV):** The CAV is the average of all grades prior to and including the indicated term using the weight of the course, the status of the course and the interpreted course grade.
- **To Be Cleared (TBC) count:** (BASc and BSE students) The TBC count represents the number of uncleared failed, dropped or not attempted courses that should have been completed given the student's academic level.
- **Supplementary Examination**: (BASc and BSE students) A supplementary examination or assessment may be permitted for a first failed attempt at a course, with the permission of the associate chair. If conditions are met for the supplementary examination or assessment, the failed course will be considered cleared. The original course grade will remain on the transcript and is included in the calculation of averages. Supplementary examinations or assessments are not available for all courses or course offerings; granting of permission does not imply that one will be available in any given term. Only one attempt at a supplementary examination or assessment is allowed. A failed supplementary examination or assessment is considered an unsuccessful attempt to clear a failed course.

Academic Standings

Academic standings are based on performance in the current term and may depend on the previous academic standing, as outlined in the Promotion Rules. The possible academic standings and their effect on the student's progress are as follows:

- Unconditional promotion occurs when promotion conditions have been met with no failed courses and the student may proceed to the next level. Depending on the TAV or CAV achieved, the student may be assigned one of the following: **Excellent Standing**, **Good Standing**, or **Satisfactory Standing**.
- Promotion conditions have been met but the term includes failed courses. A student may not graduate with this standing on their record; once the failed courses are cleared, the academic standing is changed to **Promotion Granted**.

- **On Probation**. Promotion has been granted by the Examinations & Promotions Committee (BASc and BSE students) or associate director (BAS students), contingent on satisfying prescribed conditions. A student may not graduate with this academic standing on their record. If the probation conditions are satisfied, it is replaced by the appropriate conditional or unconditional promotion academic standing. If the probation conditions are not satisfied, it will be replaced by **Failed – Required to Withdraw**.
- **Promotion Granted.** The student may proceed to the next level; any outstanding conditions have been met.
- **Decision Deferred.** No promotion decision can be determined at this time. Normally, this standing is applied when there are unresolved grades or when other academic requirements have not been completed. The student may only proceed to the next level with the approval of the associate chair or associate director and where it is certain that either conditional or unconditional promotion will be assigned once outstanding issues are resolved. A student may not graduate with this academic standing on their record; it is changed to the appropriate standing once the outstanding issues have been resolved.
- **May Not Proceed**. The student may not proceed to the next level because of outstanding issues. Students are expected to address the issues preventing promotion in a timely manner and are not permitted to take required courses from higher academic levels. A student may not graduate with this academic standing on their record; it is changed to **Promotion Granted** or the appropriate standing once the outstanding issues have been resolved.
- **Failed – Must Repeat Term**. Promotion conditions have not been met and the student must repeat the level. Normally, repeating the level is not possible for two terms following the application of this standing.
- **Must Repeat Term – No Penalty**. Promotion conditions have not been met and the student must repeat the level. Course grades below 70 in the failed term are removed from average calculations, the requirement to stay out for two terms before repeating the level is waived, and this term is not considered an attempt at the academic level. This standing is applied by the Engineering Examinations & Promotions Committee because of extenuating circumstances which significantly affected the student's performance in the failed term.
- **Failed – Required to Withdraw**. The student is required to withdraw from their major. Readmission is not possible for four academic terms following the application of this standing. The student must apply and meet the requirements for readmission.
- **Required to Withdraw – May Not Continue in Faculty**. The student is required to withdraw from their degree and is permanently ineligible for readmission to any program in the Faculty of Engineering. This academic standing is based on exceptional circumstances and may only be applied by the Engineering Examinations & Promotion Committee or because of disciplinary action by the associate dean, undergraduate studies.
- **Decision Not Applicable** (NAPP). No academic standing is required.

Bachelor of Applied Science and Bachelor of Software Engineering Regulations

Promotion Rules

Rule 1

For students on full or elective reduced load, the academic standing is based on the current TAV, the number of failed courses, the previous academic standing, the unit load, and the TBC count.

1. Students with TAV of 60.0 or greater and no failed courses in the term are unconditionally promoted with one of the following academic standings:
   - **Excellent Standing** for TAV of 80.0 or greater,
   - **Good Standing** for TAV of 70.0 or greater, but less than 80.0,
   - **Satisfactory Standing** for TAV of 60.0 or greater, but less than 70.0.
2. Students with TAV of 60.0 or greater including one or more failed courses receive an academic standing as follows:
   - Students on a full load including one or two failed courses and a TBC count of less than three are promoted with an academic standing of **Conditional.**
   - Students on an elective reduced load with one failed course and a TBC count of less than three are promoted with an academic standing of **Conditional**.
   - Students on a full load with three or more failed courses are not promoted and receive an academic standing

of **Failed – Must Repeat Term**.
- Students on an elective reduced load with two or more failed courses are not promoted and receive an academic standing of **Failed – Must Repeat Term**.
3. Students with TAV of 50.0 or greater, but less than 60.0, receive an academic standing of **Failed – Must Repeat Term**.
4. Students with TAV less than 50.0 receive an academic standing of **Failed – Required to Withdraw.**

Rule 2

Students taking a partial load and splitting an academic level into multiple parts must have a documented plan for completing their degree requirements. This plan must be approved by the associate chair and include details on how promotion decisions will be made. Where courses are taken out of sequence, the courses corresponding to the requirements of each level must be clearly identified. Normally, each academic level will be completed through two sequential terms referred to here as Part 1 and Part 2. Students are normally expected to maintain full-time status (must enrol in at least 1.5 units) in each partial load term, unless a lower load is required based on the academic accommodation assessment.

Part 1 rules:
1. Students who achieve a Part 1 TAV of 60.0 or greater with no more than one failed course will receive an academic standing of **Decision Not Applicable** and will continue to Part 2.
2. Students who achieve a Part 1 TAV of 60.0 or greater with two or more failed courses, or a Part 1 TAV of 50.0 or greater but less than 60.0 will receive an academic standing of **Failed – Must Repeat Term**, and Part 1 must be repeated.
3. Students who achieve a Part 1 TAV of less than 50.0 will receive an academic standing of **Failed – Required to Withdraw**.

Part 2 rules:
1. Students who achieve a Part 2 TAV of 60.0 or greater with no failed courses in Parts 1 and 2 combined will be promoted with an academic standing based on the combined Part 1 and 2 term average:
   - **Excellent Standing** for combined TAV of 80.0 or greater,
   - **Good Standing** for combined TAV of 70.0 or greater, but less than 80.0,
   - **Satisfactory Standing** for combined TAV of 60.0 or greater, but less than 70.0.
2. Students who achieve a Part 2 TAV of 60.0 or greater with no more than one failed course in Part 1 and no more than one failed course in Part 2 will be promoted with a **Conditional** academic standing.
3. Students who achieve a Part 2 TAV of 60.0 or greater with two or more failed courses, or a Part 2 TAV of 50.0 or greater but less than 60.0 will receive an academic standing of **Failed – Must Repeat Term**, and Part 2 must be repeated.
4. Students who achieve a Part 2 TAV of less than 50.0 will receive and academic standing of **Failed – Required to Withdraw**.

Rule 3

When the previous term academic standing was **Failed – Must Repeat Term**, students with a TAV less than 60.0 or one or more failed courses will receive an academic standing of **Failed – Required to Withdraw**.

Rule 4

When a student would otherwise be promoted, but has a TBC count of three or more, they will receive an academic standing of **May Not Proceed**. Once the TBC count is reduced to zero or one, the academic standing will be replaced by the appropriate standing, allowing them to proceed to the next academic level.

Rule 5

When a student would otherwise be promoted but is missing multiple work-term credits such that co-operative education requirements cannot be met by completing a maximum of one work-term credit after 4B, they will receive an academic

standing of **May Not Proceed**. Once a minimum of two work-term credits are completed, the academic standing will be replaced by the appropriate standing, allowing them to proceed to the next academic level.

Rule 6

Students will receive an academic standing of **Decision Deferred** if their academic level is 4B and they have not completed all degree requirements. This will be replaced by the appropriate standing when all degree requirements are completed.

Rule 7

In extraordinary circumstances, a student who does not meet promotion conditions may be promoted **On Probation**. This standing may only be assigned by the Engineering Examinations & Promotions Committee, who will specify the probation conditions. Once the conditions are satisfied, the academic standing will be replaced by the appropriate standing.

Rule 8

A student may receive an academic standing of **Failed – Required to Withdraw** if one of the following applies:
1. The student leaves their major without notification; this is normally identified by failure to participate in courses and/or write examinations (e.g., receives a grade of DNW, NMR, or FTC for one or more courses).
2. The student drops courses in the Withdrew/Failure (WF) period.
3. The student has made two or more unsuccessful attempts to clear a failed course. A grade of Withdrew (WD) does not count as a course attempt.
4. The student receives a third **Failed – Required to Repeat.**
5. Unsatisfactory performance is recorded on a work term and, following appropriate investigation, it is determined that the student should not participate in further work terms.
6. In the opinion of the Faculty, the student is unlikely to benefit from further participation in Engineering.

Other Rules

Rule 9

1. Students must complete a minimum of eight terms of full-time study at the University of Waterloo, or on an approved exchange.
2. Students must meet all graduation requirements and have an academic standing of **Promotion Granted**, **Satisfactory Standing**, **Good Standing**, or **Excellent Standing** for each academic level (i.e., 1A to 4B, inclusive).
3. Credit will be granted for graduate courses (level 600 or above) taken towards undergraduate plan requirements provided they are approved by the associate chair, and a grade of 50 or above is achieved.
4. Normally, required courses are first attempted at the University of Waterloo or on approved exchange.

Rule 10

1. Students may take an elective reduced load term, with associate chair approval, by dropping elective or designated non-elective courses (as defined by their major), while maintaining at least 2.0 units per term.
   - Dropped courses must be completed prior to graduation, will increase the TBC count, and may contribute to an academic standing of **May Not Proceed**.
2. Students may take partial load terms as part of an accommodation plan approved by AccessAbility Services, or with approval of the associate dean, undergraduate studies.
3. Students may overload (i.e., take courses above full load) during an academic term with associate chair approval.

Rule 11

A student is not required to repeat:
1. Required courses for which a grade of 70 or greater has been achieved, while repeating a level.
2. Approved elective courses for which a grade of 60 or greater has been achieved, while repeating a level.
3. Failed courses that are not required for their plan.

Students may repeat these courses with permission of the associate chair. A student may be required to take additional courses, approved by the associate chair, to ensure they are enrolled in at least an elective reduced load during a repeat term.

Rule 12

The TBC count increases when a required or approved elective course is failed, withdrawn, or not attempted by the completion of the specified academic level.

The TBC count can be reduced by one of the actions listed below.
1. Successfully completing a Supplementary Examination for a failed course, if permission has been granted.
2. Passing the previously dropped or failed course.
   - Required courses may be replaced by appropriate substitutes as approved by the associate chair.
   - Elective courses may be replaced by any other course that satisfies the same elective requirement.
   - When a failed course is repeated and passed, both course grades remain in average calculations.
3. Completing an approved substitute at another institution with a Letter of Permission, as approved by the associate chair.

Rule 13

Workplace Hazardous Materials Information System (WHMIS) training must be completed prior to undertaking laboratory or other practical activities and in any case by the end of the first term of study; enrolment in further courses will be placed on hold until this requirement is satisfied.

Rule 14

Courses that are included in the co-operative education program requirements of each major are not included in the credit count, do not contribute to the TBC count, and are excluded from the calculation of averages. Requirements vary by major.

Bachelor of Architectural Studies Regulations

Promotion Rules

Students are promoted to the next academic level if they meet the following conditions:
1. CAV of 70.0 or greater,
2. Successful completion of the studio course,
3. No more than 0.5 failed units.

Rule 1

Students with a CAV of 70.0 or greater and no failed courses in a term are promoted with one of the following academic standings:
- **Excellent Standing** for CAV of 80.0 or greater,
- **Good Standing** for CAV of 75.0 or greater, but less than 80.0,
- **Satisfactory Standing** for CAV of 70.0 or greater, but less than 75.0.

Rule 2

1. Students with a CAV of 70.0 or greater, with no more than 0.5 units of failed courses in a term, are promoted with a **Conditional** academic standing. The academic standing will change to **Promotion Granted** once the failed courses are repeated and passed.
2. Students with a CAV of 69.0 or greater, with no more than 0.5 units of failed courses in a term, are promoted **On Probation**. The academic standing will change to **Promotion Granted** once a CAV of 70.0 or greater is attained and

the failed courses are repeated and passed.
3. Students with a CAV of 70.0 or greater, who pass the studio course but fail more than 0.5 units of courses in a term, are promoted **On Probation**. The academic standing will change to **Promotion Granted** once the failed elective courses or equivalents are repeated and passed.

Rule 3

1. Students with a CAV less than 69.0, with no more than 0.5 units of failed courses in a term, will be assigned an academic standing of **May Not Proceed**.
    ○ Students must raise their CAV to 70.0 or greater by repeating courses and/or by taking approved elective courses to raise their CAV before enrolling in higher-level required or studio courses. The academic standing will change to **Promotion Granted** once a CAV of 70.0 or greater is attained and failed courses are repeated and passed.
2. Students with a CAV of 70.0 or greater, who fail a studio course, will be assigned an academic standing of **May Not Proceed.**
    ○ Students must repeat and pass the studio course. Once all fails in the term are passed, the academic standing will change to **Promotion Granted.**
    ○ Students who do not pass the studio course on the second attempt will be assigned an academic standing of **Failed - Required to Withdraw**.
    ○ Students may not register in required courses from higher academic levels until the failed studio course is passed.
3. Students with a CAV of 69.0 or greater, who fail two or more required courses in a term, or who accumulate 1.5 units or more of failed courses at any point in their degree, will be assigned an academic standing of **May Not Proceed**.
    ○ The failed courses or equivalent must be repeated and passed before the student may register in any higher-level studio or required courses. The academic standing will change to **Promotion Granted** once the CAV is 70.0 or greater and all failed courses have been repeated and passed.

Rule 4

Students with a CAV less than 69.0, and more than 0.5 units of failed courses in a term, will be assigned an academic standing of **Failed – Must Repeat Term**.

Rule 5

Students will receive an academic standing of **Failed – Required to Withdraw** if they receive a TAV less than 50.0 in any term.

Rule 6

When the previous term academic standing was **On Probation**, **May Not Proceed**, or **Failed – Must Repeat Term**, students must attain a CAV of 70.0 or greater by the end of the next academic term with no more than 0.5 units of failed courses in that term, otherwise they will be assigned an academic standing of **Failed – Required to Withdraw**.

Rule 7

Students will receive an academic standing of **Decision Deferred** if their academic level is 4B and they have not completed all degree requirements. This will be replaced by the appropriate standing when all degree requirements are completed.

Other Rules

Rule 8

1. Students must complete a minimum of eight terms of full-time study at the University of Waterloo, or on an approved exchange.
2. Students must meet all graduation requirements and have an academic standing of **Promotion Granted**, **Satisfactory Standing**, **Good Standing**, or **Excellent Standing** for each academic level (i.e., 1A to 4B, inclusive).

3. When courses are repeated, both grades remain on the record. For courses weighted 1.0 units or greater, the first grade is removed from CAV calculations.
4. Students successfully completing all requirements of their BAS degree with a CAV of 75.0 or greater will be considered for admission to the Master of Architecture program.

Rule 9

Students with extenuating circumstances must have associate director approval to complete a level over multiple terms, including a documented plan for level promotion.

Rule 10

Workplace Hazardous Materials Information System (WHMIS) training must be completed prior to undertaking laboratory or other practical activities and in any case by the end of the first term of study; enrolment in further courses will be placed on hold until this requirement is satisfied.

Existing

Regulation Details ❓

In plans associated with the Bachelor of Applied Science (BASc) and Bachelor of Software Engineering (BSE) degrees, and in the program associated with the Bachelor of Architectural Studies (BAS) degree, each student's progress is assessed at the end of each academic term. At that time a promotion decision is assigned. If the student is promoted, they are expected to return to the next academic term at an appropriate time.

All students taking plans offered by the Faculty of Engineering must have appropriate instruction on issues of safety. The Workplace Hazardous Materials Information System (WHMIS) instruction satisfies this requirement. WHMIS training is offered for students as part of their instruction in their 1A term in Engineering (Bachelor of Applied Science and Bachelor of Software Engineering), and to all incoming 1A Architecture (Bachelor of Architectural Studies) students. This requirement must be satisfied by Architecture students by the end of the first month of the 1A term, or the student's enrolment in Architecture courses will be cancelled.

Bachelor of Applied Science and Bachelor of Software Engineering

References to Engineering includes students enrolled in either the Bachelor of Applied Science (BASc) or Bachelor of Software Engineering (BSE) degree. References to associate chair are to be interpreted as either the associate chair, director, board chair, or the director of first-year engineering depending on the specific plan, and level.

The Faculty of Engineering (and Faculty of Mathematics for BSE students) constitutes the examining body for all examinations and is responsible for all decisions on grades, promotions, failures, deferred examinations, appeals, and recommendations for the granting of degrees. Authority in these matters is delegated to the Engineering Examinations and Promotions Committee. Students are examined and grades are set for individual courses on the completion of work for those courses. Upon examination of the student's performance at the end of each term, the Engineering Examinations and Promotions Committee assigns an academic decision.

Calculation of Term Averages and Course Grades

Term average: The primary factor in academic decisions in Engineering. The minimum passing average is 60%. The minimum average to remain in an Engineering plan is 50%. The term average is calculated using the weight of the course, the status of the course (e.g., Degree Requirement [in failure count] Not in Average [DRNA]) and the interpreted course grade. All grades above 32 are interpreted as the submitted grade. Courses with a submitted grade below 32 are interpreted, for averaging purposes, as having a value of 32.

Course grade: A secondary factor in academic decisions in Engineering. The minimum passing course grade is 50%. A course for which the grade is below this is a failed course. The term "required courses" will be used to denote those courses which are required for the degree. Required courses that are dropped or failed must be successfully passed, or approved replacement courses passed, prior to graduation.

Dropped and Failed Courses

Some dropped or failed courses (type blank and DRNA courses as per Rule 3) may be carried forward unless a student accumulates a total of three such courses, at which time a student May Not Proceed until they have cleared the courses (by passing the course, replacing the course, or in some cases passing a supplemental examination) as described in Rule 7. The cumulative number of dropped and failed courses of type blank or DRNA is referred to as the To Be Cleared (TBC) count. Other failed courses (type Degree Requirement [not in TBC count] Not in Average [DRNC] courses as per Rule 1) must be passed by a certain point in a students' plan or a May Not Proceed decision will be applied (see Rule 12). The due date for completion of such courses is referred to as the completion date. Courses that are failed but not required for a students' plan do not have to be cleared.

