Senate Graduate Council

Open Session

May 25, 2026

10:00 a.m. - 11:30 a.m.

Needles Hall

NH 3318

Waterloo Campus

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UNIVERSITY OF WATERLOO | Senate

2026 05 25 Senate Graduate Council Meeting Book

AGENDA

Next joint SGC/SRIC meeting will be held on June 15, 2026.

UNIVERSITY OF WATERLOO | Senate

For Approval **Open Session**

To:	Senate Graduate Council
From:	Tony Ly Governance Officer
Date of Meeting:	May 25, 2026
Agenda Item:	**2. Approval of the Agenda**

2.1. Conflict of Interest

Members are invited to declare any conflicts related to the open session agenda at this time. Should a conflict of interest arise during discussion, members are asked to declare a conflict of interest as it arises. Information and guidance on conflicts of interest is provided on the Secretariat website.

The Secretariat can provide guidance regarding potential conflicts of interest in advance of or during the 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 3.1 – 3.4.

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

2.3. Business Arising from the Minutes

None.

University of Waterloo
SENATE GRADUATE COUNCIL
Minutes of the April 16, 2026 Meeting

Present: Mike Beazely, Helen Chen, Rob de Loë, Alison Hitchens, Abhishesh Homagain, Brian Ingalls, Brian Laird, Christiane Lemieux, Tony Ly [Secretary], Lilhac Medina, Tizazu Mekonnen, Carter Neal, Christopher Nielsen, Brad Pomeroy, Ian Rowlands, Meray Sadek, Justin Wan [Chair]

Resources/Guests: Whitney Barrett, Melissa Benjamin, Shawn Fluttert, Pam Gilbertson, Carrie MacKinnon Molson, Marianne Simm, Richard Wikkerink

Regrets: Steven Bednarski, David Clausi, Charmaine Dean, Tom Duever, Vivek Goel, Nicholas Pelligrino, Clarence Woudsma

Organization of Meeting: Justin Wan took the chair and Tony Ly acted as secretary. The secretary advised that a quorum was present.

1. Governance Resources
This item was provided for information only.

2. Approval of Agenda
Council heard a motion to approve or receive for information the items of the consent agenda. Nielsen and Ingalls. Carried.

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

2.2. Approval of the Agenda and Consent Items
Council approved the agenda as distributed.

2.3. Business Arising from the Minutes
The Chair noted that there is a memo about SACC distributed in the agenda package.

3. Consent Agenda
3.1. Minutes of the March 3, 2026 Meeting
Council approved the minutes of the meeting as distributed.

3.2. Curricular Submissions
Council approved all curricular submissions items 3.2.1. – 3.2.5. on behalf of Senate.

3.3. Graduate Awards and Scholarships
Council received for information and approved all new awards and scholarships.

3.4. Graduate Studies Academic Calendar Updates
Council received for information the updated Graduate Studies Academic Calendar.

4. Regular Agenda

5. Chair's Remarks
The Chair provided an update on the Canada Impact+ Research Chairs Program noting strong international interests from both PhD (50) and postdoctoral (63) applicants. The Chair noted that the applications were primarily from the STEM disciplines. A second application cycle is anticipated in Spring 2026.

The Chair provided an update on the TA/RA unionization process including the development of a new Workday and Quest integrated system that will be operational by June 2026. Discussion on the minimum PhD funding focused on cost-of-living and competitiveness with peer institutions. There were two funding recommendations provided to the Provost, which included a 2.8% (cost-of-living adjustment) and a 4.76% (expanded cost considerations) increase with implementation anticipated for Spring 2026.

6. Curricular Submissions

6.1. Faculty of Arts

Pomeroy provided an overview of the major modifications from the Faculty of Arts. The program changes reflect the Faculty of Arts reorganization process. Research fields are not required by the provincial government. Departments may choose to have the research fields included in the student transcripts.

A motion was heard to recommend that Senate approves the major modifications to the Master of Catholic Thought (MCT), Doctor of Philosophy (PhD) in Applied Philosophy, Doctor of Philosophy (PhD) in Philosophy, Master of Arts (MA) in Philosophy, and the Doctor of Philosophy (PhD) in Religious Studies programs for the Faculty of Arts, effective September 1, 2026, as presented. Pomeroy and Neal. Carried.

6.2. Faculty of Engineering

Nielsen presented the major modifications from the Faculty of Engineering, which included updates to the Master of Business, Entrepreneurship and Technology (MBET) and the Master of Management Science (MMSc) programs. The landscape has changed since the inception of the MBET program, and the revisions aim to update admission requirements and increase the number of courses required for the program. For the MMSc program, the number of electives has changed, and the online courses are only available for students enrolled in the program.

A motion was heard to recommend that Senate approves the major modifications to the Master of Business, Entrepreneurship and Technology (MBET) and the Master of Management Science (MMSc) programs for the Faculty of Engineering, effective September 1, 2026, as presented. Nielsen and Beazely. Carried.

6.3. Graduate Studies Academic Calendar Updates

Simm presented the changes for the Graduate Studies Academic Calendar. Updates for Section 13.2.3 was deferred at the previous Senate Graduate Council meeting. The updated document includes revised language to improve clarity and reduce ambiguity.

A motion was heard to recommend that Senate approves the major modifications to the 2026 Graduate Studies Academic Calendar, effective September 1, 2026, as presented. Wan and Laird. Carried.

7. EdTech Project and Fee Proposal

Fluttert and Gilbertson provided a presentation about the proposed EdTech student technology fee. Consultation was done with various stakeholders on campus such as Deans' Council, Undergraduate Student Relations Committee, and Graduate Student Relations Committee. Currently, there is a temporary protocol that was approved by the Provost. The initiative aims to centralize educational technology procurement, reduce duplication, improve cybersecurity oversight, and lower student out-of-pocket software costs through institutional licensing. The proposed 2-year pilot will introduce a mandatory fee, which is expected to range from $10-25 per student. Council members raised questions regarding academic freedom, data sovereignty, privacy, fee allocation transparency, and implications for graduate students. There will be additional consultation with the Graduate Student Association, Waterloo Undergraduate Student Association, and the Associate Deans.

8. Relationship between Supervisors and Graduate Students
Barrett provided a brief overview of the annual report from the Ombuds Office. The relationship between supervisors and graduate students was the most common concern raised by graduate students. The students coming to the Ombuds Office are often trying to navigate and balance their concerns with their supervisors and degree completion. The Ombuds Office is a resource on campus that can support students and help them understand the university policies. Key discussion points from council members included: communication breakdowns, power imbalances, and challenges navigating supervisory conflicts. Council members emphasized the need for clearer expectations, stronger supervisor training, early intervention mechanisms, and better support structures for both students and faculty members. The Chair highlighted a new working group on campus that will focus on graduate supervision with ongoing collaboration between GSPA and the Ombuds Office.