The minimum requirements in a full-load term (except in a repeat term) for an academic decision which permits a student

to proceed to the next term are a passing term average of 60%, a TBC count of less than three and no DRNC courses that have a grade less than 50 and have passed their completion date.

Repeated Term

If a term is being repeated, the minimum requirements to remain in their engineering plan are a term average of at least 60% and no grades below 50% for courses included in the term average.

Passing Failed or Dropped Required Courses

Failed and dropped required courses may be passed by one of the actions listed below. The department or board responsible for the student's plan of study will decide which mechanism is appropriate on a case-by-case basis.

- For a failed course:
    1. By obtaining a grade of 50% or more for the course based on the outcome of a supplemental examination for which there is a fee. Supplemental examinations may not be available for all courses. The associate chair for undergraduate studies is responsible for administering the supplemental examination and for determining the final supplemental grade to be assigned for the course. If a supplemental exam is permitted to clear the course, but has not yet been taken, a note of "Supplementary Exam Allowed" is provided on the transcript. When a supplemental examination is passed, the note is modified to "Satisfied" on the transcript. If the supplemental exam is not passed then a grade of "Not Satisfied" is associated with the supplementary exam on the transcript. Only one attempt at a supplemental examination is allowed; if this is not successful, the student must retake the course or, if appropriate, take an equivalent course approved by the department.
    2. By retaking the course, taking an equivalent course approved by the department or board or, especially for elective courses, taking an approved replacement course and obtaining a grade of 50% or more for the course. When a failed course has been successfully retaken or replaced, "Fail Cleared" is added on the transcript as a note. A retaken or replacement course also appears on the transcript in the normal fashion. If a grade of less than 50% is obtained for a retaken or replacement course, see Rule 6 and Rule 9.
- For a dropped course:
    1. By taking the course during a non-academic term and obtaining a grade of 60% or more for the course.
    2. By taking the course during an academic term, obtaining a grade of 50% or more, and including it in the term average.

All failed or dropped required courses must be passed prior to graduation. It is in the best interest of students to pass failed or dropped required courses as soon as possible. Students may not accumulate more than two TBC courses and continue in the plan. A student who obtains a passing term average but has accumulated three or more TBC courses will not be permitted to proceed to the next term; normally, a student will be required to enrol instead for a non-degree term to pass some or all of the TBC courses. Only after the number of TBC courses still uncleared is reduced to one or none will the student be permitted to proceed to the next degree term.

Co-operative Education and Work Terms

Professional Development (PD) Courses

Required professional development courses are listed in plan requirements and are of type DRNA (Degree requirement, not in average); failed courses contribute to the accumulated failed count (see Rule 7). If a student has taken a PD course in each work term, and the number of remaining work terms is less than the number of remaining required PD credits, the student may request permission to enrol in a PD course on an academic term. Questions and special requests related to enrolment alternatives are to be directed to the student's plan academic advisor.

Work Terms

Unsatisfactory performance by a student on a work term is investigated. If it appears that the student will not benefit from proceeding, they may be required to withdraw from Engineering.

Academic Decisions

Academic decisions for Engineering students are based on the performance of the student in the current term and may depend on the previous term decision, as outline in the Rules. The possible academic decisions and their effect on the student's progress are as follows:

1. **Excellent Standing** - A student with this decision has achieved a term average of 80% or above and is allowed to proceed unconditionally to the next term.
2. **Good Standing** - A student with this decision has achieved a term average of 70% or above, but less than 80%, and is allowed to proceed unconditionally to the next term.
3. **Satisfactory Standing** - A student with this decision has achieved a term average of 60% or above, but less than 70%, and is allowed to proceed unconditionally to the next term.
4. **Promoted** - A student with this decision is in a reduced-load program and has completed their 1A requirements.
5. **Continue in 1A** - A student with this decision proceeds to their second 1A Reduced-Load term as part of their first 1A term in Engineering. Thus, the student has zero previous failed terms.
6. **Continue in 1A with Penalty** - A student with this decision is permitted to enrol in one more 1A Reduced-Load term to complete their 1A requirements, after a previously unsuccessful attempt at a 1A term or at a 1A Reduced-Load term.
7. **Conditional** - Replaces academic decisions 1 to 5 to indicate that the student has adequate understanding of the term material to permit continuation; however, the failed course(s) must be cleared before graduation.
8. **Promotion Granted** - Replaces an academic decision of Conditional when the student clears the failed course(s), except for students in their first 1A Reduced-Load term in their first 1A term. For students in their first 1A Reduced-Load term in their first 1A term, an academic decision of Continue in 1A replaces an academic decision of Conditional, when the student clears the failed course.
9. **Decision Deferred** - A student with this decision may not proceed until specified conditions are satisfied.
10. **Failed - Must Repeat Term** - A student with this decision is required to repeat the most recent term. Except for 1A students, the student must stay out a minimum of two terms before repeating.
11. **May Not Proceed** - A student with this decision may not proceed to the next degree term nor take required courses from that term until the academic decision has been changed to Promoted or to Conditional.
12. **May Not Proceed COOP** - A student with this decision has three (or more) missing or failed work-term credits and may not proceed to the next term or take required courses from that term until the decision has been changed to Promoted or to Conditional.
13. **Failed - Required to Withdraw** - A student with this decision has their registration in their plan - BASc or BSE - revoked. Readmission is not possible for four academic terms following the term for which the decision applies.
14. **Failed - Required to Withdraw from 1A** - A student with this decision has their registration in their plan - BASc or BSE - revoked. Application for readmission may be considered for a qualifying readmission program immediately; however, the term of entry may vary depending on circumstances.
15. **Aegrotat** - Replaces academic decisions 1 to 6. A student with this decision may continue to the next term even though, due to extraordinary circumstances, normal evaluation for at least one course was not possible.
16. **On Probation** - This academic decision is used in exceptional circumstances to allow a student to proceed to the next term. Continued progress in the plan is contingent on satisfying conditions which may be prescribed as the terms of probation.

Rules

The following rules are applied when students' performance is assessed; unless otherwise stated the rules apply to reduced-load 1A, reduced-load, and full-load terms.

Rule 1

All (full-load) students are normally expected to enrol in at least the number of courses specified in this Calendar for the corresponding term of their plan. However, a student may take a reduced-load, with approval of their academic advisor, by dropping one elective or one designated non-elective course (as defined by their plan) per term; these dropped courses must be passed prior to graduation. The courses enrolled in during the term are used to calculate the term average, which

is the basis of promotion decisions. Courses not included in the degree, term average, or failure count must be identified at the time of enrolment (see Rule 12). See Rule 15 for information regarding changing a course's designation. The designation of these courses may be changed (with the approval of the department) at any time prior to four weeks before the first day of the Final Examination Period for that term. Reduced-load 1A students must enrol in three courses (a load of at least 1.5 and normally less than a full load) as specified by their academic advisor. Normally, the reduced-load 1A term will be composed of at least two core courses from the 1A term with other courses specified by the academic advisor in consultation with the student.

Rule 2

The term decision is based on the student's course load during the term, the previous term decision, the term average for the current term, and the number of courses taken that term with grades below 50. The term average is calculated using the weight of the course, the status of the course (e.g., DRNA), and the interpreted course grade. All grades above 32 are interpreted as the submitted grade. Courses with a submitted grade below 32 are interpreted for averaging purposes, as having a value of 32. Both the number of courses below 50 in the current term as well as the cumulative number of To Be Cleared courses (the TBC count) on a student's record can be part of the decision.

Full- and reduced-load terms (excluding reduced-load 1A terms):

For students in full-load terms and reduced-load terms, the term decision is based on the current term average, the number of courses taken during the term with a grade below 50%, the previous term decision, and in some cases one or more of, the course load, the level, and the TBC count.

1. Students with a term average of 60% or greater and no course grades below 50% are promoted with a term decision of Satisfactory, Good, or Excellent.
2. Students with a term average of 60% or greater with one or more course grades below 50% who are in their first term of Engineering or whose previous term decision was not Failed – Must Repeat Term, the term decision depends on the level and, for students at level 2A or above, on the TBC count. The TBC count includes courses in the current term with grades below 50%. There are several decision descriptors that can be added to the decision described in the rules below.
    1. Students in 1A or 1B, the term decision depends on the course load and the number of course grades below 50%.
        1. Students on a full-course load with no more than two course grades below 50% are promoted with a term decision of **Conditional**.
        2. Students on an elective reduced-course load with no more than one course grade below 50% are promoted with a term decision of **Conditional**.
        3. Students on a full course load with more than two course grades below 50% have a term decision of **Failed - Must Repeat Term**.
        4. Students on an elective reduced-course load with more than one course grade below 50% have a term decision of **Failed - Must Repeat Term**.
    2. Students in 2A and beyond with a TBC count below three, the term decision depends on the course load and the number of course grades below 50%.
        1. Students on a full course load with no more than two course grades below 50% are promoted with a term decision of **Conditional**.
        2. Students on an elective reduced-course load with no more than one course grade below 50% are promoted with a term decision of **Conditional**.
        3. Students on a full course load with more than two course grades below 50% have a term decision of **Failed - Must Repeat Term**.
        4. Students on an elective reduced-course load with more than one course grade below 50% have a term decision of **Failed - Must Repeat Term**.
    3. Students in 2A and beyond with a TBC count above two have a term decision of **May not Proceed**.
3. Students with a term average below 60% and/or one or more course grades below 50%, whose previous term decision was Failed – Must Repeat Term have a term decision of **Failed - Required to Withdraw**.
4. Students with a term average of 50% or greater, but less than 60% who are in their first term of Engineering or whose

previous term decision was not Failed – Must Repeat Term, have a term decision of **Failed - Must Repeat Term**.
5. Students with a term average less than 50% who are in their first term of Engineering have a term decision of **Failed - Required to Withdraw from 1A**.
6. Students with a term average less than 50% who are not in their first term of Engineering have a term decision of **Failed - Required to Withdraw**.

Reduced-load 1A terms:

For students in the 1A Reduced-Load Program (RLP), the term decision depends on the term (i.e., the first 1A RLP term or the second 1A RLP term) and is based on the current term average, the number of courses taken during the term with a grade below 50%, and the previous term decision.

1. Students with a term average of 60% or greater and no course grades below 50%, the term decision depends on the term.
    1. Students in the first 1A term of the Reduced-Load Program (RLP), the term decision depends on the previous term decision.
        1. Students in their first 1A RLP term continue in the RLP with a term decision of **Continue in 1A**.
        2. Students whose previous term decision was Failed – Must Repeat Term continue in the RLP with a term decision of **Continue in 1A With Penalty**.
    2. Students in the second term of the Reduced-Load Program are promoted with a term decision of **Promoted**.
2. Students with a term average of 60% or greater and one course grade below 50%, and whose previous term decision was neither Failed – Must Repeat Term nor Continue in 1A With Penalty, the term decision depends on the term.
    1. Students in their first 1A RLP term continue in the RLP with a term decision of **Conditional**.
    2. Students in their second 1A RLP term are promoted with a term decision of **Conditional**.
3. Students with a term average of 60% or greater and more than one course grade below 50%, and whose previous term decision was neither Failed – Must Repeat Term nor Continue in 1A With Penalty, the term decision depends on the term.
    1. Students in their first 1A RLP term have a term decision of **Failed - Must Repeat Term**.
    2. Students in their second 1A RLP term have a term decision of **Continue in 1A With Penalty**.
4. Students with a term average below 60% and/or one or more course grades below 50%, and whose previous term decision was Failed – Must Repeat Term or Continue in 1A with Penalty, the term decision is **Failed - Required to Withdraw**.
5. Students with a term average of 50% or greater but less than 60%, and whose previous term decision was neither Failed – Must Repeat Term nor Continue in 1A With Penalty, the term decision depends on the term.
    1. Students in their first 1A RLP term have a term decision of **Failed - Must Repeat Term**.
    2. Students in the second 1A RLP term have a term decision of **Continue in 1A With Penalty**.
6. Students with a term average less than 50%, and whose previous term decision was neither Failed – Must Repeat Term nor Continue in 1A With Penalty, are **Required to Withdraw from 1A**.

Rule 3

If an academic decision of Conditional is used in place of a Promoted or May Continue in 1A decision, the condition may be satisfied only by successfully clearing the failed course(s) (see Dropped and Failed Courses above). Once the condition is satisfied, the Conditional is replaced with a decision of Promotion Granted or May Continue in 1A. No student may obtain the BASc or BSE degree with an academic decision including Conditional remaining on their record.

Rule 4

(Aegrotat) is appended to Promoted, May Continue in 1A, and Proceed on Probation decisions if one or more courses are graded as AEG (Aegrotat, credit granted under extenuating circumstances) and the other conditions for the decision are met.

Rule 5

(No Penalty) may be appended to the decision to repeat a term. In this case, the requirement to stay out for two terms

before repeating the term is waived and the term is not counted as a repeat term with regard to the number of times a term can be repeated or in the calculation of the total number of terms of full-time study in the plan. This condition is normally applied as a result of extenuating circumstances which significantly affect the student's performance in the failed term.

Rule 6

While repeating a term, a student shall be excused from repeating individual courses in which a grade of 70% or better has been achieved. If this occurs, substitute courses, as approved by the department, must be taken, such that the student takes at least a reduced load in the repeat term.

Rule 7

Normally, a student with an academic decision of May Not Proceed will enrol in a non-degree term devoted to retaking or replacing all or as many as possible of the TBC courses. If some of the TBC courses are not available, the department may specify equivalent or appropriate alternative courses to be taken in their place. If the student is otherwise in good standing, the academic decision will be changed to Promoted when the number of TBC courses has been reduced to none. If the student is otherwise in good standing, the academic decision will be changed to Promoted (Conditional) when the number of TBC courses has been reduced to one. A student clearing TBC courses under this rule must achieve a minimum grade of 50% for failed courses and a minimum grade of 60% for dropped courses, otherwise the student will be Required to Withdraw from Engineering.

Rule 8

The plan must be completed in no more than 10 terms of full-time (full-load or reduced-load) study; that is, no more than two repeat terms are allowed. A student receiving a third failed term academic decision will be Required to Withdraw from Engineering. Both full-load and reduced-load students are in this category.

Rule 9

In extraordinary circumstances, a student with a term average below 60% may be allowed to Proceed on Probation or if any course grade is AEG (see Rule 3) may be allowed to Proceed on Probation (Aegrotat).

Rule 10

A student may be Required to Withdraw from Engineering at any time if in the opinion of the Faculty the student is unlikely to benefit from further participation in Engineering, the student leaves the plan without notification and fails to write examinations (receives a grade of DNW [Did not write examination, no credit granted, value 32] for some courses), or the student has made two or more unsuccessful attempts to clear the same failed course.

Rule 11

Courses taken by students during work terms will not be included in the average for any term. However, the grades for the courses taken at the University of Waterloo or at another university on a Letter of Permission will be reported on the student's transcript. Courses taken during work terms are eligible to be used towards a reduced-load term.

Rule 12

There are five types of courses applicable to Engineering undergraduate plans (BASc or BSE): depending on whether the course is part of the degree requirements, or not; whether the course will be included in term average calculations, or not; and whether the course is in the TBC count, or not. These courses are shown on the student record and transcripts as follows:

Description	Designation	Degree Requirement	In Average	In To Be Cleared (TBC) Count
Plan requirement, included in average	blank	Yes	Yes	Yes

Description	Designation	Degree Requirement	In Average	In To Be Cleared (TBC) Count
Plan requirement, not included in average, in TBC count, supplemental exam (SUPP) not permitted	DRNA	Yes	No	Yes
Plan requirement, not in average, and not in TBC count	DRNC	Yes	No	No
Not required for plan, in average, not in TBC count	TRIA	No	Yes	No
Not required for plan, not in average	NRNA	No	No	No

With the exception of work-term reports (see Rule 17), a mixture of courses of type DRNA and courses of type TRIA will not be permitted in a single term. Grades for courses that are not included in the term average or not required for the plan will be reported on the student's transcript. Undergraduate students (BASc or BSE) are not permitted to enrol in any course in an audit category. The Faculty of Engineering does not permit other undergraduate students to enrol in Engineering courses in an audit category.

Rule 13

DRNC courses, while not in the TBC count, are normally associated with courses that must be completed by a certain point (i.e., must be completed before the end of 3A). That point is referred to as the completion date and is provided in the plan description portion of this Calendar for those plans that use DRNC courses. A student that has not completed the course successfully by the completion date will receive a May Not Proceed decision.

Rule 14

Most courses at the University of Waterloo are assigned a numerical grade (between zero and 100) by the examiners. Any grade from zero to 32 is treated as having a value of 32 when averages (for promotions and awards) are calculated. Non-numerical grade definitions and university-level processes are included in the Grading Systems and Processes section of this Calendar.

Rule 15

Changes to the set of courses included in the term average, which students take in a particular term, may be permitted at the discretion of the student's department. Such changes must normally be arranged and approved before the end of the Drop/Add Period, specified in the Important Dates & Deadlines. After this period, only exceptional cases will be considered. Courses not included in the average in any academic term may be dropped at any time prior to the start of Drop with WF Period, and courses will be graded as WD (withdrew).

Rule 16

Students are expected to maintain a balance between the number of academic terms completed and the number of work-term credits earned. Situations that are defined as out of balance are characterized in the table below. For example: 1 (4) - meaning one work-term credit, four work-term opportunities, that would otherwise earn a decision permitting them to enrol in the next academic term, will receive a term decision of **May Not Proceed COOP** and will be unable to enrol in an academic term until they have completed at least two more work terms. Normally, this will require an absence from academic study for one year. During the one year following the academic term with this decision, the student is expected to find employment that can be treated as (at least) two work terms, recovering the work-term credits required to continue academically.

May Not Proceed COOP

Number of Credited COOP courses (minimum number of opportunities)

Current Academic Term (Excellent, Good, Satisfactory, Conditional)

Stream	2B		3A	3B	4A	4B
4	0 (3)		1 (4)	2 (5)	3 (6)	3 (6)

Stream	2B	3A	3B	4A	4B
8	not applicable	0 (3)	1 (4)	2 (5)	3 (6)
4D	0 (3)	1 (4)	1 (4)	3 (6)	3 (6)
8D	not applicable	0 (3)	2 (5)	3 (6)	3 (6)
4F	0 (3)	1 (4)	1 (4)	2 (5)	3 (6)
4S	0 (3)	1 (4)	2 (5)	2 (5)	3 (6)
8S	not applicable	0 (4)	1 (4)	3 (6)	3 (6)
8X	not applicable	0 (3)	1 (4)	3 (6)	3 (6)

Once the student has earned credit for two or more additional work terms, the term decision will be changed to the normal academic decision for the term.