9. Items Removed from the Consent Agenda
No item was removed from the consent agenda.

10. Other Business
No other items of business were identified.

11. Adjournment
The next meeting of the Senate Graduate Council will be held on May 25, 2026 from 10:00 a.m. - 11:30 a.m. in Needles Hall 3318.

Date 2026/05/05

Show Empty Fields

Meeting Information

Agenda Page Title
SGC - Arts - Consent Agenda - May 25, 2026

Career Level
Graduate,

Faculty/Unit
Arts

Date
2026-05-25

Summary

Course Proposals:

1) School of Accounting and Finance (ACC)

5 new courses

1) Theological Studies (TS) (Conrad Grebel University College)

3 course being inactivated

1 new course

Program Proposals:

1) History

1.1) PhD in History

a) Updating the minimum admission requirements for the PhD in History program.

Attachment(s)

Course Proposals

Courses: Retire

Code	Title	Type	Workflow Step
TS 617	Unity and Diversity in the New Testament	Courses	SGC, Senate Graduate Council (SGC)
TS 636	Christian Approaches to Peacemaking	Courses	SGC, Senate Graduate Council (SGC)
TS 686	Spiritual Formation Across the Life-Cycle	Courses	SGC, Senate Graduate Council (SGC)

Courses: New

Code	Title	Type	Workflow Step

ACC 631	Assurance and Trust	Courses	SGC, Senate Graduate Council (SGC)
ACC 632	Corporate Reporting	Courses	SGC, Senate Graduate Council (SGC)
ACC 633	Taxation	Courses	SGC, Senate Graduate Council (SGC)
ACC 634	Management Decision-Making and Value Creation	Courses	SGC, Senate Graduate Council (SGC)
ACC 635	Professional Leadership and Integration	Courses	SGC, Senate Graduate Council (SGC)
TS 720	Atonement	Courses	SGC, Senate Graduate Council (SGC)

Courses: Changes
No proposals have been added.

Programs & Plans Proposals

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
PhD in History	Doctor of Philosophy (PhD) in History	Programs	SGC, Senate Graduate Council (SGC)

Regulations Proposals

Regulations: Retire
No proposals have been added.

Regulations: New
No proposals have been added.

Regulations: Changes
No proposals have been added.

TS 617 - Unity and Diversity in the New Testament

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Winter 2027

Existing

Effective Term and Year
Fall 2023

Quest Course ID
12801

Offering Number
1

Proposal Details

Proposal Type
Retire

Academic Unit Approval
2026-02-06

Last Offering of Course
*

Retired Impact
No

Rationale for Change

This course has not been taught in the last five years and has significant overlap with TS 611 Studying the New Testament.

Course Information

Faculty
Theology

Academic Unit
Conrad Grebel University College

Subject Code
TS

Number
617

Title
Unity and Diversity in the New Testament

Abbreviated Title
Unity & Diversity N.T.

Description
A study of distinctive and shared ways in which New Testament authors view a variety of theological, ethical, and social issues.

Units

Exceptions to Fees or Academic Progress Units

0.50

No

Components

Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

TS 636 - Christian Approaches to Peacemaking

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Winter 2027

Existing

Effective Term and Year
Fall 2023

Quest Course ID
12808

Offering Number
1

Proposal Details

Proposal Type
Retire

Academic Unit Approval
2026-02-06

Last Offering of Course
*

Retired Impact
No

Rationale for Change

It is a course that was offered in conjunction with undergraduate RS and PACS courses that have not been taught for the past five years. None of our current faculty can teach this course.

Course Information

Faculty

Academic Unit

Theology

Conrad Grebel University College

Subject Code
TS

Number
636

Title
Christian Approaches to Peacemaking

Abbreviated Title
Christian Approaches

Description
A study of the foundations, history, and practice of peacemaking within the Christian tradition, including an exploration of the roots of present practice and the ecumenical and practical diversity of contemporary peacemaking.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

TS 686 - Spiritual Formation Across the Life-Cycle

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Winter 2027

Existing

Effective Term and Year
Fall 2023

Quest Course ID
15615

Offering Number
1

Proposal Details

Proposal Type
Retire

Academic Unit Approval
2026-02-06

Last Offering of Course

Retired Impact

*	No

Rationale for Change

This has not been taught for five years and was in an area of expertise by a professor who has retired. Parts of this course are covered in the existing course TS 689 Aging and the Spiritual Life and in TS 681 Personal Spirituality.

Course Information

Faculty
Theology

Academic Unit
Conrad Grebel University College

Subject Code
TS

Number
686

Title
Spiritual Formation Across the Life-Cycle

Abbreviated Title
Spiritual Formation:Life-Cycle

Description
This multidisciplinary course explores perspectives on human development with a 21st century cultural context, and Christian faith formation. Students will reflect on a theology of spiritual formation, the process of meaning making, age appropriate spiritual practices, life-cycle transitions, and crises of faith.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Seminar

Primary Component
Seminar

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

ACC 631 - Assurance and Trust

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-02-26

Rationale for New Course

This course is new to both the Master of Accounting (MAcc) and GDip in Accounting (a new program in development) programs and will be offered in Spring 2027. It is included here, as well as within the GDip Volume 1 Brief, to provide a complete and integrated understanding of the overall curriculum structure. It is designed to meet required program-level outcomes.

Course Information

Faculty
Faculty of Arts

Academic Unit
School of Accounting and Finance

Subject Code
ACC

Number
631

Title
Assurance and Trust

Abbreviated Title
Assurance and Trust

Description
This course considers the role of risk in the context of assurance and the client's risk management process and addresses the impact of risk on an assurance provider's professional practice using case studies. By the end of this course students will be able to assess the assurance needs of relevant stakeholders; identify risks in a variety of assurance contexts; describe appropriate procedures and other responses to the assessed risk; and integrate their knowledge of assurance, financial reporting, and governance standards to analyze and conclude on issues impacting assurance engagements over various subject matters.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Accounting Graduate Students Only**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path

Faculty/AFIW Path(s) for Workflow

Committee approvals

Faculty of Arts

Dependencies

There are no dependencies

ACC 632 - Corporate Reporting

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-02-26

Rationale for New Course

This course is new to both the Master of Accounting (MAcc) and GDip in Accounting (a new program in development) programs and will be offered in Spring 2027. It is included here, as well as within the GDip Volume 1 Brief, to provide a complete and integrated understanding of the overall curriculum structure. It is designed to meet required program-level outcomes.

Course Information

Faculty

Faculty of Arts

Academic Unit

School of Accounting and Finance

Subject Code
ACC

Number
632

Title
Corporate Reporting

Abbreviated Title

Corporate Reporting

Description
This course emphasizes financial and non-financial reporting standards and their application through the use of scenarios and case studies. By the end of this course, students will be able to assess the appropriateness of the reporting framework used to prepare financial and non-financial information; apply financial reporting standards such as ASPE and IFRS to analyze and measure routine and non-routine transactions at varying levels of complexity; and analyze the impact of non-financial metrics on organizational performance and relevant stakeholders.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Accounting Graduate Students Only**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

ACC 633 - Taxation

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-02-26

Rationale for New Course

This course is new to both the Master of Accounting (MAcc) and GDip in Accounting (a new program in development) programs and will be offered in Spring 2027. It is included here, as well as within the GDip Volume 1 Brief, to provide a complete and integrated understanding of the overall curriculum structure. It is designed to meet required program-level outcomes.

Course Information

Faculty

Faculty of Arts

Academic Unit

School of Accounting and Finance

Subject Code

ACC

Number

633

Title

Taxation

Abbreviated Title

Taxation

Description

This course will develop the students' skills in identifying and addressing advanced personal and corporate tax issues, using integrated case studies. By the end of the course, students will be able to explain and calculate the various components of personal and corporate income tax payable; measure the impact of personal and corporate tax planning opportunities; and explain appropriate tax treatment for GST.

Units

0.50

Exceptions to Fees or Academic Progress Units

No

Components

Lecture

Primary Component

Lecture

Grading Information

Grading Basis

Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?

No

Repeatable Courses

Can this course be repeated for credit?

No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Accounting Graduate Students Only**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

ACC 634 - Management Decision-Making and Value Creation

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-02-26

Rationale for New Course

This course is a new course unique to the Master of Accounting (MAcc) program and will be offered in Spring 2027. It is designed to meet the program's learning outcomes.

Course Information

Faculty
Faculty of Arts

Academic Unit
School of Accounting and Finance

Subject Code
ACC

Number
634

Title
Management Decision-Making and Value Creation

Abbreviated Title
Mgmt Dec/Value Creation

Description
This course reviews and integrates value creation, management accounting, finance, and various other theories and analytical approaches to provide insight into the problems facing management and executives using cases designed to expose students to real world situations requiring qualitative and quantitative analysis. By the end of this course students will be able to identify and analyze strategic, operational, and/or financing issues faced by decision-makers and alternative solutions to address those issues by applying appropriate quantitative and qualitative analysis to support conclusion and recommended actions.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Accounting Graduate Students Only**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

ACC 635 - Professional Leadership and Integration

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-02-26

Rationale for New Course

This course is a new course unique to the GDip in Accounting (a new program in development) program and will be offered in Spring 2027. It is designed to meet the program's learning outcomes.

Course Information

Faculty
Faculty of Arts

Academic Unit
School of Accounting and Finance

Subject Code
ACC

Number
635

Title
Professional Leadership and Integration

Abbreviated Title
Prof Leadership & Integ

Description
This course will enhance students' technical and communication skills through the application and integration of their knowledge in a variety of cases, and will include advanced topics in Management Decision Making, Strategy & Governance and Finance. By the end of this course, students will be able to assess the impact of ethical decisions and governance practices on organizational performance, the risks associated with non-compliance with standards, laws, and regulations, a company's financial risks and financial health, the feasibility of capital projects and appropriate financing alternatives, and value creation

through an analysis of cost management, governance and controls, systems and strategy.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Accounting Graduate Students Only**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

TS 720 - Atonement

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Winter 2027

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-02-06

Rationale for New Course

This has been offered as a TS 690 “Special Topics” course on two occasions – Winter 2021 and Winter 2023. It is scheduled for Winter 2027. There is substantial interest in this topic among students, and the plan is to offer this course approximately once every three years.

Course Information

Faculty
Theology

Academic Unit
Conrad Grebel University College

Subject Code
TS

Number
720

Title
Atonement

Abbreviated Title
Atonement

Description
This course is a critical examination of the diverse ways the Christian tradition proposes that Jesus Christ brings about the salvation of human beings, and the practical implications of various models.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Seminar

Primary Component
Seminar

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
Department consent required

Consent to Drop
No consent required

Prerequisites

Corequisites

Antirequisites

- **Not completed nor concurrently enrolled in: TS690 (Topic 15: Atonement)**

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

PhD in History - Doctor of Philosophy (PhD) in History

Top

Effective Date and Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2026

Existing

Effective Term and Year
Fall 2025

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-03-10

Quality Assurance Designation
Minor Modification Qad

Is there an impact to existing students?
No

Is the credential name changing?
No

Graduate Co-operative Requirements
Not Applicable

Change to Learning Outcomes
No

Rationale and Background for Change(s)

The current language for the History Ph D admissions process does not align with language used at the two other institutional members of the Tri-University Graduate Program. The current language limits the graduate committee's input at the home institution and allows for final decisions to be made by stakeholders outside of the University of Waterloo. This change will allow the home institution to have primary decision-making authority and will bring the admissions language into alignment with the other institutions.

General Program/Plan Information

Faculty
Faculty of Arts

Academic Unit
Department of History

Graduate Field of Study
History

Faculty
Faculty of Arts

Program/Plan Name
Doctor of Philosophy (Ph D) in History

Graduate Credential Type
PhD

Accelerated Program
Not applicable

Program Types

Joint

Admit Term(s)

Fall

Delivery Mode

On-campus

Registration Option(s)

Full-time

Graduate Research Fields

- Canadian History
- Cold War Era History
- Early Modern European History
- Indigenous History
- Medieval History
- Modern European History
- Race, Imperialism and Slavery
- Scottish History
- War and Society
- World History

Additional Program Information

- The Tri-University Graduate Program in History brings together the faculty members and resources of three of Ontario's leading universities to develop the skills of historians in both traditional and innovative ways. The Tri-University's Ph D program was begun in 1994 as a way of combining the two small, but well-established Ph D programs at the University of Guelph and the University of Waterloo, with the members of the History department at Wilfrid Laurier University. This program integrates the skill and knowledge of over fifty faculty members and offers students a wide range of research approaches and expertise. In 2001 the successful Tri-University concept was extended to include the Master's degree in History.

Admissions

Admission Requirements: Minimum Requirements

Proposed

Admission Requirements: Minimum Requirements

- Students will be admitted only after they have obtained a Master of Arts (MA) degree or equivalent in which they have received at least an 83% standing. Direct admission following a Honours Bachelor of Arts (BA) degree is permissible only rarely, and for outstanding applicants. Only students who are graduates of accredited Universities and Colleges are eligible for admission. Since not all applicants can be admitted, close attention is paid to samples of applicant's written work, to applicant's transcripts and past record as a whole, and to their statement of research interests.
- Applications are considered by the Department of History at the University of Waterloo and the Coordinating Committee of the Tri-University Graduate Program.
- Students in the program are governed by the general regulations of the university in which they are registered and their degree is granted by that university.
- No student will be assigned to a doctoral supervisor without approval from the supervisor.
- Statement of the applicant's research interests.
- English language proficiency (ELP) (if applicable)

Existing

Admission Requirements: Minimum Requirements

- Students will be admitted only after they have obtained a Master of Arts (MA) degree in which they have received at least an 83% standing. Only students who are graduates of accredited Universities and Colleges are eligible for admission. Since not all applicants can be admitted, close attention is paid to samples of applicants' written work, to applicants' transcripts and past record as a whole, and to their statement of research interests. Applications are considered by the Coordinating Committee of the Tri-University Graduate Program.
- Students will not be accepted into the program without the agreement of the Coordinating Committee, the local Graduate Committee and the Faculty of Graduate Studies at the university at which they must register. No student will be assigned to a doctoral supervisor without approval from the supervisor.
- Statement of the applicant's research interests.
- English language proficiency (ELP) (if applicable)

Admission Requirements: Application materials

- Program-specific questions (PSQ)
- Statement of interest
- Transcript(s)
  - From previous institutions.
- Writing sample
  - Sample of the student's scholarly writing.