Rule 17

Work-term report requirements are plan dependent and may be met through technical reports, reflective reports, presentations, or some alternative method. If the plan specifies its own courses then those courses may be included in the term average, or excluded from the average. Some plans may use the common work-term report courses (WKRPT100, WKRPT200, WKRPT300, and WKRPT400). For the plans using the shared courses, the following regulations are in place. Work-term reports submitted as one of the WKRPT courses are due seven days after the first official day of lectures of the academic term in which the report is required. Reports submitted after the deadline will receive grades of **Unacceptable (38)** and will be carried forward to the following academic term for evaluation, and are not eligible for prizes. Failed work-term reports are cleared by retaking the WKRPT course and passing it in a subsequent term.

Work-term report courses WKRPT100, WKRPT200, WKRPT300, and WKRPT400 are considered to be required courses of type DRNA: failed work-term report evaluations contribute to the accumulated failed course count (see Rule 7). For failed work-term reports, the original grade will appear in the grade field. The failed course will be corrected by retaking and passing the course in a subsequent term.

When a work-term report (submitted as one of the WKRPT courses) has been submitted and the grade obtained is **Resubmit**, the student must provide any subsequent submissions by the date lectures end for that term, as specified in this Calendar, in order for those submissions to be considered in that term. Failure to clear a **Resubmit** by the lectures end date will result in a grade of **Unacceptable (38)**. Any submissions after the lectures end date will be deemed to be new submissions and to have been submitted for consideration in the following term.

Bachelor of Architectural Studies

Passing Requirements and Academic Standing

In order to proceed unconditionally from one term to the next in the Bachelor of Architectural Studies (BAS), Honours, students must satisfy each of the following requirements:

1. Maintain a minimum cumulative overall average of 70% (calculated at the end of each term). Students successfully completing all requirements of the fourth year and obtaining a cumulative average of 75% will be considered for admission to the Masters of Architecture.
2. Pass the studio course.
3. Not fail more than 0.50 units or equivalent (excluding studio) in any single term.

The School of Architecture reserves the right to recommend exceptional academic decisions for students who require exceptional consideration, the Examinations and Promotions Committee will be guided by the following:

- Students who satisfy at least two of the above passing requirements, 1, 2, and 3, in a given term may be permitted to continue conditionally in the academic program as outlined in notes 1-5 below.

- Promotions decisions for students who satisfy only one of the passing requirements in any given term will be made on an individual basis by the Examinations and Promotions Committee.
- Students who satisfy one or none of the above requirements in a given term will normally receive the decision Required to Withdraw (see below).
- No supplemental examinations are given by the School of Architecture.
- Generally, students must complete a minimum of six academic terms, of the eight required for the BAS degree, at a University of Waterloo campus, including the 4B term. This does not preclude special studies approved in advance.

Averages

The numeric grade system in combination with course unit weighting, are used in the calculation of averages and standing in the School of Architecture.

Academic Decisions

The possible academic decisions and their effect on the student's progress in the program are as follows:

1. **Excellent Standing** - student has achieved a cumulative average of 80% or above and is allowed to proceed unconditionally to the next term.
2. **Good Standing** - student has achieved a cumulative average that falls between 75% and 79.9% and is allowed to proceed unconditionally to the next term.
3. **Satisfactory Standing** - student has achieved a cumulative average that falls between 70% and 74.9% and is allowed to proceed unconditionally to the next term.
4. **May Not Proceed** - the student may not proceed to the next academic term. In the case of a failed studio, the student must repeat and pass the studio prior to continuation in the program. In the case of other failed core courses, the student will be given an Academic Advice Hold and must make arrangements with the associate director, undergraduate studies to retake the core courses. In the case of incomplete courses, these must be completed before the standing decision will be changed.
5. **Required to Withdraw** - the student's registration in the BAS program is revoked. Readmission is not possible for four academic terms following the term for which the decision applies. Students must apply to the program for readmission.
6. **Recommended for BAS Degree** - all requirements of the program have been successfully completed.
7. **Aegrotat** - added to academic decision one; proceed to next term. The student has adequate understanding of the material, but because of illness or other extenuating circumstances, normal evaluation for at least one course was not possible.
8. **Proceed on Probation** - a decision used in exceptional circumstances that allows the student to proceed to the next term. Continued progress in the program is contingent on satisfying conditions which may be prescribed as the terms of probation.

Notes

1. **Cumulative Average -** Students who fail to maintain the minimum cumulative overall average requirement but who satisfy the other two requirements will receive the academic decision May Not Proceed. At the discretion of the Examinations and Promotions Committee such students must raise their cumulative average to a minimum of 70% by repeating the term or by repeating courses which are detrimental to their average and/or by taking approved elective courses before enrolling in the next higher level core or studio courses. The minimum cumulative average must be attained within the next calendar year. Failing this, the student will be Required to Withdraw. Failure to maintain the minimum cumulative average of 70% by the end of the next higher level term will result in the academic decision Required to Withdraw.
2. **Term Decision -** The term decision is based on the previous term decision, the term average for the current term, and the number of courses with grades below 50. The term average is calculated using the weight of the course, the status of the course (e.g., DRNA), and the interpreted course grade. All grades above 32 are interpreted as the submitted grade. Courses with a submitted grade below 32 are interpreted for averaging purposes, as having a value of 32. Both the number of courses below 50 in the current term as well as the cumulative number of uncleared courses on a student's record can be part of the decision.

3. **Studio Courses -** Students who fail a studio course (ARCH192, ARCH193, ARCH292, ARCH293, ARCH392, ARCH393, ARCH492, ARCH493) but who satisfy the other requirements will receive the academic decision May Not Proceed. Such students must repeat and pass the studio course. Failure to pass the studio in question on the second attempt will result in the academic decision Required to Withdraw. Students may not register in any higher level studio course or core courses until the failed studio course is passed. Credit will be retained for courses passed in a term in which a studio course is failed.

4. **Elective Courses -** Students who fail more than one elective course or equivalent in any single term (but who pass studio and maintain the minimum cumulative overall average) will receive the academic decision Proceed on Probation. Failed elective courses or their equivalents must be repeated and passed by the end of the next term of study. Should the student fail more than one half-unit elective course or equivalent in the next term, the student will receive the academic decision Required to Withdraw.

5. **Core Courses and Accumulated Fail Counts -** Students who fail or achieve incomplete status in two or more core (non-studio) courses or equivalent in any single term, or who accumulate three or more failed or incomplete courses at any point in their degree (but who pass studio courses and maintain the minimum cumulative overall average), will receive the academic decision May Not Proceed. The failed courses or equivalent must be repeated and passed before the student may register in any higher-level studio or core courses. Should the student fail two or more courses or equivalent in the next term, the student will receive the academic decision Required to Withdraw.

6. **Conditional Status (Proceed on Probation) -** Notwithstanding the provisions of Notes 1 to 4, students who have been granted conditional status in a previous term during the course of the BAS, Honours academic program will be Required to Withdraw if at any subsequent time they fail to meet any one or more of the three basic requirements for unconditional promotion as stated in 1, 2, 3 under Passing Requirements and Academic Standing above.

7. **Incomplete Courses -** Students who receive the decision INC, see Grading Systems and Processes for description of grades. To obtain credit for a core or elective course subsequently, the student must retake and register again for the course (or an approved equivalent). For an elective course, an alternative may be taken.

8. **Failed Courses -** When a course is repeated, both grades will appear on the student record and will be included in the calculation of the cumulative overall average. An exception applies to repeated core courses of greater than or equal to 1.0 credit weight. These will have the first failure removed from the average, however, the course attempt will be retained on the transcript.

Workflow Information

Change to Undergraduate Communication Requirement
No

Workflow Path	Faculty/AFIW Path(s) for Workflow	Senate Workflow
Committee approvals	Faculty of Engineering	--

UG-ENG-Course Load
Engineering: Courses and Classes
Under Review | Fall 2025

Proposal Information

Status
Active

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes
- Regulation Details
- Description
- Regulation Page Name
- Effective Term and Year
- Admin Notes

Effective Date & Career

Career
Undergraduate

IMPORTANT!

Proposed
Effective Term and Year
Fall 2025

Existing
Effective Term and Year
Fall 2024

Proposal Details

Proposal Type
Change

Rationale and Background
When we moved the UG calendar to Kuali, all regulation pages were reorganized. We realized that many of our rules were difficult to follow and confusing to students and advising staff that required the rules to make academic progression decisions. This version of the regulations is structured to provide consistency between the Engineering and Architecture rules. Definitions have been added, standings are consistent and rules are clear and re-ordered to provide an easy guide for advisors and students to determine academic standings.

The rules have been presented and discussed over several months - FOPS, FUGS, APC, EFC. There have been multiple version of the rules that have been circulated to these committees, to the Examinations and Promotions Committee (who adjudicate petitions), and and the UG advising staff who utilize the rules on a regular basis. The attached document lists the changes made and includes a Q&A section that summarizes some questions that have been raised about the rules throughout their development.

Supporting Documentation
- 2024 Engineering Regulations Proposal Supporting Information.pdf

General Regulation Information

Type of Regulation
Faculty-specific

Faculty
Faculty of Engineering

Regulation Grouping
Regulations for Faculty of Engineering Students

Proposed
Regulation Page Name
Engineering: Courses and Classes

Existing
Regulation Page Name
Engineering: Course Load

Proposed
Description
BASc, BSE, BAS: course load, auditing courses, repeating courses, enrolment in grad courses, extra courses

Existing
Description
BASc, BSE: Full course load. Reduced load. BAS: Full course load.

Regulation Details

Proposed
Regulation Details ❓

Bachelor of Applied Science (BASc), Bachelor of Software Engineering (BSE), and Bachelor of Architectural Studies (BAS)

Course Load

Normally, students are expected to enrol in a full-load term where they will take the number of courses specified by their plan. Students may reduce their load with departmental approval, as outlined in Engineering: Averages and Academic Standings.

Auditing Courses

The Faculty of Engineering neither records nor recognizes Audits for students in Engineering or any other faculty.

Letter of Permission

Students may request to take a course(s) at other universities for credit towards a University of Waterloo degree by Letter of Permission or by Cross-Registration with Wilfrid Laurier University. Courses taken on a Letter of Permission or Cross-Registration must receive departmental approval in advance and be recorded by the Office of the Registrar. Such courses must be taken at a degree granting university. Credit for courses taken on a Letter of Permission will be granted only when the assigned grade is equivalent to at least 60% on the University of Waterloo grade scale.

Repeating Courses

(BASc and BSE students only) When courses are taken twice but passed once, all numerical grades are included in average calculations regardless of whether the failure occurred on the first or subsequent registration. In instances where a passed course is repeated, and passed again, credit will not be recorded for both attempts.

(BAS students only) When courses are repeated, both grades remain on the record. In instances where a passed course is repeated, and passed again, credit will not be recorded for both attempts. For courses weighted 1.0 units or greater, the first grade is removed from average calculations.

Enrolment in Graduate Courses

(BASc and BSE students only) With departmental permission, students who have completed 3B may substitute up to two approved electives with graduate courses. Graduate courses counted towards the requirements of any undergraduate credential have a passing grade of 50 and are not eligible to be transferred for use towards graduate plans.

Extra Courses

(BASc and BSE students only) When a student is pursuing an Accelerated Master's, or in certain other exceptional circumstances, the associate chair may permit a student to denote one or more non-required courses as "extra". Courses denoted as "extra" do not count towards the BASc or BSE degree, and do not contribute to TAV, CAV, or the TBC count. Requests from students to denote a course as "extra" must be made prior to the "Drop with WD begins" date for the term in which the course is taken.

Existing
Regulation Details ❓

Bachelor of Applied Science and Bachelor of Software Engineering

Normally, students are expected to enrol in a full-load term where they will take the number of courses specified by their plan. Students may reduce their load with the approval of their academic advisor. If extenuating circumstances are present, students should discuss their situation with their academic advisor, AccessAbility Services, or Campus Wellness (including Counselling Services and Health Services).

Reduced Load

In a reduced-load 1A term, students are permitted to drop two plan-specific courses with the approval of their academic advisor. Students on a reduced-load 1A term will complete their 1A term requirements during a second reduced-load 1A term. Students who complete their 1A term requirements in two successful reduced-load 1A terms join the 1B class in their plan one year after the 1B term that they would have qualified for had they completed 1A in one full-load term. The exact timing of the reduced-load term is dependent on the students' plan. Students should discuss this alternative with an academic advisor prior to requesting a reduced load.
In 1B and above, a student may take a reduced load, with the approval of their academic advisor, by dropping one elective or one designated non-elective course (as defined by their plan) per term; dropped courses must be passed prior to graduation.

Bachelor of Architectural Studies

Normally, students of the School of Architecture are permitted to take only one more or one fewer term courses than that prescribed for the particular year and term in which they are registered. Any further addition or reduction to the student's program must be approved by the undergraduate officer of the School of Architecture.

Workflow Information

Change to Undergraduate Communication Requirement
No

Workflow Path	**Faculty/AFIW Path(s) for Workflow**	**Senate Workflow**
Committee approvals	Faculty of Engineering	--

For Approval   **Open Session**

To:	Senate
From:	Senate Undergraduate Council
Presenter(s):	David DeVidi Associate Vice-President, Academic
Date of Meeting:	March 3, 2025
Agenda Item:	**7.3 Senate Undergraduate Council: Faculty of Environment – Major Modifications**

Recommendation/Motion

Motion: That Senate approve the new plans for the Knowledge Integration Diploma and Sustainable Finance Specialization, effective September 1, 2025, as presented.

Summary

Senate Undergraduate Council met on January 28, 2025 and agreed to forward the following items to Senate for approval as part of the regular agenda.

   a. Diploma in Knowledge Integration
   b. Sustainable Finance Specialization

Proposal/Rationale

   a. Diploma in Knowledge Integration

The Department of Knowledge Integration offers several INTEG courses that explicitly teach – and allow students to practice – foundational skills such as critical thinking, communication, creativity, collaboration, and design thinking. These skills are essential for working effectively in professional settings, especially in teams, and align with the top attributes employers are looking for in recent graduates. Moreover, they align with Waterloo's Future Ready Talent Framework, especially the following attributes (mapped onto relevant courses from the Diploma):

   • Self-management (INTEG120, 221)
   • Self-assessment (INTEG120, 121, 210, 220, 221)
   • Communication (INTEG121, 210, 220, 221)
   • Collaboration (INTEG120, 121, 210, 220, 221)
   • Intercultural effectiveness (INTEG120, 220, 221)
   • Innovation mindset (INTEG121, 210, 251)
   • Critical thinking (INTEG121, 220)
   • Implementation (INTEG121, 210, 251)

To enable University of Waterloo students to be Future Ready and competitive in the job market, we have packaged together a set of INTEG courses that are already open to students across campus which (1) explicitly teach students how to develop these skills, (2) give them opportunities to practice them with peers, and (3) require students to reflect on their development.

We expect this will be of interest to students from many faculties, especially those pursuing more technical degrees that don't have as much space to devote to these foundational skills. In addition, we've had several students at UW take one or two of these INTEG courses in the past who expressed interest in taking more of them but lack the space for a full KI Minor. Having a Diploma in Knowledge Integration gives a credential to those students who have taken the time and put in the effort to develop these foundational skills.

b. Sustainable Finance Specialization

With our existing theme electives and SFM courses that ENBUS students have access to we have a strong 'package' of courses that can form a specialization in Sustainable Finance. Such a specialization would provide a great marketing and retention tool (particularly for admit deflects from the SFM program), as well as provide a valuable credential for our ENBUS students.

Jurisdictional Information

As provided for in Senate Bylaw 2, section 5.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

b. Make recommendations to Senate with respect to new undergraduate programs/plans, the deletion of undergraduate programs/plans, and major changes to undergraduate programs/plans.

Governance Path

Environment Faculty Council: 11/14/2024

Senate Undergraduate Council: 01/28/2025

Documentation Provided

Appendix: Proposed Changes – Faculty of Environment

Knowledge Integration Diploma
Diploma in Knowledge Integration

Under Review | Fall 2025

Proposal Information

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
>
> Mike Grivicic
>
> Diana Goncalves
>
> Kuali - Arts
>
> Kuali - Env
>
> Melanie Figueiredo
>
> Kuali - Math
>
> Kuali - Eng
>
> Kuali - Hlth
>
> Ashley Day
>
> Kuali - Science

Effective Date and Career

Career

Undergraduate

Important! ❓

Effective Term and Year ❓

Fall 2025

Proposal Details

Proposal Type ❓

New

Academic Unit Approval

09/06/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials
No

Co-operative System of Study and Requirements ❓
Not Applicable

Creating or Changing Invalid Combinations ❓
Yes

Invalid Combinations Consultations
This diploma is not open to students in the Knowledge Integration Honours, Knowledge Integration Minor, or Knowledge Intergration Joint academic plans, due to overlap of course requirements.

Rationale and Background for New Program/Plan ❓
The Department of Knowledge Integration offers several INTEG courses that explicitly teach – and allow students to practice – foundational skills such as critical thinking, communication, creativity, collaboration, and design thinking. These skills are essential for working effectively in professional settings, especially in teams, and align with the top attributes employers are looking for in recent graduates. Moreover, they align with Waterloo's Future Ready Talent Framework, especially the following attributes (mapped onto relevant courses from the Diploma):

- Self-management (INTEG120, 221)
- Self-assessment (INTEG120, 121, 210, 220, 221)
- Communication (INTEG121, 210, 220, 221)
- Collaboration (INTEG120, 121, 210, 220, 221)
- Intercultural effectiveness (INTEG120, 220, 221)
- Innovation mindset (INTEG121, 210, 251)
- Critical thinking (INTEG121, 220)
- Implementation (INTEG121, 210, 251)

To enable University of Waterloo students to be Future Ready and competitive in the job market, we have packaged together a set of INTEG courses that are already open to students across campus which (1) explicitly teach students how to develop these skills, (2) give them opportunities to practice them with peers, and (3) require students to reflect on their development.

We expect this will be of interest to students from many faculties, especially those pursuing more technical degrees that don't have as much space to devote to these foundational skills. In addition, we've had several students at UW take one or two of these INTEG courses in the past who expressed interest in taking more of them but lack the space for a full KI Minor. Having a Diploma in Knowledge Integration gives a credential to those students who have taken the time and put in the effort to develop these foundational skills.

Related agenda proposals:
H-Knowledge Integration (minor change)

Consultations (Departmental) ❓
Philosophy has been consulted.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Environment

Academic Unit ❓
Dean of Environment Office

Field of Study ❓
Knowledge Integration

Faculty ❓
Faculty of Environment

Undergraduate Credential Type ❓
Diploma

Program/Plan Name ❓
Diploma in Knowledge Integration

Online Degree/Diploma ❓

Admissions

Admissions Entry Point ❓
Declare Plan

Declaration Audience ❓
This credential is open to students enrolled in degree programs or any non- or post-degree academic plan.