Admission Requirements: References

- Number of references: 3
- Type of references: academic

Requirements Information

Graduate Degree Requirements

- Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).

Graduate Course Requirements

No Rules

Graduate Course Requirements

- Each student is required to demonstrate competency in 1 major field and 2 minor areas. In the minor areas, competency is demonstrated by successful completion of 2 area seminars. In the major field, students must successfully complete a major field seminar (HIST 710-719), a written qualifying exam (HIST 704) and oral qualifying exam (HIST 701). All the major field seminars within the following areas of study are offered each year: Canadian history; early modern European history; Indigenous history; modern European history; race, imperialism and slavery; Scottish history; and war and society. The Coordinating Committee, in collaboration with the student, will establish the minor field seminars appropriate for that student.
- The major field is the student's primary area of concentration; it provides the background and context for thesis research and will, in all likelihood, serve as the area in which graduates apply for academic jobs. The basis of the major field is the major field reading list. Students are examined on their knowledge of their field list through a seminar, a major field written exam and a major field oral qualifying exam. These components of the major field will each be graded separately.
- The major field reading list will consist of the equivalent of 100 books, approximately half of which will be read in the major field seminar and half by students independently. The major field seminar (HIST 710-719) must be successfully completed in the first year of the student's program. The major field qualifying exams are normally taken at the beginning of the students' fourth term in the program. In the major field qualifying exams students will be examined on their knowledge of the entire major field reading list. The exam will consist of a written portion (HIST 704) and an oral portion (HIST 701) with a separate grade assigned for each part. The oral portion of the exam will normally be held within two weeks of the successful completion of the written portion. Students may not complete the oral portion if they fail to pass the written, but they must pass the oral to successfully complete the examination process.
- The minor areas represent the secondary areas of concentration; they are intended to provide students with a supplementary teaching area and a comparative understanding of works in their dissertation research area. These two goals may be combined in each minor area course or the director, in consultation with the student, the thesis advisor and the seminar instructors, may coordinate a program in which one area is primarily geared towards a second teaching area and the other towards developing an understanding of the students' primary research areas beyond their major field. The reading list for each minor area seminar (HIST 759-771) will consist of the equivalent of 50 books. The minor area seminars are normally completed during the first two terms of the student's program, however, students may choose to take their minor area seminars in their fourth and fifth terms.
- Minor field seminar instructors may require students to attend a one-term MA-level historiographical seminar in partial completion of their field requirement. A student who fails to pass either of their minor field seminars will be required to withdraw from the program. The minor field seminar reading list is drawn up by each minor field instructor. The minor field reading lists and outline will be deposited in the student's file prior to the completion of the field.

Milestone Requirements

Ph D Language Requirement

- If no specific language is required for the student's research (as authorized by the student's Advisory Committee), the second language will be French. The determination of the second language will be made by the student's Advisory Committee in the first term of the student's registration in the program. The language exam will be offered every Fall and Winter term and it is expected that a student will successfully complete the test no later than the sixth term following admission into the program.
- The same requirement will hold for students whose native language is French except that it will be applied to a reading knowledge of English.
- The language exam is intended to evaluate the candidate's reading knowledge of a second language and is not to be understood as a test of fluency. Use of a dictionary is allowed during the exam. A student who has already fulfilled a language requirement, for example through an equivalent exam previously taken, may have credit given for that work by their Advisory Committee. Completion of an undergraduate course is not in itself considered an equivalent.

Ph D Professional Development Seminar

- Students must attend the Professional Development Seminar in their first year of the program. The seminar is designed to prepare students for success as a Ph D student and for their future careers. A pass/fail grade will be assigned for the seminar.
- The seminar will consist of 8 sessions covering a range of topic areas, including - the historians' craft (researching, conferencing, and publishing), careers (teaching and non-teaching work) and keys to success as a graduate student (applying for grants, and success as a teaching assistant). Seminars will rotate across each of the three campuses. Attendance and/or participation in the Tri-University Conference is included in the Professional Development Seminar.

Graduate Studies Colloquium

- The colloquium is a public presentation of a chapter, significant portion, or summary of the student's thesis. In exceptional circumstances, the Advisory Committee may also approve the presentation of a paper on another topic. The colloquium paper will be presented within three terms of the completion of the thesis proposal. A grade of pass/fail will be assigned for the colloquium.
- The exact scheduling will be determined by the supervisor/advisor in consultation with the student and the Advisory Committee. Students are expected to consult with their Advisory Committee on a suitable topic for the colloquium. An abstract of the colloquium paper must be approved by the Supervisory Committee before the supervisor/advisor can schedule the colloquium defense. The entire committee will be provided with copies of the colloquium paper at a minimum of no less than one week in advance of the presentation. The student will present the paper orally (normally no more than 20 minutes) after which committee members will examine the candidate on their draft chapter and presentation. The colloquium presentation is a public event. Time permitting, guests attending the colloquium will be invited to ask questions following the formal examination. A pass/fail grade will be assigned by the Committee at the end of the examination.

Ph D Thesis Proposal

- All doctoral students will present a thesis proposal of no more than 2000 words including citations by the end of the Fall or Winter term (whichever comes first) following the completion of their three fields. The student will be examined orally on the proposal by the Advisory Committee within four weeks of submission of the proposal to the director and a pass/fail grade will be assigned.

Ph D Thesis

- Following successful completion of all other requirements, the student must complete, under the supervision of a tri-university doctoral program faculty member, an original research project on an advanced topic. Each student will be required to write and successfully defend a thesis of such cogency and originality as will represent a significant contribution to knowledge. The thesis will normally be between 50,000 and 90,000 words in length. The regulations and procedures at the university in which the student is enrolled will govern the thesis format and the thesis examination.

Notes

- Department of History website
- Doctor of Philosophy (Ph D) in History future graduate students program page

Specializations

Undergraduate Plan Guidelines

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

Prerequisites

- HIST 704 - Major Field Written Qualifying Examination View Program
- HIST 760 - Canadian History Minor Area Seminar View Program
- HIST 761 - British History Minor Area Seminar View Program
- HIST 763 - Community Studies Minor Area Seminar View Program
- HIST 766 - Gender, Women and Family Minor Area Seminar View Program
- HIST 768 - United States Minor Area Seminar View Program
- HIST 770 - Science, Medicine and Technology Minor Area Seminar View Program
- HIST 771 - Minor Area of Concentration View Program
- HIST 701 - Major Field Oral Qualifying Examination View Program
- HIST 710 - Canadian History Major Field View Program
- HIST 769 - International Relations Minor Area Seminar View Program
- HIST 712 - Scottish History Major Field View Program
- HIST 714 - Early Modern European History Major Field View Program
- HIST 715 - Modern European History Major Field View Program
- HIST 762 - Scottish History Minor Area Seminar View Program
- HIST 764 - Early Modern European History Minor Area Seminar View Program
- HIST 765 - Modern European History Minor Area Seminar View Program
- HIST 767 - Race, Class, Imperialism and Slavery Minor Area Seminar View Program
- HIST 719 - War and Society Major Field View Program
- HIST 759 - War and Society Minor Area Seminar View Program
- HIST 725 - Cold War Era History Major Field View Program
- HIST 726 - Medieval History Major Field View Program
- HIST 727 - World History Major Field View Program
- HIST 775 - Cold War Era History Minor Area Seminar View Program
- HIST 776 - Medieval History Minor Area Seminar View Program
- HIST 777 - World History Minor Area Seminar View Program
- HIST 728 - Indigenous History Major Field View Program
- HIST 778 - Indigenous History Minor Area Seminar View Program

Date 2026/05/07

Show Empty Fields

Meeting Information

Agenda Page Title
SGC - Engineering - Consent Agenda - May 25, 2026

Career Level
Graduate,

Faculty/Unit
Engineering

Date
2026-05-25

Summary

Course Proposals:

1) Biomedical Engineering:

3 new courses

Program Proposals:

1) Biomedical Engineering:

1.1) PhD in Biomedical Engineering

a. *Removing 500 level courses on field-specific course list and replacing them with 700 level courses.*
b. *Adding ME 780 topic 45 and ME 641 to field-specific course list.*
c. *Revising the PACE Milestone to exempt PhD students from presenting at the BME Research Day the year(s) they are presenting at the BME Seminar Series.*
d. *Changing the standard English language proficiency (ELP) requirement test scores to the alternative minimum scores. (attached)*

1.2) MASc in Biomedical Engineering:

a. *Revising the minimum average admission requirement for the MASc program.*
b. *Adding ME 780 topic 45 and ME 641 to field-specific course list.*
c. *Adding BME 700 level courses (BME 721, BME 722, and BME 723) to BME 500 level courses (BME 550, BME 551, and BME 553) to be held with.*
d. *Changing the standard English language proficiency (ELP) requirement test scores to the alternative minimum scores. (attached)*

2) Chemical Engineering

Electrical and Computer Engineering

Management Science and Engineering

Systems Design Engineering

2.1) MEng in Chemical Engineering - Co-operative Program

2.2) MEng in Chemical Engineering - Health Technologies - Co-operative Program

2.3) MEng in Electrical and Computer Engineering - Co-operative Program

2.4) MEng in Electrical and Computer Engineering - Health Technologies - Co-operative Program

2.5) Master of Applied Science (MASc) in Management Science and Engineering - Co-operative Program

2.6) Master of Management Science (MMSc) - Co-operative Program

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

2.8) Master of Engineering (MEng) in Systems Design Engineering - Health Technologies - Co-operative Program

a. *Replacing the Department supported "Graduate Studies Work Report" milestone with the CEE supported "Graduate WIL Reflective Report" milestone. (attached).*

Attachment(s)

- BME PhD MASc - ELP Revisions - Reviewed by GSPA.pdf
- ENG - GradWIL Reflective Report - graduate_studies_program_revision_template - Reviewed by GSPA.pdf

Course Proposals

Courses: Retire
No proposals have been added.

Courses: New

Code	Title	Type	Workflow Step
BME 721	Sports Engineering	Courses	SGC, Senate Graduate Council (SGC)
BME 722	Biomechanics of Human Movement	Courses	SGC, Senate Graduate Council (SGC)
BME 723	Mechanics of Biomedical and Biological Materials	Courses	SGC, Senate Graduate Council (SGC)

Courses: Changes
No proposals have been added.

Programs & Plans Proposals

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
PhD in Biomedical Engineering	Doctor of Philosophy (PhD) in Biomedical Engineering	Programs	SGC, Senate Graduate Council (SGC)
MASc in Biomedical Engineering	Master of Applied Science (MASc) in Biomedical Engineering	Programs	SGC, Senate Graduate Council (SGC)

Regulations Proposals

Regulations: Retire
No proposals have been added.

Regulations: New
No proposals have been added.

Regulations: Changes
No proposals have been added.

BME 721 - Sports Engineering

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-03-02

Rationale for New Course

BME 550 is currently listed on the field-specific course list (which is a course requirement) for the BME Ph D program. We would like to remove BME 550 and add BME 721 as a held-with course for Ph D students to take.

Course Information

Faculty
Faculty of Engineering

Academic Unit
Dean of Engineering Office

Subject Code
BME

Number
721

Title
Sports Engineering

Abbreviated Title
Sports Engineering

Description
This course focuses on the application of engineering principles to the analysis of sports equipment and their effects on athletic performance. Principles of mechanics are used to understand the motion and forces arising in sports equipment, and their interaction with the musculoskeletal dynamics of athletes. (Held with BME 550. Students in BME 721 will be expected to meet some additional learning objectives.)

Units

Exceptions to Fees or Academic Progress Units

0.50

No

Components

Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

Corequisites

Antirequisites

- **Not completed nor concurrently enrolled in: BME550**

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Engineering

Dependencies

There are no dependencies

BME 722 - Biomechanics of Human Movement

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-03-02

Rationale for New Course

BME 551 is currently listed on the field-specific course list (which is a course requirement) for the BME Ph D program. We would like to remove BME 551 and add BME 722 as a held-with course for Ph D students to take.

Course Information

Faculty
Faculty of Engineering

Academic Unit
Dean of Engineering Office

Subject Code
BME

Number
722

Title
Biomechanics of Human Movement

Abbreviated Title
Biomechanics of Human Movement

Description
This course introduces students to the biomechanics of the musculoskeletal system, including motor control and rehabilitation engineering. Multibody models in two-dimensional (2D) and three-dimensional (3D) will be used to study the dynamics of normal and pathological motions. Motor control will be included, as well as the identification of body segment parameters and the dynamics of muscles. Applications may include assistive devices, rehabilitation, human gait, occupational biomechanics, and other activities. (Held with BME 551. Students in BME 722 will be expected to meet some additional learning objectives.)