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓
Yes

List of Invalid Combinations ❓
H-Knowledge IntegrationKnowledge Integration Minor

Average Requirement ❓
Yes

Minimum Average(s) Required ❓
- A minimum cumulative diploma average of 70.0%.

Graduation Requirements ❓
- Complete a total of 2.0 units.

Course Requirements (units) ❷

Required Courses

2
Units to Complete

- Complete all of the following
  - Complete 1 of the following:
    - INTEG121 - Collaboration, Design Thinking, and Problem Solving   (0.50)
    - INTEG210 - Making Collaboration Work   (0.50)
  - Complete 3 of the following:
    - INTEG120 - The Art and Science of Learning   (0.50)
    - INTEG220 - Nature of Scientific Knowledge   (0.50)
    - INTEG221 - The Social Nature of Knowledge   (0.50)
    - INTEG251 - Creativity and Innovation   (0.50)
    - PHIL290 - Nature of Scientific Knowledge   (0.50)
    - PHIL291 - The Social Nature of Knowledge   (0.50)

Grand Total Units: 2

Course Requirements (no units) ❷

Required Courses

No Rules

Course Lists ❷

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❷
All cross-listings to be displayed

Additional Constraints ❷

1. Students may only complete one course from any cross-listed set.

Notes ❷

- See list of academic advisors.

Undergraduate Plan Guidelines

Adherence to Academic Plan Guidelines ❷

Yes

Workflow Information

Workflow Path @

Committee approvals

Faculty/AFIW Path(s) for Workflow @

Faculty of Environment

Senate Workflow

--

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

Sustainable Finance Specialization
Sustainable Finance Specialization
Under Review | Fall 2025

Proposal Information

Workflow Status
In Progress
SUC Subcommittee, SUC Curricular Subcommittee   expand ▲
Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski
Mike Grivicic
Diana Goncalves
Kuali - Arts
Kuali - Env
Melanie Figueiredo
Kuali - Math
Kuali - Eng
Kuali - Hlth
Ashley Day
Kuali - Science

Effective Date and Career

Career
Undergraduate

Important! ❓

Effective Term and Year ❓
Fall 2025

Proposal Details

Proposal Type ❓
New

Academic Unit Approval
09/13/2024

Quality Assurance Designation ❓
Major Modification

Major Modification Categories
Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials
No

Co-operative System of Study and Requirements ❷
Not Applicable

Creating or Changing Invalid Combinations ❷
No

Rationale and Background for New Program/Plan ❷
With our existing theme electives and SFM courses that ENBUS students have access to we have a strong 'package' of courses that can form a specialization in Sustainable Finance. Such a specialization would provide a great marketing and retention tool (particularly for admit deflects from the SFM program), as well as provide a valuable credential for our ENBUS students.

Related agenda proposals:
H-Environment and Business (minor change)

Consultations (Departmental) ❷
SEED has consulted with the Dean's Office and with the SFM Program Director.

Supporting Documentation

General Program/Plan Information

Faculty ❷
Faculty of Environment

Academic Unit ❷
School of Environment, Enterprise and Development

Field of Study ❷
Environment and Business

Faculty ❷
Faculty of Environment

Undergraduate Credential Type ❷
Specialization

Program/Plan Name ❷
Sustainable Finance Specialization

Admissions

Specialization is available for students in the following majors ❷

- H-Environment & Business

Admissions Entry Point ❷

Declare Plan

Declaration Requirements ❷

Requirements Information

Invalid Combinations ❷

No

Average Requirement ❷

No

Graduation Requirements ❷

- Complete a minimum of 2.0 units.

Course Requirements (units) ❷

Required Courses

2 - 2.5
Units to Complete

- Complete all of the following
  - Complete all the following:
    - ENBUS310 - Introduction to Sustainable Finance   (0.50)
  - Complete 4 of the following:
    - ENBUS314 - Sustainable Business Models   (0.50)
    - ENBUS407 - Corporate Sustainability Accounting and Reporting   (0.50)
    - ENBUS408 - Policy Instruments for Sustainability   (0.50)
    - ENBUS410 - Engaging Stakeholders   (0.50)
    - SFM201 - Social Issues in Sustainability   (0.50)
    - SFM328 - Sustainability Integration Consulting Group - Junior Strategist   (0.25)
    - SFM329 - Sustainability Integration Consulting Group - Senior Strategist   (0.25)

Grand Total Units: 2 - 2.5

Course Requirements (no units) ❷

Required Courses

No Rules

Course Lists ❷

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
No

Additional Constraints ❷

Notes ❷

Workflow Information

Workflow Path ❷
Committee approvals

Faculty/AFIW Path(s) for Workflow ❷
Faculty of Environment

Senate Workflow
--

Dependencies

Dependent Courses and Programs/Plans
There are no dependencies

For Approval   **Open Session**

To:	Senate
From:	Senate Undergraduate Council
Presenter(s):	David DeVidi Associate Vice-President, Academic
Date of Meeting:	March 3, 2025
Agenda Item:	**7.4 Senate Undergraduate Council: Faculty of Mathematics – Major Modifications**

Recommendation/Motion

Motion: That Senate approve the major modifications to the Applied Mathematics with Scientific Computing and Scientific Machine Learning (Bachelor of Mathematics - Honours) and new CS-Game Design Specialization, effective September 1, 2025, as presented.

Summary

Senate Undergraduate Council met on January 28, 2025 and agreed to forward the following items to Senate for approval as part of the regular agenda.

a. Applied Mathematics with Scientific Computing and Scientific Machine Learning (Bachelor of Mathematics - Honours)
b. Game Design Specialization

Proposal/Rationale

a. Applied Mathematics with Scientific Computing and Scientific Machine Learning (Bachelor of Mathematics - Honours)

The "Applied Mathematics with Scientific Computing" program is updated to reflect the major new developments in the field over the past 10 years. In modern Scientific Computing, there is increasing importance of scientific machine learning, data-driven numerical methods, continuous optimization, quantum algorithms, and computational statistics; by updating the required courses and adding optional courses in these areas, students in the program will get access to these more recently emerging focus areas in scientific computing; this will also increase the relevance of this major to students interested in the intersection of applied mathematics and computer science.

To reflect the broader and shifted focus of both the scientific computing field and the updated program, the name of the degree is modified to "Applied Mathematics with Scientific Computing and Scientific Machine Learning". This reflects the new prominence

of scientific machine learning methods in the area, combined with the broader term "Scientific Computing".

Summary:
- Students take at least 8 AMATH courses (5 required, 3 additional; + up to 4 from the "four or more courses" list, for a total of up to 12 AMATH courses)
- One required CS course (+ AMATH 242/CS371) (and several additional optional CS courses)
- 12 required Math courses beyond faculty core (including 5 AMATH courses); + 3 non-specified AMATH courses

b. Game Design Specialization

The Department of Communication Arts in the Faculty of Arts offers courses on communication through the medium of digital games and on the social impacts of digital games. These courses would be relevant to Computer Science students interested in digital games. A Game Design Specialization recognizes students who take a significant number of these courses. The Faculty of Mathematics has approved this specialization to be made available to SE students, but it will require further work with the Faculty of Engineering in 2025.

Jurisdictional Information

As provided for in Senate Bylaw 2, section 5.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

a. Make recommendations to Senate with respect to new undergraduate programs/plans, the deletion of undergraduate programs/plans, and major changes to undergraduate programs/plans.

Governance Path

Mathematics Faculty Council: 10/22/2024 and 11/26/2024

Senate Undergraduate Council: 01/28/2025

Documentation Provided

Appendix: Proposed Changes – Faculty of Mathematics

CS-Game Design Specialization
Game Design Specialization
Under Review | Fall 2025

Proposal Information

Workflow Status

In Progress

Senate, Senate   expand ▲

Waiting for Approval | Approval Delegate(s)

> Mike Grivicic
>
> Tim Weber-Kraljevski
>
> Diana Goncalves
>
> Melanie Figueiredo
>
> Ashley Day

Effective Date and Career

Career   **Important!** ❓

Undergraduate

                                                         Effective Term and Year ❓

                                                         Fall 2025

Proposal Details

Proposal Type ❓   **Academic Unit Approval**

New   05/08/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials

Yes

Co-operative System of Study and Requirements ❓

No

Creating or Changing Invalid Combinations ❓
No

Rationale and Background for New Program/Plan ❓

The Department of Communication Arts in the Faculty of Arts offers courses on communication through the medium of digital games and on the social impacts of digital games. These courses would be relevant to Computer Science students interested in digital games. A Game Design Specialization recognizes students who take a significant number of these courses.

The Faculty of Mathematics has approved this specialization to be made available to SE students, but it will require further work with the Faculty of Engineering in 2025.

Approved at UAC on 20240527
Approved at FC on 20241022

Consultations (Departmental) ❓

There has been extensive consultation between the Department of Communication Arts and the School of Computer Science. The DAC Undergraduate Chair, Gerald Voorhees, also attended the CS UG Academic Programs Committee on April 10 2024 to discuss the proposal. The non-CS course lists are based on the proposed Game Design and Game Studies Minors that have been discussed extensively within the Faculty of Arts.

2025-01-06 Jay Dolmage (Chair of English) confirmed this proposal was discussed and then voted on at a department meeting in English in March 2023, and passed unanimously.
2025-01-06 Monica Leoni (Chair Fine Arts) confirmed supports the inclusion of FINE 247.
2025-01-06 Mathieu Doucet (Chair Philosophy) has no objections to listing GSJ 205.
2025-02-07 Janice Aurini (Chair Sociology) confirmed SOC 324 is a good fit for the plan.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Mathematics

Academic Unit ❓
David R. Cheriton School of Computer Science

Field of Study ❓
Computer Science

Faculty ❓
Faculty of Mathematics

Undergraduate Credential Type ❓
Specialization

Program/Plan Name ❓
Game Design Specialization

Admissions

Specialization is available for students in the following majors ❓

- H-Computer Science (BCS), H-Computer Science (BMath), or H-BBA & BCS Double Degree

Admissions Entry Point ❓

Declare Plan

Declaration Requirements ❓

Requirements Information

Invalid Combinations ❓
No

Average Requirement ❓
No

Graduation Requirements ❓
- Complete a total of 3.5 units.

Course Requirements (units) ❓

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
    - Complete all the following:
        - DAC204 - Introduction to Game Design   (0.50)
        - DAC305 - Designing and Evaluating Digital Games   (0.50)
    - Complete 2 of the following:
        - CS449 - Human-Computer Interaction   (0.50)
        - CS454 - Distributed Systems   (0.50)
        - CS488 - Introduction to Computer Graphics   (0.50)
    - Complete 1 of the following:
        - COMMST235 - Games and Society   (0.50)
        - ENGL294 - Introduction to Critical Game Studies   (0.50)
    - Complete 1 of the following:
        - COMMST149 - Introduction to Critical Design Practices   (0.50)
        - FINE247 - Expanded Media: Interaction   (0.50)
        - DAC302 - Digital Storytelling Design   (0.50)
        - DAC309 - User Experience Design   (0.50)
        - ENGL392A - Information Design   (0.50)
        - ENGL392B - Visual Rhetoric   (0.50)
        - ENGL408C - The Rhetoric of Digital Design: Theory and Practice   (0.50)
        - THPERF149 - Introduction to Critical Design Practices   (0.50)
        - DAC209 - Introduction to Critical Design Practices   (0.50)
    - Complete 1 of the following:
        - GSJ205 - Technology, Gender, and Social Justice   (0.50)

- COMMST210 - Key Concepts in Media and Culture (0.50)
- ENGL293 - Introduction to Digital Media Studies (0.50)
- SOC324 - Digital Cultures (0.50)
- COMMST339 - Media, Images, and Communication (0.50)
- COMMST430 - Communication and Social Justice (0.50)
- COMMST435 - Games and Culture (0.50)

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Additional Constraints ❓

Notes ❓

Workflow Information

Workflow Path ❓
Committee approvals

Faculty/AFIW Path(s) for Workflow ❓
Faculty of Mathematics

Senate Workflow
Senate Regular

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

H-Applied Mathematics with Scientific Computing Applied Mathematics with Scientific Computing and Scientific Machine Learning (Bachelor of Mathematics - Honours)

Under Review | Fall 2025

Proposal Information

Status

Active

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Changes

- Program/Plan Name
- Course Requirements (no units)
- participants
- Effective Term and Year
- Admin Notes

Show All ⌄

Effective Date and Career

Career

Undergraduate

Important! ❓

Proposed
Effective Term and Year ❓
Fall 2025

Existing
Effective Term and Year ❓
Fall 2024

Proposal Details

Proposal Type ❓   **Academic Unit Approval**

Change   09/18/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Change program name

Is there an impact to existing students? ❓

No

Is the credential name changing?   **Impact of Credential Name Change**

Yes   The name change applies only to future students (current
                                        students may opt in)

Co-operative System of Study and Requirements ❓

No

Creating or Changing Invalid Combinations ❓

No

Rationale and Background for Change(s) ❓

The "Applied Mathematics with Scientific Computing" program is updated to reflect the major new developments in the field over the past 10 years.

In modern Scientific Computing, there is increasing importance of scientific machine learning, data-driven numerical methods, continuous optimization, quantum algorithms, and computational statistics; by updating the required courses and adding optional courses in these areas, students in the program will get access to these more recently emerging focus areas in scientific computing; this will also increase the relevance of this major to students interested in the intersection of applied mathematics and computer science.

To reflect the broader and shifted focus of both the scientific computing field and the updated program, the name of the degree is modified to "Applied Mathematics with Scientific Computing and Scientific Machine Learning". This reflects the new prominence of scientific machine learning methods in the area, combined with the broader term "Scientific Computing".

Summary:
- students take at least 8 AMATH courses (5 required, 3 additional; + up to 4 from the "four or more courses" list, for a total of up to 12 AMATH courses)
- one required CS course (+ AMATH 242/CS371) (and several additional optional CS courses)
- 12 required Math courses beyond faculty core (including 5 AMATH courses); + 3 non-specified AMATH courses

Approved at UAC on 20240930
Approved at FC on 20241126

Consultations (Departmental) ❓
- PMATH: Consulted and approved by email with Blake Madill (Associate chair) on July 30th
- C&O: Consulted and given the OK by email with David Jao and Peter Nelson (former and current Associate chairs) on August 1st.
- STAT: Kuali document shared and discussed in a meeting on August 21st with Steve Drekic (Associate Chair).
- CS: Kuali document shared and discussed in a meeting on August 21st with Ondřej Lhoták (Director of Undergraduate Studies). Ondřej Lhoták notified us on September 9th that CS exec agrees with program name and course changes. New cross listed course with CS approved at UAC 20241028.
- QA. Angela Christelis on 30 July: We consider this a major modification because of the name change, the course changes are minor. However, since current students can continue their degrees under the existing program name, we wouldn't require student consultation for this major modification.

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Mathematics

Academic Unit ❓
Department of Applied Mathematics

Field of Study ❓
Applied Mathematics

Faculty ❓
Faculty of Mathematics

Undergraduate Credential Type ❓
Major

Program Type
Honours

Degree ❓
Bachelor of Mathematics

Proposed
Program/Plan Name ❓
Applied Mathematics with Scientific Computing and Scientific Machine Learning (Bachelor of Mathematics - Honours)

Existing
Program/Plan Name ❓
Applied Mathematics with Scientific Computing (Bachelor of Mathematics - Honours)

Systems of Study
Co-operative
Regular

Online Degree/Diploma ❓

Admissions

Admissions Entry Point ❓
Declare Plan

Declaration Requirements ❓
Before declaring this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓
Yes

List of Invalid Combinations ❓
H-Applied MathematicsJH-Applied Mathematics
Applied Mathematics MinorH-Computational Mathematics
Computational Mathematics MinorH-Data Science (BCS)
H-Data Science (BMath)H-Mathematical Physics (BMath)
H-Math/FARM - Chartered Financial Analyst Spec
H-Math/FARM - Professional Risk Management Spec

Average Requirement ❓

Yes

Minimum Average(s) Required ❓

- A minimum cumulative overall average of 60.0%.
- A minimum cumulative major average of 65.0%: all math courses.

Graduation Requirements ❓

- See Bachelor of Mathematics degree-level requirements.
- Complete all the required courses listed below.
- Complete a minimum of 13.0 units of math courses.
- Complete a minimum of 5.0 units of non-math courses.

Co-operative Education Program Requirements ❓

For students in the co-operative system of study, see Bachelor of Mathematics co-operative education program requirements.

Course Requirements (units) ❓

Required Courses

0

Units to Complete

No Rules

Course Requirements (no units) ❓

Required Courses

- Complete all of the following
    - Complete all the following:
        - AMATH231 - Calculus 4 (0.50)
        - ~~AMATH342 - Computational Methods for Differential Equations~~ ~~(0.50)~~
        - ~~AMATH442 - Computational Methods for Partial Differential Equations~~ ~~(0.50)~~
        - ~~CS230 - Introduction to Computers and Computer Systems~~ ~~(0.50)~~
        - CS234 - Data Types and Structures (0.50)
        - ~~CS475 - Computational Linear Algebra~~ ~~(0.50)~~
        - ~~STAT341 - Computational Statistics and Data Analysis~~ ~~(0.50)~~
        - **AMATH445 - Scientific Machine Learning (0.50)**
    - Complete 1 of the following:
        - AMATH242 - Introduction to Computational Mathematics (0.50)
        - CS371 - Introduction to Computational Mathematics (0.50)
    - Complete 1 of the following:
        - AMATH250 - Introduction to Differential Equations (0.50)
        - AMATH251 - Introduction to Differential Equations (Advanced Level) (0.50)
    - **Complete 1 of the following:**
        - **AMATH342 - Computational Methods for Differential Equations (0.50)**
        - **AMATH345 - Data-Driven Mathematical Models (0.50)**
        - **AMATH449 - Neural Networks (0.50)**
        - **CS479 - Neural Networks (0.50)**

- Complete 1 of the following:
    - CO250 - Introduction to Optimization   (0.50)
    - CO255 - Introduction to Optimization (Advanced Level)   (0.50)
- Complete 1 of the following:
    - MATH237 - Calculus 3 for Honours Mathematics   (0.50)
    - MATH247 - Calculus 3 (Advanced Level)   (0.50)
- Complete 2 additional AMATH courses at the **300- or** 400-level
- Complete ~~2~~1 additional AMATH courses at the ~~300- or~~ 400-level
- **Complete 4 additional courses from the options in List 1**

List 1

- **Complete 4 of the following:**
    - **CS467 - Introduction to Quantum Information Processing   (0.50)**
    - **CS475 - Computational Linear Algebra   (0.50)**
    - **AMATH342 - Computational Methods for Differential Equations   (0.50)**
    - **AMATH391 - Data Analysis with Fourier and Wavelet Methods   (0.50)**
    - **AMATH442 - Computational Methods for Partial Differential Equations   (0.50)**
    - **AMATH477 - Stochastic Processes for Applied Mathematics   (0.50)**
    - **CO367 - Nonlinear Optimization   (0.50)**
    - **CO466 - Continuous Optimization   (0.50)**
    - **PMATH343 - Introduction to the Mathematics of Quantum Information   (0.50)**
    - **STAT331 - Applied Linear Models   (0.50)**
    - **STAT341 - Computational Statistics and Data Analysis   (0.50)**
    - **STAT441 - Statistical Learning - Classification   (0.50)**
    - **STAT444 - Statistical Learning - Advanced Regression   (0.50)**
    - **CS231 - Algorithmic Problem Solving   (0.50)**
    - **CS479 - Neural Networks   (0.50)**
    - **AMATH449 - Neural Networks   (0.50)**

Course Lists ❷

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❷
All cross-listings to be displayed

Proposed
Additional Constraints ❷

1. Courses used to satisfy core program requirements cannot be used to satisfy requirements on List 1.
2. Students may only complete one course from any cross-listed set.

Existing
Additional Constraints ❷

Notes ❷

Specializations

Specializations for this Major ❷

No

Workflow Information

Change to Undergraduate Communication Requirement

No

Workflow Path ❷	**Faculty/AFIW Path(s) for Workflow** ❷	**Senate Workflow**
Committee approvals	Faculty of Mathematics	--

Dependencies

Dependent Courses and Programs/Plans

PREREQUISITES

∨ AMATH 499 - Research Project   View Courses ❯

For Approval   **Open Session**

To:	Senate
From:	Senate Undergraduate Council
Presenter(s):	David DeVidi Associate Vice-President, Academic
Date of Meeting:	March 3, 2025
Agenda Item:	**7.5 Senate Undergraduate Council: Faculty of Science – Major Modifications**

Recommendation/Motion

Motion: That Senate approve the new Ecology and Environmental Biology Option for the Bachelor of Science (Science), effective September 1, 2025, as presented.

Summary

Senate Undergraduate Council met on January 28, 2025 and agreed to forward the following items to Senate for approval as part of the regular agenda.

   a. Ecology & Environmental Biology Option

Proposal/Rationale

The Ecology and Environmental Biology option provides an attainable pathway for Faculty of Science students to acknowledge an interest in the field. It takes a biome-focused approach in organizing its requirements. With the creation of this option, it completes a robust collection of options across all major fields of Biology that are offered to science students. It is expected that students interested in this option will be drawn from Honours Biology and Honours Science, though it is open to students in any Faculty of Science program. Biodiversity, Biomes & Evolution (BIOL 110), Genetics (BIOL 239), and Intro Stats (STAT 202) are prerequisite courses to declare this Option and are either a program requirement for multiple programs or are widely required for other programs, thus should not impose a barrier to students.

The Ecology and Environmental Biology Option can't be combined with the Environmental Sciences programs (Ecology, Geosciences or Water Science Specializations), a Biology Minor, or the Bioinformatics, Microbiology or Cell and Molecular Biology Options. The invalid credential combination table will require update for each of these plans to ensure they list the new Ecology and Environmental Biology Option as an invalid combination with each.

Jurisdictional Information

As provided for in Senate Bylaw 2, section 5.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

b. Make recommendations to Senate with respect to new undergraduate programs/plans, the deletion of undergraduate programs/plans, and major changes to undergraduate programs/plans.

Governance Path

Science Faculty Council: 11/15/2024

Senate Undergraduate Council: 01/28/2025

Documentation Provided

Appendix: Proposed Changes – Faculty of Science

Ecology & Environmental Biology Option
Ecology and Environmental Biology Option

Under Review | Fall 2025

Proposal Information

Workflow Status

In Progress

SUC Subcommittee, SUC Curricular Subcommittee   expand ▲

Waiting for Approval | Approval Delegate(s)

> Tim Weber-Kraljevski
> Mike Grivicic
> Diana Goncalves
> Kuali - Arts
> Kuali - Env
> Melanie Figueiredo
> Kuali - Math
> Kuali - Eng
> Kuali - Hlth
> Ashley Day
> Kuali - Science

Effective Date and Career

Career

Undergraduate

Important! ❓

Effective Term and Year ❓

Fall 2025

Proposal Details

Proposal Type ❓

New

Academic Unit Approval

02/27/2024

Quality Assurance Designation ❓

Major Modification

Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization, undergraduate diploma, minor

Recruitment Materials

No

Co-operative System of Study and Requirements ❓

Not Applicable

Creating or Changing Invalid Combinations ❓
Yes

Invalid Combinations Consultations
Honours Environmental Sciences, all specializations, Biology Minor, Bioinformatics Option, Microbiology Option, Cell and Molecular Biology Option

Rationale and Background for New Program/Plan ❓
Motion: To create another new Option for students in the Faculty of Science.

Effective Date: September 1, 2025

Background and Rationale:
The Ecology and Environmental Biology option provides an attainable pathway for Faculty of Science students to acknowledge an interest in the field. It takes a biome-focused approach in organizing its requirements. With the creation of this option, it completes a robust collection of options across all major fields of Biology that are offered to science students. It is expected that students interested in this option will be drawn from Honours Biology and Honours Science, though it is open to students in any Faculty of Science program. Biodiversity, Biomes & Evolution (BIOL 110), Genetics (BIOL 239), and Intro Stats (STAT 202) are prerequisite courses to declare this Option and are either a program requirement for multiple programs or are widely required for other programs, thus should not impose a barrier to students.

The Ecology and Environmental Biology Option can't be combined with the Environmental Sciences programs (Ecology, Geosciences or Water Science Specializations), a Biology Minor, or the Bioinformatics, Microbiology or Cell and Molecular Biology Options. The invalid credential combination table will require update for each of these plans to ensure they list the new Ecology and Environmental Biology Option as an invalid combination with each.

Requirements:
- A minimum cumulative option average of 65.0%
- 4.0 units as follows:
    - BIOL 251, 359 and 361
    - One of: BIOL 220 or 211
    - Two of: BIOL 312, 350, 370, 371, 451, 452, 455, 456, 457, 458, 470, 479, 485
    - Two of: BIOL 351, 383, 450, 462, 489

Consultations (Departmental) ❓

Supporting Documentation

General Program/Plan Information

Faculty ❓
Faculty of Science

Academic Unit ❓
Department of Biology

Field of Study ❓
Biology

Faculty ❓
Faculty of Science

Undergraduate Credential Type ❓

Option

Program/Plan Name ❓

Ecology and Environmental Biology Option

Admissions

Option is available for students in the following degrees ❓

Bachelor of Science (Science)

Admissions Entry Point ❓

Declare Plan

Declaration Requirements ❓

- Students must have completed BIOL110, BIOL239, and STAT202.
- Before declaring this academic plan, see invalid credential combinations.

Requirements Information

Invalid Combinations ❓

Yes

List of Invalid Combinations ❓

H-Environmental Sciences - Ecology Specialization
Bioinformatics OptionCell and Molecular Biology Option
Microbiology OptionBiology Minor
H-Environmental Sciences - Geoscience Specialization
H-Environmental Sciences - Water Science Specialization

Average Requirement ❓

Yes

Minimum Average(s) Required ❓

- A minimum cumulative option average of 65.0%.

Graduation Requirements ❓

- Complete a total of 4.0 units.

Course Requirements (units) ❓

Required Courses

4
Units to Complete

- Complete all of the following
  - Complete all the following:
    - BIOL251 - Fundamentals of Ecology   (0.50)
    - BIOL359 - Evolution 1: Mechanisms   (0.50)
    - BIOL361 - Biostatistics and Experimental Design   (0.50)
  - Complete 1 of the following:
    - BIOL220 - Introduction to Plant Structure and Function   (0.50)
    - BIOL211 - Introductory Vertebrate Zoology   (0.50)
  - Complete 2 of the following:
    - BIOL312 - The Natural History of Aquatic Organisms   (0.50)
    - BIOL350 - Ecosystem Ecology   (0.50)
    - BIOL370 - Comparative Animal Physiology: Environmental Aspects   (0.50)
    - BIOL371 - Comparative Animal Physiology: Evolutionary Themes   (0.50)
    - BIOL451 - Advanced Ecology and Evolution   (0.50)
    - BIOL452 - Quantitative Fisheries Biology   (0.50)
    - BIOL455 - Ecological Risk Assessment and Management   (0.50)
    - BIOL456 - Population Biology   (0.50)
    - BIOL457 - Analysis of Communities   (0.50)
    - BIOL458 - Quantitative Ecology   (0.50)
    - BIOL470 - Methods of Aquatic Ecology   (0.50)
    - BIOL479 - Population Genetics and Evolution   (0.50)
    - BIOL485 - Conservation Biology   (0.50)
  - Complete 2 of the following:

- BIOL351 - Aquatic Ecology   (0.50)
- BIOL383 - Tropical Ecosystems   (0.50)
- BIOL450 - Marine Biology   (0.50)
- BIOL462 - Applied Wetland Science   (0.50)
- BIOL489 - Arctic Ecology   (0.50)
- EARTH444 - Applied Wetland Science   (0.50)
- ERS383 - Tropical Ecosystems   (0.50)

Grand Total Units: 4

Course Requirements (no units) ❓

Required Courses

No Rules

Course Lists ❓

Required Courses

No Rules

Are there cross-listed courses listed in requirements?
Yes

Cross-Listings Options ❓
All cross-listings to be displayed

Additional Constraints ❓

1. Students may only complete one course from any cross-listed set.

Notes ❓

- See list of academic advisors.

Undergraduate Plan Guidelines

Adherence to Academic Plan Guidelines ❓
Yes

Workflow Information

Workflow Path ❓
Committee approvals

Faculty/AFIW Path(s) for Workflow ❓
Faculty of Science

Senate Workflow
Senate Consent

Dependencies

Dependent Courses and Programs/Plans

There are no dependencies

For Approval   **Open Session**

To:	Senate
From:	Senate Undergraduate Council
Presenter(s):	David DeVidi Associate Vice-President, Academic
Date of Meeting:	March 3, 2025
Agenda Item:	XX.1 **Senate Undergraduate Council: Course Outline Working Group Report**

Recommendation/Motion

1. That Senate approve the requirement of the inclusion of course materials costs directly into course outlines.

2. That Senate approve the list of required and recommended elements to be included in a course outline, as presented in this report.

3. That Senate approve an update to the boilerplate text below for Accessibility and Mental Health Supports.

Summary

Senate Undergraduate Council conducted an e-vote from February 11-14, 2025 and agreed to forward the following item to Senate for approval as part of the regular agenda.

Proposal/Rationale

The report represents the findings of the consultations and contributions of the members of the Course Outline Working Group ('Working Group') and the broader University of Waterloo campus community to determine pathways to support institutional compliance with legislative requirements laid out in *Bill 166: Strengthening Accountability and Student Support Act.* The recommendations enclosed capture the suggestions proposed to Senate to update requirements to include costs of course materials, to update the list of required elements to be included in course outlines, and to update the mental health and AccessAbility boilerplate text. The Working Group has created a separate set of recommendations to the Associate Vice-President, Academic, covering recommendations to form an Outline Advisory Group to oversee any future updates to the Outline template and request the Center for Teaching Excellence generate instructor supports in the form of best practice guidelines.

Jurisdictional Information

As provided for in Senate Bylaw 2, section 5.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

  a. Make recommendations to Senate with respect to rules and regulations for the governance, direction and management of undergraduate studies in the university

Governance Path

Senate Graduate and Research Council: 01/27/2025

Senate Undergraduate Council: 02/14/2025

Documentation Provided

Appendix A: Course Outline Working Group Report

University of Waterloo Course Outline Working Group Report

- Senate Recommendations -

January 30, 2025

Laura Deakin
Associate Dean for
Teaching and Learning
Faculty of Science

Christine Barbeau
Associate Dean, Teaching
Faculty of Environment

Mirko Vucicevich
Lead Developer, Outline Project
Science Computing Office

Mary Power
Sr. Educational Developer
Centre for Teaching
Excellence

Pavol Chvala
Manager, Systems
Development; Information
System & Technologies

Sarah Seabrook
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Executive Summary

This report represents the findings of the consultations and contributions of the members of the Course Outline Working Group ('Working Group') and the broader University of Waterloo campus community to determine pathways to support institutional compliance with the legislative requirements laid out in *Bill 166: Strengthening Accountability and Student Supports Act*. The recommendations below capture the suggestions proposed to Senate to update requirements to include costs of course materials, to update the list of required elements to be included in course outlines, and to update the mental health and AccessAbility boilerplate text. The Working Group has created a separate set of recommendations to the Associate Vice-President, Academic, covering recommendations to form an Outline Advisory Group to oversee any future updates to the Outline template, and request the Center for Teaching Excellence generate instructor supports in the form of best practice guidelines.

Summary of Consultations

The Working Group engaged with a variety of stakeholders through consultations during the Fall 2024 term. The Working Group consulted with Associate Deans for undergraduate and graduate studies from all Faculties and AFIWs, FAUW, academic support unit staff, and teaching fellows. Undergraduate and graduate students were approached via in-person group meetings hosted by the Student Life Centre, and feedback was solicited from undergraduate students employed within academic support units. The consultations allowed the Working Group to consider both Bill 166 and the Accessibility for Ontarians with Disabilities Act (AODA) compliance; it also allowed us to capture updated teaching and learning best practices.

Recommendations for Content within Outlines

Below are the recommendations the Working Group identified as pressing updates that would address legislative compliance, as well as internal consistency, with Calendar language. Recommendations from the Accessible Education Project are expected next year.

Recommendation 1: That Senate approve the requirement of the inclusion of course materials costs directly into course outlines.
Justification:

To comply with Bill 166, requiring as of Jan 31st, 2025, that course outlines contain the costs of course learning materials. Included below are components of the bill that would impact course outlines.

The Working Group identifies these course learning materials as textbooks, equipment, software, or other items that allow students to participate in all class activities and best supports their success.

The Working Group believes that it is important for costs to be included directly into the course outline rather than provided via a link to a website or LEARN page. The inclusion of the costs in outlines allows UW to more easily report compliance and ensures any AODA compliance once course outline templates are updated with AODA recommendations.

Recommendation 2: That Senate approve the updated list below of required and recommended elements to be included in a course outline.

The Working Group recommends that the list of required and recommended items to be included in course outlines be updated from the current list on the Secretariat's page on Course Outline Requirements.

The proposed list of required items shown in Table 1, does not include the costs of materials (Recommendation 1). Some new requirements for instructors would now include:

1. Date/Deadline for each test/assessment worth individually at least 10% of overall grade;

2. Indication of how late/missed content (assignments, tests, and other graded activities) will be treated;

Note that should Recommendation 1 be approved by the Senate, an additional line would make it to the list.

Table 1. Comparison of Posted Course Outline content and update proposal

Current Secretariat Page	Proposed Required and Recommended Items
Every course outline <u>should</u> include the following basic elements: • Course number and title • Term and year of offering • Class days, times, building, and room number • Class instructor's name, office, contact information, office hours • Teaching assistant's name, office, contact information, office hours (if applicable) • Course description • Course objectives • Required text and/or readings • A general overview of the topics to be covered • The evaluation structure for the course including course requirements, deadlines, weight of requirements toward the final course grade • Acceptable rules for group work • Indication of how late submission of assignments and missed assignments will be treated • Indication of where students are to submit assignments and pick up marked assignments • Any other element required by the program/department/faculty • Any institutional-required statements – there are required statements that have to be published with regard to academic integrity.	**Every course outline shall include the following basic elements:** • Course number and title • Term and year of offering • Class days, times, building, and room number • Instructional Team information (names, office hours, contact info for any instructors and TAs, if applicable) • Course Description • The evaluation structure for Assessments and Activities including course requirements, weight of requirements toward the final course grade • Deadlines for major assessments worth individually at least 10% of overall grade • Indication of how late/missed content (assignments, tests, and other graded activities) will be treated; • Acceptable rules for groupwork (if applicable) • Information about Assignment Screening procedures (if applicable) • The course policy on the use of Generative Artificial Intelligence (if applicable) • Any other element required by the program/department/faculty, including Administrative Policy (if applicable) • Any institutional-required statements or University Policy
	Every course outline should include the following basic elements: • Course Objectives/Learning Outcomes

	- A general overview of the topics to be covered in the form of a Tentative Class Plan - Required or Recommended course materials that carry no additional costs - Indication of where or how assignments will be submitted and retrieved after marking

Justification:
The update to the list of required items in course outlines will better align outlines with statements included in the Undergraduate Calendar and will provide transparency and clarity for students.

Examples of Calendar statements that require the inclusion of the above course elements include:

- The Calendar states that for religious accommodations: students must consult with their instructor(s) within two weeks of the announcement of the due date or scheduled examination date for which academic accommodation is being sought.

- The Calendar states for academic considerations: When instructors are asked to consider student's extenuating circumstances, the options available to students vary based on the nature of the extenuating circumstances/events they are facing, on the kind of assessment they are unable to complete on time, and the instructor's own grading practices stated in the course outline.

The mandatory inclusion of the instructor grading practice into the course outline, stating outcomes for late/missed assessments, will provide clarity for students. This is increasingly important now that students can choose to self-declare a short-term absence during the term.

The deadline for assessments is restricted to major assessments, determined as worth at least 10% in the overall grading scheme. This allows instructor flexibility to schedule low weight assessment throughout the term, as needed to best support student learning.

Recommendation 3: That Senate approve an update to the boilerplate text below for Accessibility and Mental Health Supports.

Justification: These changes are recommended to support student wellbeing, and ensure they are aware of critical support services and how to access them. This update also aligns

AccessAbility Services text in course outlines with statements in the Calendar, most specifically outlining the accommodation for persons with disabilities or disabling conditions.

Boilerplate text for Mental Health Supports:

At the University of Waterloo, we are dedicated to supporting your mental and emotional well-being. Our Counselling Services offer confidential support, including individual counselling, workshops, and crisis support. If you're struggling, please reach out for help at 519-888-4096 or visit their website for more information.

Boilerplate text for Accessibility Services:

The University of Waterloo recognizes its obligations under the Ontario Human Rights Code to accommodate students with known or suspected disabilities and disabling conditions (e.g. medical conditions, injuries, impacts of trauma such as from violence or discrimination) to the point of undue hardship. To support this obligation, AccessAbility Services (AAS) collaborates with all academic departments and schools to facilitate academic accommodations for students with disabilities and disabling conditions without compromising the academic integrity of the curriculum. If you believe you may require academic accommodations (e.g., testing accommodation, classroom accommodation), register with AAS as early in the term as possible by completing the online application. Students already registered with AAS must activate their accommodations for each of their courses at the beginning of each term using AAS' online system. If you require assistance, contact AAS by phone (519-888-4567 ext. 35082), email (access@uwaterloo.ca) or in-person (Needles Hall North, 1st Floor, Room 1401).