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

Corequisites

Antirequisites

- **Not completed nor concurrently enrolled in: BME551**

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Engineering

Dependencies

There are no dependencies

BME 723 - Mechanics of Biomedical and Biological Materials

Top

Effective Date & Career

Career
Graduate

Effective Term and Year
Fall 2026

Proposal Details

Proposal Type
New

Academic Unit Approval
2026-03-02

Rationale for New Course

BME 588 Topic 1 (which has been replaced with BME 553) is currently listed on the field-specific course list (which is a course requirement) for the BME Ph D program. We would like to remove BME 588 Topic 1 and add BME 723 as a held-with course for Ph D students to take.

Course Information

Faculty
Faculty of Engineering

Academic Unit
Dean of Engineering Office

Subject Code
BME

Number
723

Title
Mechanics of Biomedical and Biological Materials

Abbreviated Title
Mech of Biomed & Bio Materials

Description
This course covers select topics fundamental to the study of the mechanical behaviour of biological (e.g., bone, tendon, skin, cartilage, et.c) and synthetic (polymers, ceramics, metals, etc.) biomaterials with a strong emphasis on materials found in medicine (biomedical materials). Topics will include a selection of basics of continuum mechanics, structure-function-property (mechanistic) relationships, linear and non-linear elasticity, viscoelasticity, anisotropy, failure criteria, fracture, fatigue, and fundamentals of mechanical testing in the biomaterials and tissues context.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?

No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

Corequisites

Antirequisites

- **Not completed nor concurrently enrolled in: BME588 (Topic 1: Biomech of Bone-Implant System) and BME553**

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Engineering

Dependencies

There are no dependencies

PhD in Biomedical Engineering - Doctor of Philosophy (PhD) in Biomedical Engineering

Top

Effective Date and Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2026

Existing

Effective Term and Year

Spring 2026

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-03-02

Quality Assurance Designation
Minor Modification Qad

Is there an impact to existing students?
Yes

Impact on Existing Students

Registered students will be allowed to count these courses as part of their field-specific course requirement. Students will have the option to follow the updated requirements since the changes are considered to be in their favour.

Is the credential name changing?
No

Graduate Co-operative Requirements
Not Applicable

Change to Learning Outcomes
No

Rationale and Background for Change(s)

1) Remove 500 level courses on field-specific course list and replace them with 700 level courses. We are requesting to remove the 500 level courses that are listed on field-specific course list and replace them with 700 level courses as Ph D students are not to take 500 level courses.
2) Add ME 780 topic 45 and ME 641 to field-specific course list. We are requesting to add ME 780 topic 45 and ME 641 to the field-specific course requirement. These courses relate to our fields, and therefore students who take these courses should have them count towards their field-specific course requirement.
3) Revise the PACE Milestone to exempt Ph D students from presenting at the BME Research Day the year(s) they are presenting at the BME Seminar Series. We have received feedback from students and faculty that the BME Ph D program requires students to present a large number of presentations. This includes presenting at all BME Research Days and presenting 2 seminars during the BME Seminar Series. This is taking away time from completing research and course work. Due to this, we would like to exempt Ph D students from presenting at the BME Research Day the year(s) they are presenting at the BME Seminar Series.

General Program/Plan Information

Faculty

Faculty of Engineering

Academic Unit

Dean of Engineering Office

Graduate Field of Study

Biomedical Engineering

Faculty
Faculty of Engineering

Program/Plan Name
Doctor of Philosophy (Ph D) in Biomedical Engineering

Graduate Credential Type
PhD

Accelerated Program
Not applicable

Admit Term(s)
Fall, Winter, Spring

Delivery Mode
On-campus

Length of Program

- Students are required to complete the program in accordance with the University program time limits.

Registration Option(s)
Full-time

Graduate Research Fields

- Biomaterials, Tissue Engineering, and Drug Delivery
- Biomechanics and Rehabilitation
- Biomedical Signals and Devices
- Biomedical Imaging Technology
- Biomedical Informatics

Admissions

Admission Requirements: Minimum Requirements

- Ph D (regular entry) applicants who completed a research thesis-based master's degree (or equivalent) in engineering, applied science, or science from a recognized institution with at least an overall 80% average and documented evidence of potential to excel in Ph D studies and research.
- Ph D (direct from Honours Biomedical Engineering (BME) undergraduate entry) applicants require a minimum overall average of 80% in a BME program at the undergraduate level and clear evidence of excellent potential to excel in Ph D studies and research. Substantial research experience is expected.
- Applicants who are deemed by the graduate coordinator, BME graduate program director, Admissions Committee or intended advisor to have an inadequate depth of technical BME background may be directed to take additional foundational courses, to be specified at the time of admission.
- English language proficiency (ELP) (if applicable)

Admission Requirements: Application materials

- Program-specific questions (PSQ)
- Résumé
- Statement of interest
- Transcript(s)

Admission Requirements: References

- Number of references: 3
- Type of references: 2 from academic sources that are able to comment upon academic preparation and research ability.

Requirements Information

Graduate Degree Requirements

- Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).