Further updates to Boilerplate text:

It is the expectation of the Working Group that the content of boilerplate text will be subject to change moving forward as technologies and policies continue to evolve. Due to the timelines set by Bill 166, further updates are not recommended at this time. The Working Group has made recommendations to the AVPA Office that an Outline Advisory Group be tasked with ensuring updates to course outlines are undertaken periodically.

Conclusion and Next Steps

The work of the Outline Working Group represents a significant step forward in improving the course outlines used at the University of Waterloo. These recommendations ensure alignment with Bill 166 and the AODA, while also prioritizing student-centered practices, transparency, and accessibility. The updates to the template, from the inclusion of detailed material cost tables to the refinement of assessment policies and boilerplate text, provide clarity and consistency for both instructors and students. The proposed process for a future working group will ensure the content in course outlines remains updated as the teaching landscape evolves.

By consulting with a wide range of campus stakeholders, the Working Group developed actionable recommendations to enhance the functionality, compliance, and usability of the Outline tool. The updates to Outline will better support instructors in obtaining

approved language and accessible outlines, as well as ensure the capacity for institutional compliance reporting. Additionally, the proposed processes for the generation of best practices guidance will provide support for instructors regarding content in course outlines as well as in the use of the Outline tool.

Next Steps

1. **Approvals:**
    The recommendations outlined in this report, particularly those requiring Senate approval (e.g., the mandatory inclusion of course materials costs and updates to boilerplate text), should be prioritized for review and approval. This approval will allow for compliance reporting as needed by Bill 166.

2. **Update Responsibilities and Establish a Governance Structure Through the AVPAs Office:**
    The Outline Advisory Group should be formally established to address content updates needed to course outlines and to oversee the ongoing maintenance of the Outline tool. This group will ensure there is appropriate consultation with leadership in the Faculties and AFIWs and will have representatives from Outline tool users, faculty and staff.

3. **Implementation with Best Practice Guidance:**
    Once approved, the updates to the required content in course outlines will be provided to instructors for use in upcoming academic terms. This will be accompanied with best practice guidelines from CTE and the Outline Advisory Group. This guidance will be instrumental in helping instructors navigate the updated template, ensure compliance, and maintain clarity and accessibility in their course outlines.

4. **Further Update to Boilerplate Text:**
    While updates to boilerplate text have been addressed in this report, further examination of this text will be needed as technologies, policies, and student needs evolve. Future updates should include a review process to ensure that boilerplate language remains relevant, concise, and compliant with institutional and legislative requirements.

5. **Encourage Continuous Feedback:**
    Feedback mechanisms should be established to allow instructors, students, and staff to provide ongoing input to the Outline Advisory Group on modifications to content of course outlines as well as improvements to the Outline tool. This feedback will help identify areas for improvement and ensure the tool continues to meet the needs of its users.

By taking these next steps, the University of Waterloo can ensure that course outlines remain compliant with Ministry initiatives, accessibility needs for students with disabilities, and contain the latest approved boilerplate language.

Secretariat

For Recommendation	**Open Session**

To: **Senate Executive Committee**

Sponsor/Presenter: Genevieve Gauthier-Chalifour, University Secretary
Contact Information: gen.gauthier-chalifour@uwaterloo.ca

Date of Meeting: **March 3, 2025**

Agenda Item Identification: **8.1 Proposed Amendment to Senate Bylaws - Governance Year**

Recommendation/Motion:

That Senate gives second reading to the amendments to Senate Bylaws 1, 2, and 3 as presented in this report.

And, that Senate approve that the current year be extended to end on August 31, 2025 to facilitate a transition year, with provisions for the transition year as described in this report;

And, that Senate approve the extension of the terms of elected senators and of members of Senate committees and councils to be congruent with the revised year, as appropriate;

With all approvals subject to final approval of the proposed bylaw amendments by Senate.

Summary/Rationale:

The *University of Waterloo Act* ("the Act"), section 22(o), provides that Senate may "… enact by-laws and regulations for the conduct of its affairs."

This report proposes to shift the start of the Senate-defined year to September 1st annually, which would provide benefit to Senate in mitigating logistical issues in organizing elements of Senate governance. Firstly, Senate would benefit from maintaining continuity over the summer months where approvals may be required and where those approvals can be considered by senators and/or Senate committee and council members who are well-oriented to the mandate and business of the body; this would necessarily not be the case for newer members starting on May 1. Secondly, in the current paradigm thegeneral elections of senators from faculty and student constituencies are required to occur in March of each year, which in turn creates considerable time pressure to have those new senators oriented and potentially also appointed to a Senate committee/council in time for the May 1 start date, with these activities occurring in the March-April period where the University already has considerable operational activity/demands. By shifting the Senate year to begin on September 1, this will provide a longer available period for important orientation and onboarding activities to occur and for those activities to be scheduled at times that where operational demands are generally lower e.g. during the May-August period. Waterloo's Senate is an outlier among Canadian universities as most have years that run either July 1-June 30 or from September 1-August 31. As well, starting the year aligns with the natural rhythm of campus life where the new year starts at the same time as when most new students commence their studies in the fall term. This recommendation would also align Senate with the decision of the Board of Governors to shift to the year beginning September 1, which was approved at the October 29, 2024 meeting of the Board.

The current language in Senate bylaws uses the term "year" and "academic year" interchangeably, and to simplify the former will be used consistently.

To facilitate this change, a transition year will be necessary which would include the following adaptations:

- The current Senate academic year would be extended to 16 months, running from May 1, 2024 to August 31, 2025
- The terms of current elected senators would be extended by four months
  - For all current elected senators with terms to April 30, 2025, said terms would be extended with approval of the bylaw change to August 31, 2025
  - For all current elected senators with terms to April 30, 2026, said terms would be extended with approval of the bylaw change to August 31, 2026
  - For all current elected senators with terms to April 30, 2027, said terms would be extended with approval of the bylaw change to August 31, 2027
- Where terms of office are enunciated for committees and councils of Senate, whether in bylaws or in approved terms of reference, that those terms of office be equivalently extended to align with the Senate academic year
- The terms of *ex-officio* senators would not be impacted by this change, with their terms of Senate related to the terms of appointment for their respective offices
- For the purposes of interpreting section 23 of the Act, the extension of a senator's term these amendments will constitute an extension of their current term and will not be considered to be a new or additional term
- For the purposes of interpreting section 24 of the Act, the calculation of absences vs. regular meetings shall reflect the 16-month transition year and the additional regular meetings of Senate for the transition year
- For any issues of interpretation related to the transition year that are not enunciated within this report, those issues shall be decided by the University Secretary, who may consult the chair of Senate in making their decision. All such decisions are to be reported to Senate at the next regularly scheduled meeting.

In addition to specific bylaw amendments to adjust the Senate year, minor amendments to the Senate bylaws are included with this recommendation to align and simplify language in related sections of the bylaws.

Separately from these proposed amendments, the Secretariat plans to initiate a general review of all Senate bylaws early in 2025 in accordance with the recommendations of the Senate Governance Review, with the aim of ensuring broad currency in governance practices.

Draft Bylaw Amendments:

(strikethrough = deleted text; underline = new text)

Senate Bylaw 1

    1. Interpretation

    1.01 In all the bylaws of Senate,

        a. "~~academic~~ year" means the twelve-month period dating from ~~1 May~~ September 1 of one calendar year to ~~30 April~~ August 31 of the succeeding calendar year.

    …

    2.01 The schedule of meetings for Senate and its committees and councils shall be approved by the chair of Senate and published by the Secretariat prior to the new ~~academic~~ year.

…

3.01 General meetings

Senate shall normally hold eight (8) general meetings during each ~~academic~~ year. Notice of each meeting shall be communicated to the university community in such places and ways as may be designated from time to time by Senate.

Senate Bylaw 2

…

1.04(e) To present to Senate, normally at the last regular meeting in the ~~academic~~ year ~~in April~~, a list of nominations for the committees and councils of Senate.

…

1.05 The committee shall normally hold ~~ten (10)~~ regular meetings during each ~~academic~~ year <u>equal to the number of regular meetings of Senate</u>, each such meeting to be held approximately two weeks prior to the date of each general meeting of Senate. Special meetings of the committee shall be called by the chair of the committee.

Senate Bylaw 3

…

1.01 The university secretary or designate shall act as chief returning officer for the purpose of conducting the election of members of Senate. As chief returning officer, the university secretary or designate has overall responsibility for the general conduct of such elections and by-elections, which shall be by secret ballot. Without restricting the generality of the foregoing, the chief returning officer shall:

…

(b) Call for nominations and when doing so inform the university community of the names of those members of Senate whose terms of office expire ~~on 30 April of~~ that year and whether such members are eligible for a further term of service.

Jurisdictional Information:

This item is submitted to Senate in accordance with the *University of Waterloo Act*, section 22(o), which empowers Senate "…to enact by-laws and regulations for the conduct of its affairs."

Senate Bylaw 1 states the procedural requirements for the passage of new bylaws and amendments to existing bylaws:

14. Bylaws – general

14.01 The passage of a new bylaw or amendment(s) to an existing bylaw is accomplished in two readings by Senate. At the first reading, such discussion as is deemed appropriate by Senate shall take place. At the second reading, further discussion may take place and the vote on the document shall be taken. The two readings shall take place at different, but not necessarily consecutive, meetings of Senate.

14.02 No proposed bylaw or amendment(s) will be given reading unless it has been bound into or accompanies the agenda portfolio distributed in advance of the meeting.

14.03 Any proposed bylaw or amendment(s) shall include the proposed wording of the bylaw or amendment(s), and where appropriate, a summary of the reasons for such bylaw or amendment(s).

14.04 In order to be approved by Senate, any new bylaw or amendment(s) to bylaws must receive the affirmative vote of at least two-thirds of the members of Senate present and voting at the meeting.

Governance Path:

Senate Executive Committee – January 13, 2025

Senate – January 27, 2025 and March 3, 2025

For Recommendation   **Open Session**

To:	**Senate**
Sponsor/Presenters:	Gen Gauthier-Chalifour University Secretary
Date of Meeting:	March 3, 2025
Agenda Item Identification:	**8.2 Guidelines for Visitors to Senate Meetings**

Recommendation/Motion: That Senate amend section 4.7 of the Guidelines for Visitors to Senate Meetings as follows:

> 4.7. An individual or group may request to bring a representation to Senate on a given subject normally once in a Senate <u>year</u> ~~meeting cycle (May 1 to April 30)~~.

Summary:

With the prospective change to the definition of the Senate year, the wording in the visitors' guidelines will not be aligned. This recommendation adjusts the wording in the **visitors' guidelines** to be flexible and to align with the Senate year however defined, rather than mirroring the wording of the Senate year as set out in Senate bylaw 1.

A separate report is forthcoming, recommending a mechanism for implementing minor changes as outlined in this report, with provisions for reporting to the Senate.

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UNIVERSITY OF WATERLOO | Senate

For Approval   **Open Session**

To:	**Senate**
Sponsor/Presenter:	Gen Gauthier-Chalifour University Secretary
Date of Meeting:	March 3, 2025
Agenda Item Identification:	**8.3 Delegation of Authority for Editorial Amendments to Senate Bylaws and Senate-Approved Guidelines**

Recommendation/Motion:

That Senate delegate its authority to the Secretary of Senate for the execution and approval of editorial amendments to Senate bylaws and to Senate-approved guidelines for a fixed period from the date of approval to March 31, 2026 inclusive;

And, that for all such amendments executed by the Secretary of Senate there shall be a report made to the next Senate meeting;

And, that Senate reserves its authority to rescind amendments so executed through majority vote at a properly constituted meeting.

Summary:

It is customary practice to include editorial or **"housekeeping" amendments with** recommendations for substantive amendments to documents requiring Senate approval. This is routinely seen for amendments to Senate bylaws, University policies, etc. As well, such editorial amendments may also be identified on a standalone basis with no other substantive revisions required. In either case, it is prudent to have a mechanism where editorial, non-substantive amendments may be efficiently identified and approved without a significant undertaking of Senate.

The recommendation in this report aims to provide a mechanism to facilitate said amendments administratively and in a limited fashion, with accountability and reporting to Senate every time action is taken utilizing this delegation of authority to foster transparency in practice. Examples would include: amendments to pronouns to keep with current editorial style; amendments to titles to update to current titles/portfolios; amendments to point to an authoritative definition, rather than to insert the defined term repeatedly, etc.

Should any such editorial amendment(s) be controversial or otherwise of sufficient concern to Senate, the body reserves its authority to rescind said amendment(s) through a majority vote at a properly constituted meeting. Where practicable, the Secretary may elect to bring forward a prospective amendment to Senate in advance of executing the editorial amendment.

To provide an abundance of clarity, the recommended delegation of authority cannot and shall not be applied to:

- Substantive amendments to the Senate bylaws or committee/council terms of reference;
- Substantive amendments to Senate-approved guidelines;
- Senate approval of any University policy, guideline, or signing procedure
- The execution of any of the general or specific powers of the Senate as described in section 22 of the *University of Waterloo Act*, 1972

Senate   **1**

As a point of reference for the proposed delegation, other examples of ongoing/regular delegations of Senate authority include:

- Senate Bylaw 2, section 1.04(b) provides that Senate Executive Committee may:

  > On those occasions when the agenda does not, in the estimation of the Executive Committee, warrant a meeting of Senate, to cancel any such meeting of Senate, and to exercise the powers of Senate, within the limits of *The University of Waterloo Act, 1972*, on all matters considered by the Executive Committee in its discretion to be of sufficient urgency that they must be decided prior to the next regular meeting of Senate, provided that the Executive Committee shall have no power under any circumstances to repeal, amend or modify Senate bylaws, or to exercise Senate's responsibilities under Policies 45, 48, 50 and 68. All such actions are to be reported to Senate.

- Since 2023, Senate has annually delegated its authority to the Senate chair and vice-chair (the president and the provost, respectively) to handle the approval of the list of convocation graduands on behalf of Senate

The recommended delegation of authority is time-limited by design and will expire **in one year's time** as stated in the recommendation. This prevents the delegation of authority from continuing unchecked and ensures that the body of Senate (with membership that changes from year to year) remains cognizant of the delegation of its powers. Should Senate find it prudent and expedient, it may resolve to renew this delegation of authority on an annual basis.

Governance Path:

Senate Executive Committee – February 18, 2025

Senate – March 3, 2025

Senate   **2**

For Recommendation   **Open Session**

To: **Senate**

Sponsor/Presenter: Vivek Goel
                           President and Vice-Chancellor

Date of Meeting: March 3, 2025

Agenda Item: **8.4 Appointment of the COU Academic Colleague 2025-28**

Recommendation/Motion:

Motion: That Senate approve the reappointment of Dr. Scott Kline as the Council of Ontario Universities (COU) Academic Colleague for the University of Waterloo for a three-year term to June 30, 2028.

Summary

According to the by-laws of the COU, membership as an Academic Colleague is available to individuals who are faculty members of a Member University and who have been elected or appointed to serve as an Academic Colleague **by the Member University's Senate or senior academic body. According to the** University of Waterloo Act, members of faculty are defined as:

> "…**those members of personnel employed by the University or employed by a federated or** affiliated college, whose duties are basically those of performing and administering the teaching and research functions of the University, or, as the case may be, of a federated or **affiliated college, and who are included in the lecturer and professorial ranks…"**

The term of office for Academic Colleagues runs from July 1 to June 30. Only one (1) Academic Colleague shall be admitted per Member University. Academic Colleagues are Voting Members. While the COU By-Laws do not specify the length of term, Academic Colleagues typically hold office for a term of three years, renewable.

The chair of Senate has ascertained from Dr. Kline that he is willing to renew his appointment after having served in the role since October 2022 – a short biographical sketch is provided:

> Dr. Scott Kline is Chair of the Department of Religious Studies at University of Waterloo. An ethicist by training, he has written on religion and politics, ethics and public life, and healthcare ethics. He was co-chair of the University of Waterloo Taskforce on Freedom of Expression and Inclusive Engagement. He has served on boards and senior committees of international academic associations and national research organizations, including the Heart and Stroke Foundation of Canada.

At the meeting further nominations will be accepted from the floor and in the instance that there is more than one name put forward for this position an electronic election will follow the meeting, as is **Senate's established practice.**

Governance Path:

Senate Executive Committee – February 18, 2025

Senate – March 3, 2025

Senate   **1**

For Information   <mark>**Open Session**</mark>

To:	**Senate**
Sponsor/ Presenter:	Gen Gauthier-Chalifour, University Secretary gen.gauthier-chalifour@uwaterloo.ca
Date of Meeting:	March 3, 2025
Agenda Item:	**9.1 2025-2026 Senate Election Results**

Summary

Elections for Faculty, Undergraduate and Graduate student Senators were held in February 2025. Elections for Faculty and Graduate students were conducted by the Secretariat, and elections for Undergraduate student Senators were conducted by the Waterloo Undergraduate Student Association (WUSA). This report provides a summary of newly elected Senators and Senators with concluding terms.

Proposal/Rationale

This report is being provided to the Senate as an information item, and to provide an official record of election results.

Jurisdictional Information

Elections were held in accordance with Senate Bylaw 3 – Selection of Members of Senate, as well as various sections of the *University of Waterloo Act*.

Governance Path

Election results were discussed at the Senate Executive Committee meeting held February 18, 2025. This item is not subject to the terms of reference for any other council or committee of Senate.

Newly Elected Senators

Elections **that are noted as "acclaimed"** received nominations that were equal to, or less than, the number of available vacancies in that contest.

All successful candidates are listed in alphabetical order by last name.

Faculty Elections

All Faculty Senator-elects will have three-year terms beginning May 1, 2025 and concluding April 30, 2028.

March 3, 2025

Faculty-at-Large (8 Vacancies – ACCLAIMED):

1. Drescher, Michael (School of Planning, Environment)
2. Gorbet, Rob (Knowledge Integration, Environment)
3. Liu, Jun (Applied Mathematics, Mathematics)
4. Lushman, Brad (School of Computer Science, Mathematics)
5. Mahmoudi, Pendar (Chemical Engineering, Engineering)
6. Mitra, Sushanta (Mechanical and Mechatronics Engineering, Engineering)
7. Neal, Carter (English Language and Literature, Arts)
8. Tan, Su-Yin (School of Planning and Geography and Environmental Management, Environment)

Faculty of Arts (1 Vacancy – No nominations received):

1. *Remaining vacancy – to be filled through by-election*

Faculty of Engineering (1 Vacancy):

1. Clausi, David (Systems Design Engineering)

Faculty of Environment (2 Vacancies):

1. Wilson, Jeffery (School of Environment, Enterprise, and Development)
2. Woudsma, Clarence (School of Planning)

Faculty of Health (3 Vacancies – 1 SEAT ACCLAIMED):

1. Chen, Helen (School of Public Health Sciences)
2. *Remaining vacancy – to be filled through by-election*
3. *Remaining vacancy – to be filled through by-election*

Faculty of Math (1 Vacancy – ACCLAIMED):

1. Boutaba, Raouf (School of Computer Science)

Faculty of Science (1 Vacancy – ACCLAIMED):

1. Deakin, Laura (Chemistry)

Remaining vacancies will be addressed through an upcoming by-election (dates to be announced).