Graduate Course Requirements

No Rules

Graduate Course Requirements

Proposed

Graduate Course Requirements

- Students are required to successfully complete 4 graduate-level courses (with unit weights of 0.50 each), including 1 core biomedical engineering course (BME 601, BME 602, or BME 603), 1 field-specific course from the list below, and 2 elective courses.
    - The field specific course and the chosen electives must be approved by the supervisor(s).
    - All courses are expected to be completed by the end of term 4.
    - Further courses may be required by the supervisor(s) in consultation with the Director of Biomedical Engineering Graduate Programs depending on the student's educational background.
    - Students who have completed the MASc program in BME at Waterloo may apply and continue to the doctoral program. In this situation, students will have already completed the core course requirements (one of BME 601, BME 602, or BME 603), a field-specific course and two electives as part of their master's degree requirements. To satisfy the Ph D program requirements, these students must complete a total of four courses including a) one core course requirement (one of BME 601, BME 602 or BME 603 that was not completed as part of the MASc in BME program); b) two additional electives; c) an additional field-specific course if they have switched fields between MASc and Ph D.
- Students admitted directly to the Ph D program who possess an honour's undergraduate degree in biomedical engineering are required to complete a minimum of 7 courses (with 0.50 credits each), including 1 core BME course (BME 601, BME 602, BME 603), 2 field-specific courses from the list below, and 4 elective courses.
    - The field specific course and the chosen electives must be approved by the supervisor(s).
    - All courses are expected to be completed by the end of term 5.
- Student must select their field-specific course(s) from the following list:
    - Biomaterials, Tissue Engineering and Drug Delivery
        - BIOL 636 Advanced Immunology
        - BME 611 Materials Biocompatibility
        - CHE 601 Theory and Application of Transport Phenomena
        - CHE 602 Chemical Reactor Analysis
        - CHE 612 Interfacial Phenomena
        - CHE 620 Applied Engineering Mathematics
        - CHE 640 Principles of Polymer Science
        - CHE 660 Principles of Biochemical Engineering
        - CHE 663 Bioseparations
        - CHE 760 Special Topics in Biochemical Engineering
        - ECE 601 Foundations of Biology in Engineering
        - KIN 657 Human Neuroanatomy
        - PHARM 609 Advanced Pharmacokinetics
        - PHARM 610 Topics in Drug Development
        - PHARM 617 Formulations
        - SYDE 684 Materials Biocompatibility
    - Biomechanics and Rehabilitation
        - AMATH 663 Fluid Mechanics
        - BME 721 Sports Engineering
        - BME 722 Biomechanics of Human Movement
        - BME 723 Mechanics of Biomaterials and Tissues
        - KIN 601 Skeletal Muscle Physiology: Structure & Function
        - KIN 602 Respiratory and Cardiovascular Physiology
        - KIN 603 Cardiac and Vascular Smooth Muscle Physiology
        - KIN 611 Biomechanics of Human Motion
        - KIN 613 Modern Methods in Biomechanical Modeling, Kinematics, and Kinetics
        - KIN 620 Ergonomic Aspects of Occupational Musculoskeletal Injuries
        - ME 621 Applied Finite Element Methods
        - ME 641 System Identification & Adaptive Control
        - ME 662 Advanced Fluid Mechanics
        - ME 663 Computational Fluid Dynamics
        - ME 720 Special Topics in Solid Mechanics Topic 5: Impact Biomechanics
        - ME 720 Special Topics in Solid Mechanics Topic 4: Mechanics of Medical Devices
        - ME 780 Special Topics in Mechatronics Topic 37: Human Movement Neuromechanics
        - ME 780 Special Topics in Mechatronics Topic 45: Collaborative Robotics
        - PHYS 752 Molecular Biophysics
        - SYDE 644 Human Factors Testing
        - SYDE 652 Dynamics of Multibody Systems
    - Biomedical Signals and Devices

        - ECE 638 Biosensing: Fundamentals and Applications
        - ECE 770 Special Topics in Antenna and Microwave Theory Topic 4: Computational Methods for Engineering Electromagnetics
        - KIN 653 Human Neuroscience Theory
        - ME 641 System Identification & Adaptive Control
        - ME 646 Design for Additive Manufacturing
        - ME 720 Special Topics in Solid Mechanics Topic 4: Mechanics of Medical Devices
        - ME 739 Manufacturing Processes Topics Topic 3: Materials for Nano & Microelectromechanical Systems
        - ME 765 Special Topics in Fluid Mechanics Topic 22: Microfluidic and MEMS Systems and Applications
        - ME 780 Special Topics in Mechatronics Topic 32: Neural and Rehabilitation Engineering
        - ME 780 Special Topics in Mechatronics Topic 45: Collaborative Robotics
        - NANO 604 Nanomechanics and Molecular Dynamics Simulations
        - SYDE 750 Topics in Systems Modelling Topic 38: Social Robotics

    - Biomedical Imaging Technology

        - BME 641 Medical Imaging
        - ECE 607 Fundamentals of Ultrasonics
        - ECE 613 Image Processing and Visual Communication
        - ECE 675 Radiation & Propagation of Electromagnetic Fields
        - ME 720 Special Topics in Solid Mechanics Topic 20: Acoustics
        - PHYS 751 Clinical Applications of Physics in Medicine
        - SYDE 671 Advanced Image Processing
        - SYDE 672 Statistical Image Processing
        - SYDE 675 Pattern Recognition
        - SYDE 677 Medical Imaging
        - SYDE 780 Selected Topics in Engineering Sciences Topic 13: Biomedical Optics

    - Biomedical Informatics

        - AMATH 882 Mathematical Cell Biology
        - BIOL 614 Applied Bioinformatics and Genomics
        - BME 651 Big Data Analysis: Health and Biomedical Engineering
        - HLTH 612 Data Structures and Standards in Health Informatics
        - HLTH 615 Requirements Specification and Analysis in Health Systems
        - HLTH 717M Advanced Artificial Intelligence in Health I (0.25 unit weight) and HLTH 718M Natural Language Processing Algorithm and Application in Health (0.25 unit weight)
        - KIN 613 Modern Methods in Biomechanical Modeling, Kinematics, and Kinetics

    - BME and health electives (general electives that include topics in more than one research fields)

        - ECE 603 Statistical Signal Processing
        - ECE 608 Quantitative Methods in Biomedical Engineering
        - ECE 757A Embodied Intelligence
        - KIN 601 Skeletal Muscle Physiology: Structure & Function
        - KIN 606 Molecular Basis of Disease
        - KIN 607 Integrative Energy Metabolism in Health and Disease
        - KIN 608 Introduction to Genetics for the Biosciences
        - KIN 612 Instrumentation and Signal Processing in Biophysical Research
        - KIN 646 Physiological and Biochemical Analysis of Nutrition and Health
        - KIN 653 Human Neuroscience Theory
        - KIN 654 Instrumentation in Neuroscience Research
        - MSE 619 Healthcare Analytics
        - SYDE 642 Cognitive Engineering Methods
        - SYDE/ECE 750 Topics in Systems Modelling/Special Topics in Computer Software Topic 37/32: Biology and Computation
        - SYDE 750 Topics in Systems Modelling Topic 39: Embodied Intelligence

    - In every case, a graduate course program is established by the supervisor(s) in consultation with the student and is subject to the approval of the Director of the BME Graduate Program. Candidates may also be required to take additional courses as a result of a comprehensive examination. Students pursuing one of the program's Graduate Research Fields should inform their supervisor(s) of their chosen field(s) to ensure appropriate course selection.

    - The Faculty of Engineering requires that no more than one-half of the courses used for credit towards a graduate degree may be taught by the candidate's supervisor(s). In the case of co-supervision in small research groups, it may be necessary to relax this rule, but the student's file must contain a statement of formal approval from the BME graduate program director and endorsement from the Associate Dean for Graduate Studies and Postdoctoral Affairs in the Faculty of Engineering.

Existing

Graduate Course Requirements

- Students are required to successfully complete 4 graduate-level courses (with unit weights of 0.50 each), including 1 core biomedical engineering course (BME 601, BME 602, or BME 603), 1 field-specific course from the list below, and 2 elective courses.

    - The field specific course and the chosen electives must be approved by the supervisor(s).

    - All courses are expected to be completed by the end of term 4.

    - Further courses may be required by the supervisor(s) in consultation with the Director of Biomedical

Engineering Graduate Programs depending on the student's educational background.

    - Students who have completed the MASc program in BME at Waterloo may apply and continue to the doctoral program. In this situation, students will have already completed the core course requirements (one of BME 601, BME 602, or BME 603), a field-specific course and two electives as part of their master's degree requirements. To satisfy the Ph D program requirements, these students must complete a total of four courses including a) one core course requirement (one of BME 601, BME 602 or BME 603 that was not completed as part of the MASc in BME program); b) two additional electives; c) an additional field-specific course if they have switched fields between MASc and Ph D.