Graduate Students

All Graduate Senator-elects will have two-year terms beginning May 1, 2025 and concluding April 30, 2027.

(3 Vacancies)

1. Alkhawaldeh, Laith (Electrical and Computer Engineering, Engineering)
2. Almomani, Yasmeen (Public Health Sciences, Health)
3. Rindlisbacher, Jessica (Public Service, Arts)

Undergraduate Students

Term lengths for each position are noted below.

March 3, 2025

(5 Vacancies)

1. Khan, Misha, At-large (Science) (One-year term: May1, 2025 – April 30, 2026)
2. Lim, Christopher, Health (Two-year term: May 1, 2025 – April 30, 2027)
3. Pawelko, Alex, Mathematics (Two-year term: May 1, 2025 – April 30, 2027)
4. Razmjoo, Arya, At-large (Arts) (Two-year term: May 1, 2025 – April 30, 2027)
5. Sayed, Rida, Engineering (Two-year term: May 1, 2025 – April 30, 2027)

Out-going Senators

All Senators listed below will conclude their Senate terms at the end of the current governance year, unless otherwise indicated:

Faculty

- Veronica Kitchen, Faculty of Arts
- David Ha, Faculty at Large (Arts)
- Ellen MacEachen, Faculty of Health
- Narveen Jandu, Faculty of Health (term concluded December 31, 2024)
- Mary Robinson, Faculty of Engineering
- Marc Aucoin, Faculty of Engineering
- Siva Sivoththaman, Faculty at Large (Engineering)
- Jennifer Lynes, Faculty of Environment
- Sivabal Sivaloganathan, Faculty of Math
- Changbao Wu, Faculty at Large (Math)
- Kim Cuddington, Faculty at Large (Science)
- Natalie Hutchings, Faculty at Large (Science)

Graduate Students

- Judy Castaneda
- Stephanie Maaz
- Everett Patterson (term concluded December 31, 2024)

Undergraduate Students

- Asher Scaini
- Avery Akkerman
- Catherine Dong
- Bilal Ahmed

Senate Elections to Board and Committee Assignments

Nominations for Senate elections for Faculty and Student positions on the Board of Governors open from March 4 to March 14. Candidates will be asked to submit a nomination form as well as a 100-word candidate statement. Additional communications with information regarding Senate elections to the Board of Governors will be sent directly to Senators.

Council/committee assignments for the 2025-2026 governance year will be presented for approval at a future meeting.

Conclusion

The University would like to thank all candidates who allowed their name to stand for election and would additionally like to thank all out-going Senators for their service to the University and their participation in university governance.

For Information   **Open Session**

To:	**Senate**
Sponsor/ Presenter:	Gen Gauthier-Chalifour, University Secretary gen.gauthier-chalifour@uwaterloo.ca
Date of Meeting:	March 3, 2025
Agenda Item:	**9.2 Update on Policy Activity**

Summary

Enclosed is a high-level summary of University Policy activity currently underway or planned in 2025. In 2024, Secretariat staff resources were realigned to streamline work and provide more effective support for policy review, development and policy development committees. The Secretariat provides impartial support for class "F", "S" and "F/S" policy development committees as contemplated in Policy 1 – Initiation and Review of University Policies, as well as review and development of class "G" policies, support for compliance with increasing legislative requirements, and advancing related leading practices in a collegial governance model.

Proposal/Rationale

This report is being provided to the Senate for information, to apprise Senators of broad policy activity underway, including those that will or may advance to Senate and/or the Board of Governors for final approval. The report is intended to provide a high-level summary and sense of the scope of ongoing and completed policy work, with anticipated timelines.

Jurisdictional Information

Policy review, development, and approval is guided by Policy 1 – Initiation and Review of University Policies.

Governance Path

The Faculty Relations Committee (FRC) and Staff Relations Committee (SRC) receive regular updates on the status of policy activities being done through policy development committees, consistent with provisions in Policy 1.

Other Policy Initiatives

Work is ongoing to provide greater clarity with respect to various policy instruments (e.g. policies, procedures, guidelines, frameworks), and provide a resource for the campus community on the distinctions between and utility of each.

UNIVERSITY OF **WATERLOO** | Secretariat

	Numbered and Legislative Initiatives		
Policy	**In Progress or Upcoming**	**Description (New, Amend)**	**Timeline Status**
2 – *Bulletin Boards, Temporary Signs, and Notices* (G)	Upcoming	(Amend) FOE Task Force Related	2025
5 – *Salary Administration, University Support Staff* (S)	In Progress	Amend	2025
8 – *Freedom of Speech* (G)	Upcoming	(Amend) FOE Task Force Related	2025
12 (FS)	In Progress	(New) Bereavement, Family Medical, Critical Illness	Anticipate Spring 2025 draft
15 – *Bookings* (G)	Upcoming	(Amend)	2025
18 – *Staff Employment* (S)	In Progress	(Amend)	2025
31 – *University Expenses* (G)	In Progress	(Amend) Second Phase of revisions made in 2021, 2024 Policy and Guidelines receiving updates in consultation with FFOs	
33 – *Ethical Behaviour* (FS) PHASE 1	Complete	(Amend) Bill 166 Due January 31, 2025	Complete
33 – *Ethical Behaviour* (FS) PHASE 2	Upcoming	(Amend)	Anticipate 2025-2026
34 – *Health, Safety and Environment* (G)	Complete	(Amend) Streamline language, best practice in OHS management systems	Complete
40 – *The Chair* (A)	In Progress	(Amend)	2025
42 (G) – *Prevention of and Response to Sexual Violence*	In Progress	(Amend)	2025

Numbered and Legislative Initiatives

Policy	In Progress or Upcoming	Description (New, Amend)	Timeline Status
44 – *Research Centres and Institutes* (G)	Upcoming	(Amend) Related to Global Futures Network	TBD
57 (FS)	In Progress	(New) Employee Accommodation	Anticipate Spring 2025 draft
70 – *Student Petitions and Grievances* (G)	In Progress	(Amend) Student Petitions and Grievances	2025
73 – *Intellectual Property Rights* (G)	Upcoming	(Amend)	
68, 69, 73, 77	In Progress	(Revise) – Housekeeping. title change, new hyperlinks, and gendered language	2025
76– *Faculty Appointments* (F)	Complete	(Amend)	Complete
77 – *Tenure and Promotion of Faculty Members* (F)	Complete	(Amend)	Complete
77 – *Tenure and Promotion of Faculty Members* (F)	In progress	Revise "Annual/Biannual" → "Annual /Biennial"	2025

Non-numbered initiatives

Policy or Initiative Name	In Progress or Upcoming	Description (New, Amend)	Timeline Status
Student Accommodation Policy	In Progress	(New) Student Accommodations Policy. Accessible Education Project - Policy & Guidelines Group.	2025

Non-numbered initiatives			
Policy or Initiative Name	**In Progress or Upcoming**	**Description (New, Amend)**	**Timeline Status**
(G)			
Student Mental Health Framework Bill 166	Complete	(New) Bill 166. Student Mental Health Policy Required via Amendment to *Ministry of Training, Colleges and Universities Act* and new MCO Directives issued Sept 9. 2024	Complete
Anti-Racism Anti-Hate Bill 166	Complete	(New) Anti-Racism and Hate **Centralized Platform** Required via Bill 166 Amendment to *Ministry of Training, Colleges and Universities Act*	Complete
Student Housing Framework Bill 185	Complete	(New) Student Housing Policy **Framework** Required via Ministerial Directive – related to *Cutting Red Tape to Build More Homes Act, 2024*	Complete

Other Priorities and Procedures			
Policy	**In Progress or Upcoming**	**Description (New, Amend)**	**Timeline Status**
Signing Authority	In Progress	(New) A new signing G-class Policy to replace signing procedures.	Anticipate Spring/Summer 2025 Board
Procedure 8	Paused	(Amend)	Incorporated into Signing policy
Procedure 1A	Paused	(Amend)	Incorporated into Signing policy
		Review of Policy 1	Not yet started. Pending discussion and support from FRC/SRC.

Ongoing Policy Initiatives. As of 3.01.2025.

Yellow highlights = government required.

Other Priorities and Procedures			
Policy	**In Progress or Upcoming**	**Description (New, Amend)**	**Timeline Status**
Policy, Procedure, & Guidelines Document	Drafted	(New) Categorization of the content of policy versus procedure versus guideline, with authority	2025. Pending discussion at FRC/SRC.
Secretariat authorization for minor edits to policies	Drafted	(New) Confirmation of Secretariat authority to address minor edits to policies, in line with historical practice, and including transparent reporting/accountability mechanism.	2025. Pending discussion and support from FRC/SRC.

2024-2025 Senate Work Plan

Senate Agenda Items · expected *as needed	May 6, 2024	June 10, 2024	September 23, 2024	October 21, 2024	November 25, 2024	January 27, 2025	March 3, 2025	April 7, 2025
REGULAR AGENDA (including items for information and discussion)								
Minutes	·	·	·	·	·	·	·	·
Business Arising	·	·	·	·	·	·	·	·
LEADERSHIP UPDATES[6]								
Report of the Vice-President, Academic & Provost	*	*	*	*	*	*	*	*
Report of the Vice-President, Research and International	*	*	*	*	*	*	*	*
COMMITTEE/COUNCIL REPORTS								
Executive Committee	*	*	*	*	*	*	*	*
Graduate & Research Council (GRC)	·	·	·	·	·	·	·	·
Undergraduate Council (UC)	·	·	·	·	·	·	·	·
Long Range Planning Committee				·		·		·
Fall Update, University Operating Budget					·			
Joint Report of GRC & UC, Academic Calendar Dates[1]						·		
University Committee on Student Appeals Annual Report[1] (Policy 72)						·		
University Appointment Review Committee Annual Report[1] (Policy 76)								·
Finance Committee - Budget Update[3]							·	
Finance Committee - Budget recommendation[2, 3]								·
OTHER SENATE AGENDA ITEMS								
New Senator Orientations (before meeting)	·							
Meeting technology overview for Senate room			·	·				
Teaching Awards Committee, appointment of members							·	
Delegation of Roster of Graduands								·
Report of Roster of Graduands			·		·			
Convocation Report – summary of this years' ceremonies					·			
Undergraduate and Graduate Admissions Update						·		
Conduct Self-Assessment Survey[1]							·	
Appointment of COU Academic Colleague	Current appointment runs to April 30, 2025							
SENATE PRESENTATIONS								
Presentations from the Presidents of the Faculty Association, Waterloo Undergraduate Association and Graduate Student Association[1]							·	
Strategic Plan Accountability Update[1] (June)		·						
PART Annual Update		·						
Faculty Updates		SCI						

[1] Annual item
[2] Board of Governors approval
[3] Presented by the Vice-President Academic and Provost
[4] Presented by the President and Vice-Chancellor, and Chair of Senate
[5] Presented by the University Secretary
[6] Leadership updates may include such topics as: Talent, We Accelerate Report, Communities (EDI, Sustainability), Waterloo International, etc.

Secretariat

Senate Agenda Items · expected *as needed	May 6, 2024	June 10, 2024	September 23, 2024	October 21, 2024	November 25, 2024	January 27, 2025	March 3, 2025	April 7, 2025
CONSENT AGENDA								
Reports from Faculties (e.g., appointments, administrative appointments, sabbaticals)[2]	·	·	·	·	·	·	·	·
Tenure and Promotion Report[4]			·					
University Professor Designation[3]								·
Call for Nominations for University Professor[3]			·					
Call for Nominations for Honorary Degree Recipients[4]						·		
Report of the COU Academic Colleague[1]								·
Senate Committee Appointments[5]	*	*	·	*	*	*	*	*
CLOSED AGENDA								
Minutes	·	·	·	·	·	·	·	·
Business Arising	·	·	·	·	·	·	·	·
Reports from Committees and Councils	*	*	*	*	*	*	*	*
Honorary Degree Recommendations	*	*	*	*	·	·	*	*
Reports from Search and Review Committees for Policy-based Senior Leadership Appointments and Reappointments	*	*	*	*	*	*	*	*
Report of VP Advancement on Policy 7[1]		·						

Special Topics for 2024-2025 to be Scheduled:

- President's Anti-racism Task Force Update (PART)

For more information: secretariat@uwaterloo.ca
uwaterloo.ca/secretariat, NH 3060

[1] Annual item
[2] Board of Governors approval
[3] Presented by the Vice-President Academic and Provost
[4] Presented by the President and Vice-Chancellor, and Chair of Senate
[5] Presented by the University Secretary
[6] Leadership updates may include such topics as: Talent, We Accelerate Report, Communities (EDI, Sustainability), Waterloo International, etc.

For Information   **Open Session - Consent**

To:	Senate
From:	Senate Graduate and Research Council
Presenter(s):	Charmaine Dean Vice-President, Research & International Clarence Woudsma Interim Co-Associate Vice-President, Graduate Studies and Postdoctoral Affairs
Date of Meeting:	March 3, 2025
Agenda Item:	**10.2 Senate Graduate and Research Council**

Summary

Senate Graduate & Research Council met on January 27, 2025 and agreed to forward the following items to Senate for information as part of the consent agenda. On behalf of Senate, the following items were approved:

1. Graduate Awards

   Council approved the following graduate awards:

   a.   Pearl Sullivan Engineering Ideas Clinic Activity Pitch Award **–** operating

   b.   Dr. Benjamin Plumb Memorial Graduate Scholarship **–** trust

   c.   Ages Foundation Graduate Scholarship **–** trust

   d.   Jenny Francis Graduate Award in Architecture **–** endowment

   Council received for information the following graduate awards:

   e.   Pure Math Doctoral Thesis Completion Award **–** operating

   f.   Jain Family Award for Entrepreneurship **–** trust

   g.   Mike and Ophelia Lazaridis Fellowships **–** endowment

2. Clinical Research Ethics Board

   Council approved membership updates to the Clinical Research Ethics Board (CREB).

3. Research Institutes

   Council approved the renewal of the Waterloo Centre for Automotive Research (WatCAR) and the Centre for Advanced Materials Joining (CAMJ) for five year terms.

4. Curricular Submissions

   Council approved the following new graduate courses, the deletion of graduate courses, and proposed minor changes to existing graduate courses and programs for:

   a. Faculty of Arts (Anna Esselment)

   b. Faculty of Engineering (Siva Sivoththaman)

   c. Faculty of Environment (Peter Deadman)

   d. Faculty of Health (Brian Laird)

   e. Faculty of Math (Brian Ingalls)

5. Council also received a presentation on Senate Course Outline Requirements and discussed recommendations from the working group. Council was supportive of the recommendations presented.

Jurisdictional Information

As provided for in Senate Bylaw 2, section 4.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

   f. On behalf of Senate, consider and approve all new graduate courses, the deletion of graduate courses, and proposed minor changes to existing graduate courses and programs, and provide Senate with a brief summary of council's deliberations in this regard. Any matter of controversy that might arise may be referred to Senate.

   h. On behalf of Senate, consider and approve renewals for centres and institutes, and report such renewals to Senate for information. Any matter of controversy that might arise may be referred to Senate.

   i. On behalf of Senate, consider and approve all new graduate scholarships and awards. Any matter of controversy that might arise may be referred to Senate.

Governance Path

Senate Graduate and Research Council: 01/27/2025

UNIVERSITY OF WATERLOO | Senate

For Information	**Open Session - Consent**

To:	Senate
From:	Senate Undergraduate Council
Presenter(s):	David DeVidi Associate Vice-President, Academic
Date of Meeting:	March 3, 2025
Agenda Item:	**10.3 Senate Undergraduate Council: Report for Information**

Summary

Senate Undergraduate Council met on January 28, 2025 and agreed to forward the following items to Senate for information as part of the consent agenda. On behalf of Senate, the following items were approved:

1. Curricular Submissions

   Council approved the following new courses, the deletion of courses, and proposed minor changes to existing courses and programs for:

   a. Faculty of Arts
   b. Faculty of Arts & Faculty of Environment
   c. Faculty of Engineering
   d. Faculty of Engineering & Faculty of Mathematics
   e. Faculty of Environment
   f. Faculty of Environment & Faculty of Science
   g. Faculty of Health
   h. Faculty of Mathematics
   i. Faculty of Science
   j. Co-operative and Experiential Education

Jurisdictional Information

As provided for in Senate Bylaw 2, section 5.03, council is empowered to make approvals on behalf of Senate for a variety of operational matters:

   c. On behalf of Senate, consider and approve all new undergraduate courses, the deletion of undergraduate courses, and proposed changes to existing undergraduate courses and minor changes to programs and/or plans, and provide Senate with a

summary of council's deliberations in this regard. Any matter of controversy that might arise may be referred to Senate.

Governance Path

Senate Undergraduate Council: 01/28/2025

UNIVERSITY OF WATERLOO | Senate

Senate Finance Committee

For Information   **Open Session**

To: **Senate**

Sponsor/Presenter: Vivek Goel, President and Vice-Chancellor
                                 president@uwaterloo.ca

Date of Meeting: **March 3, 2025**

Agenda Item   **10.4 Report - Senate Finance Committee**
Identification:

Summary:

Senate Finance Committee met on January 23, 2025. A summary of the items discussed is provided for the information of Senate.

   i.   Budget Planning Process

        The University aims to balance its budget within three years, which will require immediate action to mitigate budget shortfalls along with a transformation of operations over the coming years. Budget challenges stem from provincial limits on tuition and grants, resulting in the loss of hundreds of millions of dollars; reductions in international enrolments; trends of rising costs (including for salaries and benefits) and little likelihood of changes in government policy in the near term. The University continues to navigate external risks through proactive financial planning - mitigation strategies include strategic enrollment management, cost reductions, cash conservation, and internal funding for crucial investments as well as development of new revenue sources.

  ii.   Consideration of Restructuring of Senate Long Range Planning Committee and Senate Finance Committee

        The committee considered the potential restructuring of the two committees to improve institutional coordination and reduce resource requirements by streamlining processes and addressing information asymmetry between finance and long-term planning topics. Such changes would align with structures seen at U15 comparators and would align with modern institutional needs, especially integrated budget planning.

        Both committees support the exploration of a possible restructuring, and potential options for consideration will be brought forward to the committees in the coming months.

For Information	**Open Session - Consent**

To:	Senate
From:	Senate Academic Quality Enhancement Committee
Presenter(s):	David DeVidi
	Associate Vice-President, Academic
Date of Meeting:	March 3, 2025
Agenda Item:	**10.5** **Report: Senate Academic Quality Enhancement Committee**

Summary

Senate Academic Quality Enhancement Committee conducted an e-vote concluding on January 27th, 2025 and agreed to forward the following items to Senate for information as part of the consent agenda. On behalf of Senate, the following items were approved:

Academic Program Reviews

Following the review of the reports and responses from the programs, the Committee approved the following reports:

a. Final Assessment Report: Accounting and Financial Management (BAFM)
b. Final Assessment Report: Cognitive Science (Minor, GDip) and Theoretical Neuroscience (GDip)
c. Final Assessment Report: Planning (BES, MA, MES, MPlan, PhD, GDip)

    There were no issues noted in the reports.

Jurisdictional Information

As **outlined in the committee's** Terms and Reference, Senate Academic Quality Enhancement Committee is empowered to make approvals on behalf of Senate for a variety of operational matters:

2. On behalf of Senate, consider and approve all Final Assessment Reports and Progress **Reports within the University's IQAP,** and provide Senate with a summary of the committee's deliberations in this regard. Any matter of controversy that might arise may be referred to Senate.

Governance Path

Senate Academic Quality Enhancement Committee approval date: 01/27/2025

For Discussion   **Open Session**

To: **Senate**

Sponsor: Charmaine B. Dean
Contact Information: Vice President Research and International

Date of Meeting: **March 3, 2025**

Agenda Item: **10.6 Awards, Distinctions, Grants, Waterloo
                           International Engagements**

Summary:

Presenting the Vice-President, Research and International February 2025 Report to
Senate. This report to Senate highlights key research, international and
entrepreneurial outputs and outcomes for December 2024.

Documentation Provided:

- Vice-President, Research and International February 2025 Report to Senate

Senate   **1**

**Vice-President, Research & International
Report to Senate
February 2025**

Introduction

This report to Senate highlights successful commercialization, research and international outputs and outcomes for the period December 2024.

Commercialization and Entrepreneurship Highlights

Current student success stories

Seun Adetunji (Master of Business Entrepreneurship and Technology, '24) - Founder and CEO - MedInclude
In December, the Velocity incubated health-teach start-up, MedInclude, announced a new partnership with Grand River Hospital (GRH) to address communication challenges within the hospital's Renal Program. This collaboration is a pre-commercialization project spanning three months which will leverage MedInclude's artificial intelligence (AI) platform to enhance patient engagement and streamline interactions between health-care providers and patients.

Forbes' 30 Under 30 List

The annual list highlights young entrepreneurs who are making a difference in their fields. The following University of Waterloo Students made the 2025 list.

*Holden Beggs (BASc.,'20) and Jackson Mills (Bachelor Computer Science,'21)
- Co-founders - The Zero Experience*
Driven by a shared vision, Holden Beggs and Jackson Mills founded The Zero Experience — a nonprofit with a mission to impart entrepreneurial skills to students at post-secondary institutions. The program emphasizes starting from scratch, teaching young innovators to execute their ideas even before they have a groundbreaking business concept. Since its inception in 2020, The Zero Experience has engaged 4,600 students, guiding them to develop practical solutions to pressing issues such as climate change. Both Beggs and Mills made the 2025 Forbes 30 under 30 list in the education category

Jeffrey Chu (BASc., '18) - Co-founder - Yuugi Izakaya
Jeffrey Chu began his journey on a conventional path, earning an engineering degree. However, his passion for food led him to a culinary class in Tokyo, sparking his dream of opening an izakaya-style restaurant in Toronto. Leaving his secure job, he started as a dishwasher at a Japanese restaurant, where he met chef Yuki Tanaka. Together, they launched Yuugi Izakaya. Chu has since opened Toronto's first Japanese sports bar, a café by day and bar at night, and is developing a boutique hotel set to open in early 2025. With $3.3 million in funding, he anticipates $3 million in revenue for 2024. Chu made the 2025 Forbes list in the food and drink category.

Dylan Conway (BASc., '20) and Jim Zhu (BASc., '20) - Co-founders - Squint
In 2021, Dylan Conway and Jim Zhu assisted to co-found Squint to bridge the knowledge gap between new manufacturers and retiring experts. Based in San Jose, California, the company develops AI-powered software that automates data entry, manages equipment and creates training plans for manufacturers. The company has secured $19 million in funding from investors like Sequoia and Menlo Ventures, with clients including Michelin, Nestlé, Colgate-Palmolive, Volvo, and Siemens. Zhu and Conway serve as the founding engineer and founding customer lead, respectively. Conway and Zhu made the 2025 Forbes list in the manufacturing and industry category.

Serena Ge (Bachelor Computer Science, no date available) and Charley Lee (Bachelor Computer Science, no date available) - Co-founders - Datacurve AI
During a machine learning internship at Cohere, Waterloo computer science student Serena Ge noticed a significant lack of quality data for training advanced AI models. Datacurve provides companies with data to train AI in coding through a gamified platform where contributors earn money by solving problems, thus generating valuable data for enterprises. The co-founders were involved with Velocity on campus through various events and programs and have recently joined Y Combinator, a prestigious startup incubator in Silicon Valley. Ge and Lee made the 2025 Forbes list in the AI category.

Vidyut Ghuwalewala (BA,'18) - Co-founder - Social Currant
In 2020, Waterloo's Peace and Conflict Studies student, Vidyut Ghuwalewala, helped launched Social Currant — a platform that links mission-driven organizations with social media creators to enhance their reach and develop marketing campaigns. Since its inception, Social Currant has collaborated with more than 3,000 creators, distributing more than $5 million directly to them. Social Currant generated $2 million in revenue in 2023 and anticipates $6 million this year. Their business model offers tiered services, from a "starter kit" that provides access to a database of content creators, to an "enterprise plan" for full-scale campaign management. Their clients include NextGen America, the U.S. Capitol Historical Society and Repair the World. Ghuwalewala made the 2025 Forbes list in the marketing and advertising category.

Aida Mollaei (Master Environmental Studies, '20, PhD '24) and Sheida Shahi (Civil and Environmental Engineering, PhD '21) - Co-founders – Adaptis Technologies)
Adaptis is at the forefront of sustainability innovation with a carbon optimization platform that has secured over $7 million in equity and non-dilutive funding. The Velocity startup has evaluated more than 400 buildings, enabling clients to save millions of dollars while preventing 145,000 tons of CO2 emissions. Mollaei and Shavi made the 2025 Forbes list in the energy and green tech category.

VPRI Senate Report: February 2025

Past student success stories
Mickey Areibi (Global Business and Digital Arts, '18) - Founder - [Blockchain Centre](#) *[in Abu Dhabi](#)*
During this period, Velocity signed a Memorandum of Understanding (MOU) with Mickey Areibi, founder of the Blockchain Centre [Abu Dhabi], to further connections in building world-class talent through training, events, entrepreneurship, and integration with Waterloo's co-op program. These connections will drive blockchain technology to unlock opportunities in health data, cybersecurity and beyond.

Funded Research Awards

Natural Resources Canada's Climate Change Adaptation Program
This program strengthens climate change adaptation capacity in Canada and abroad. In this period, **$1.2M** in funding was received for transformative projects that integrate climate change adaptation into professional degree programs and develop tools to build resilient supply chains.

- *Sarah Burch (Department of Geography and Environmental Management)*
- *Jose Di Bella (Manager of research and partnerships – Climate Institute)*

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Quantum funding

The National Quantum Strategy (NQS) aims to amplify Canada's significant strength in quantum research; grow Canadian quantum-ready technologies, companies and talent; and solidify global leadership in quantum science and its commercialization. The strategy allocates $360 million in funding between 2021/22 and 2027/28 across the three pillars of:

1) **Research** – Supporting basic and applied research to realize new solutions and new innovations.
2) **Talent** – Developing, attracting and retaining the critical talent from within Canada and around the world to build the quantum sector.
3) **Commercialization** – Translating research into scalable, commercial products and services that can benefit Canadians, our industries and the world.

In this period, the University of Waterloo was successful in gaining part of this funding across the following two programs:

3

NSERC Alliance International Catalyst Quantum

Alliance International Quantum grants provide support for researchers in Canada to establish and grow international research collaborations that will strengthen research excellence in Canada and abroad, and further develop Canadian research strengths and leadership in quantum science and technology. Last year, Waterloo secured two grants which totaled $50,000 ($25,000 value each). This year, there were five successful grants that totaled **$125,000.**

- *Roberto Guglielmi (Applied Mathematics)*
  Title: Control of quantum systems described by the Dirac equation
- *Kazi Rajibul Islam (Physics and Astronomy and the Institute for Quantum Computing)*
  Title: Simulating driven-dissipative systems on a trapped ion quantum processor
- *Anna Klinkova (Chemistry)*
  Title: Proof-of-Concept Quantum Shells with Boosted Quantum Confinement Obtained Using Customized Nanoreactors
- *Sushanta Mitra (Department of Mechanical and Mechatronics Engineering)*
  Title: A Novel Trapped Ion Architecture for Quantum Sensing
- *Ashwin Nayak (Combinatorics and Optimization and Institute for Quantum Computing)*
  Title: Algorithms for Quantum Computers

NSERC International Quantum Collaboration – United Kingdom Research and Innovation (UKRI)

In 2024, NSERC added a new grant competition to promote international quantum research and development between Canada and the United Kingdom.
Each project is selected for its potential to support key elements and specific missions of Canada's National Quantum Strategy and the UK National Quantum Strategy. The grant recipients work closely with their international counterparts, sharing knowledge and resources to achieve their collective research goals. This year, there were three successful projects that totaled **$1,369,500.**

Eihab Abdel-Rahman (Systems Design Engineering)
Title: Quantum NV-hBN Resonators for Advanced Sensing Applications
Amount: $380,000

Alexandre Cooper-Roy (Institute for Quantum Computing)
Title: Quantum-enhanced sensing with atoms and molecules
Amount: $500,000

Alex May (Physics and Astronomy)
Title: Quantum network applications in theory and practice
Amount: $489,500

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NSERC Alliance Advantage

Alliance grants encourage university researchers to collaborate with partner organizations from the private, public or not-for-profit sectors.
In this period, 19 researchers received funding that totaled **$5.3M.**

Nasser Mohieddin Abukhdeir (Chemical Engineering)
Title: Development and Application of a Generalized Adaptive Model for Large Conditioned Spaces
Partner: City of Waterloo
Amount: $200,000

Hector Budman (Chemical Engineering)
Title: Optimization of cell-culture based flu vaccine manufacturing process: genetic engineering and mathematical model-based approaches
Partner: Sanofi Pasteur Limited
Amount: $200,000

Trevor Charles (Biology)
Title: Functional metagenomics exploration and discovery of novel antimicrobial resistance
Partners: Ministry of the Environment, Conservation and Parks, Region of Waterloo, York Region
Amount: $800,000

Charles Clarke (Cheriton School of Computer Science)
Title: Tools to Support Lateral Reading of News Articles
Partner: Microsoft Vancouver
Amount: $100,000

Duane Cronin (Mechanical and Mechatronic Engineering)
Title: Side impact safety for vulnerable populations enabled by finite element human body models
Partner: Honda R&D Americas, Inc.
Amount: $223,636

Krzysztof Czarnecki (Electrical and Computer Engineering)
Title: Generating critical dynamic occlusion scenarios for assuring driving automation systems
Partner: Ford Motor Company (US)
Amount: $132,000

Kaan Inal (Mechanical and Mechatronic Engineering)
Title: A machine learning-based constitutive model to predict fracture and crashworthiness of quenched and partitioned steels
Partner: Natural Resources Canada
Amount: $60,000

VPRI Senate Report: February 2025

Kaan Inal (Mechanical and Mechatronic Engineering)
Title: Multiscale Modelling of Formability and Fracture in Magnesium Alloys at Various Temperatures and Strain Rates
Partner: General Motors of Canada Ltd.
Amount: $309,264

Lyndon Jones (Optometry and Vision Science)
Title: Developing a cells-on-a-chip eye model to measure the retention time eye drops containing hyaluronic acid
Partner: I-MED Pharma Inc.
Amount: $20,000

Karim Karim Sallaudin (Electrical and Computer Engineering)
Title: Non-destructive testing using high energy spectral and phase contrast X-ray
Partner: Hitachi High-Technologies Canada Inc.
Amount: $92,306

Bruce MacVicar (Civil & Environmental Engineering)
Title: Constraints on River Meandering in Cities
Partners: City of Calgary, National Research Council Canada
Amount: $108,200

Vivek Maheshwari (Chemistry)
Title: Catalytic material design for non-enzymatic lactate sensors for detection of anastomotic leaks post-surgery
Partner: NERv Technology Inc.
Amount: $100,000

Wayne Parker (Civil & Environmental Engineering)
Title: Transient responses in MABR systems
Partners: EIDCA Specialty Products Company, Ontario Clean Water Agency, Region of Waterloo, Veolia Water Canada
Amount: $246,150

Michael Pope (Chemical Engineering)
Title: Conductive additive development for improved Li-ion batteries
Partner: NanoRial
Amount: $148,826

David Rudolph (Earth and Environmental Studies)
Title: Optimizing Stream Baseflow Estimation with Numerical and Tracer Based Methods Through Field Investigations
Partners: Aquanty Inc, Ministry of the Environment, Conservation and Parks, Region of Waterloo
Amount: $150,000

Mark Servos (Biology)
Title: Improving wastewater-based surveillance of high-risk substances
Partners: Ministry of the Environment, Conservation and Parks, Region of Peel,
Region of Waterloo
Amount: $900,000

Weiyi Shang (Electrical and Computer Engineering)
Title: Test/Req Intelligent: Bridging the gap between testing and requirement in
WindRiver
Partner: Wind River
Amount: $461,230

Stephen Smith (Electrical and Computer Engineering)
Title: Scalable Flight Planning with Complex Airspace Restrictions and Fail-Safe
Constraints
Partner: Navblue
Amount: $276,840

Solomon Tesfamariam (Civil & Environmental Engineering)
Title: Interactive risk assessment framework of transmission gas network
Partner: Enbridge
Amount: $300,000

Ehsan Toyserkani (Mechanical and Mechatronic Engineering)
Title: Machine learning-driven defect detection using an integrated optical
tomography and melt pool monitoring setup during multi-laser powder bed fusion of
cobalt-based alloy
Partner: Voestalpine High Performance Metals Ltd.
Amount: $461,538

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Transport Canada - Enhanced Road Safety Transfer Payment Program
This program provides funding to support initiatives that contribute to a safe and
secure transportation system. The following two projects which totaled **$473,715**
were successful.

Bruce Hellinga (Civil & Environmental Engineering)
Title: Improving Road Safety in Canadian Municipalities
Amount: $235,138

Krzysztof Czarnecki (Electrical & Computer Engineering)
Title: Enhancing Driving Automation Safety in Canada: A Traffic Data-Driven
Approach for Advanced Driver Assistance System and Connected and Autonomous
Vehicle Test Scenarios
Amount: $238,577

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Fisheries and Oceans Canada

This program provides funding to build expertise in ocean and freshwater science and technology in areas that support Fisheries and Oceans Canada's mission to protect, sustain and restore fisheries and their supporting aquatic ecosystems. The following project received funding:

Anh Pham (Civil & Environmental Engineering)
Title: Development and validation of a passive sampler for PHCs and PFAS to support oil and hazardous and noxious substances spill response.
Amount: $334,211.00

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Mitacs

Mitacs is "Canada's leading innovation organization" that supports research and training through effective partnerships. Through matched funding programs, Mitacs connects researchers, government, and public and private sectors to promote innovation, complex problem solving, economic growth and productivity across a diverse range of sectors. These include advanced manufacturing, AI, cleantech, cybersecurity, health and life sciences, IT, quantum, and beyond. The following four Mitacs projects received **$525K** funding in this period:

Zhao Pan (Mechanical and Mechatronics Engineering)
Title: Lumos smart light therapy glasses, system to provide personalized light therapy
intervention for shift workers
Amount: $105,000

Christian Euler (Chemical Engineering)
Title: Polyglycolate homopolymer production in Escherichia coli
Amount: $120,000

Milad Kamkar (Chemical Engineering)
Title: Pyroguard: Development of New Materials to Replace Perfluoroalkyl Substances and Improve Carcinogen Protection in Firefighter and Other Protective Gear
Amount: $180,000

Bryan Tripp (Systems Design Engineering)
Title: Assessment of large language models for understanding patient needs
Amount: $ 120,000

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Awards and Distinctions

Kate Larson (Cheriton School of Computer Science)
2025 AAAI Elected Fellow
AAAI recognizes individuals who have made significant and sustained contributions to the field of artificial intelligence.

Jimmy Lin (Cheriton School of Computer Science)
2024 Fellow of the Association for Computational Linguistics
Lin has won the award for his significant contributions to machine learning for web search, natural language processing and conversational systems.

Mark Servos (Earth and Environmental Sciences)
2024 Award for Outstanding Contribution to Canadian Ecotoxicology, Canadian Ecotoxicity Workshop
Formerly known as the Aquatic Toxicity Workshop (ATW), CEW recognized Dr. Servos for his exceptional and enduring contributions to Canadian ecotoxicology.

Waterloo International

During December 2024 Waterloo International accomplished the following work towards its three strategic goals:

1) Enhancing International Priorities and Partnership Connections:

- **Signed a new MOU** with the *Catalan Institute of Nanoscience and Nanotechnology* to support research connections with the Waterloo Institute for Nanotechnology and to launch a seed funding program to bring researchers together for participation in the EU Horizon Pilar 2 initiative

2) Supporting International Talent Pipeline Development and Student Mobility:

- **Renewed a MOU** with the King Faisal University to facilitate discussions on international co-op opportunities for students.
- Registered 194 international university-sanctioned trips and monitored over 1300 active travellers.
- Monitored 40 high-risk global incidents and coordinated with six travellers impacted by high-risk global incidents.

3) Developing New International Opportunities:

- **Signed two new MOUs** with the *University of Sharjah and the Abu Dhabi Blockchain Centre* to facilitate future research collaboration and opportunities for international student mobility.

For Information   **Open Session**

To: Senate

From: Vice-President, Academic & Provost

Presenter(s):   James Rush
                     Vice-President, Academic & Provost

Date of Meeting: March 3, 2025

Agenda Item: 10.7   **Report of the Provost, Faculty Appointments, Leaves**

Summary:

The Faculty Reports for Senators' information regarding the variety of appointments, reappointments, special appointments, leaves, and other matters of interest about individuals in the Faculties are available at the Senate agenda page[1].

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1 https://uwaterloo.ca/secretariat/sites/default/files/uploads/documents/faculty-all-march-2025.pdf

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