- Students admitted directly to the Ph D program who possess an honour's undergraduate degree in biomedical engineering are required to complete a minimum of 7 courses (with 0.50 credits each), including 1 core BME course (BME 601, BME 602, BME 603), 2 field-specific courses from the list below, and 4 elective courses.
    - The field specific course and the chosen electives must be approved by the supervisor(s).
    - All courses are expected to be completed by the end of term 5.
- Student must select their field-specific course(s) from the following list:
    - Biomaterials, Tissue Engineering and Drug Delivery
        - BIOL 636 Advanced Immunology
        - BME 611 Materials Biocompatibility
        - CHE 601 Theory and Application of Transport Phenomena
        - CHE 602 Chemical Reactor Analysis
        - CHE 612 Interfacial Phenomena
        - CHE 620 Applied Engineering Mathematics
        - CHE 640 Principles of Polymer Science
        - CHE 660 Principles of Biochemical Engineering
        - CHE 663 Bioseparations
        - CHE 760 Special Topics in Biochemical Engineering
        - ECE 601 Foundations of Biology in Engineering
        - KIN 657 Human Neuroanatomy
        - PHARM 609 Advanced Pharmacokinetics
        - PHARM 610 Topics in Drug Development
        - PHARM 617 Formulations
        - SYDE 684 Materials Biocompatibility
    - Biomechanics and Rehabilitation
        - AMATH 663 Fluid Mechanics
        - BME 550 Sports Engineering
        - BME 551 Biomechanics of Human Movement
        - BME 588 Special Topics in Biomechanics Topic 1: Mechanics of Biomaterials and Tissues
        - KIN 601 Skeletal Muscle Physiology: Structure & Function
        - KIN 602 Respiratory and Cardiovascular Physiology
        - KIN 603 Cardiac and Vascular Smooth Muscle Physiology
        - KIN 611 Biomechanics of Human Motion
        - KIN 613 Modern Methods in Biomechanical Modeling, Kinematics, and Kinetics
        - KIN 620 Ergonomic Aspects of Occupational Musculoskeletal Injuries
        - ME 621 Applied Finite Element Methods
        - ME 662 Advanced Fluid Mechanics
        - ME 663 Computational Fluid Dynamics
        - ME 720 Special Topics in Solid Mechanics Topic 5: Impact Biomechanics
        - ME 720 Special Topics in Solid Mechanics Topic 4: Mechanics of Medical Devices
        - ME 780 Special Topics in Mechatronics Topic 37: Human Movement Neuromechanics
        - PHYS 752 Molecular Biophysics
        - SYDE 644 Human Factors Testing
        - SYDE 652 Dynamics of Multibody Systems

- Biomedical Signals and Devices
  - ECE 638 Biosensing: Fundamentals and Applications
  - ECE 770 Special Topics in Antenna and Microwave Theory Topic 4: Computational Methods for Engineering Electromagnetics
  - KIN 653 Human Neuroscience Theory
  - ME 646 Design for Additive Manufacturing
  - ME 720 Special Topics in Solid Mechanics Topic 4: Mechanics of Medical Devices
  - ME 739 Manufacturing Processes Topics Topic 3: Materials for Nano & Microelectromechanical Systems
  - ME 765 Special Topics in Fluid Mechanics Topic 22: Microfluidic and MEMS Systems and Applications
  - ME 780 Special Topics in Mechatronics Topic 32: Neural and Rehabilitation Engineering
  - NANO 604 Nanomechanics and Molecular Dynamics Simulations
  - SYDE 750 Topics in Systems Modelling Topic 38: Social Robotics
- Biomedical Imaging Technology
  - BME 641 Medical Imaging
  - ECE 607 Fundamentals of Ultrasonics
  - ECE 613 Image Processing and Visual Communication
  - ECE 675 Radiation & Propagation of Electromagnetic Fields
  - ME 720 Special Topics in Solid Mechanics Topic 20: Acoustics
  - PHYS 751 Clinical Applications of Physics in Medicine
  - SYDE 671 Advanced Image Processing
  - SYDE 672 Statistical Image Processing
  - SYDE 675 Pattern Recognition
  - SYDE 677 Medical Imaging
  - SYDE 780 Selected Topics in Engineering Sciences Topic 13: Biomedical Optics
- Biomedical Informatics
  - AMATH 882 Mathematical Cell Biology
  - BIOL 614 Applied Bioinformatics and Genomics
  - BME 651 Big Data Analysis: Health and Biomedical Engineering
  - HLTH 612 Data Structures and Standards in Health Informatics
  - HLTH 615 Requirements Specification and Analysis in Health Systems
  - HLTH 717M Advanced Artificial Intelligence in Health I (0.25 unit weight) and HLTH 718M Natural Language Processing Algorithm and Application in Health (0.25 unit weight)
  - KIN 613 Modern Methods in Biomechanical Modeling, Kinematics, and Kinetics
- BME and health electives (general electives that include topics in more than one research fields)
  - ECE 603 Statistical Signal Processing
  - ECE 608 Quantitative Methods in Biomedical Engineering
  - ECE 757A Embodied Intelligence
  - KIN 601 Skeletal Muscle Physiology: Structure & Function
  - KIN 606 Molecular Basis of Disease
  - KIN 607 Integrative Energy Metabolism in Health and Disease
  - KIN 608 Introduction to Genetics for the Biosciences
  - KIN 612 Instrumentation and Signal Processing in Biophysical Research
  - KIN 646 Physiological and Biochemical Analysis of Nutrition and Health
  - KIN 653 Human Neuroscience Theory
  - KIN 654 Instrumentation in Neuroscience Research
  - MSE 619 Healthcare Analytics
  - SYDE 642 Cognitive Engineering Methods

        - SYDE/ECE 750 Topics in Systems Modelling/Special Topics in Computer Software Topic 37/32: Biology and Computation
        - SYDE 750 Topics in Systems Modelling Topic 39: Embodied Intelligence
    - In every case, a graduate course program is established by the supervisor(s) in consultation with the student and is subject to the approval of the Director of the BME Graduate Program. Candidates may also be required to take additional courses as a result of a comprehensive examination. Students pursuing one of the program's Graduate Research Fields should inform their supervisor(s) of their chosen field(s) to ensure appropriate course selection.
    - The Faculty of Engineering requires that no more than one-half of the courses used for credit towards a graduate degree may be taught by the candidate's supervisor(s). In the case of co-supervision in small research groups, it may be necessary to relax this rule, but the student's file must contain a statement of formal approval from the BME graduate program director and endorsement from the Associate Dean for Graduate Studies and Postdoctoral Affairs in the Faculty of Engineering.

Milestone Requirements

Proposed

Milestone Requirements

Professional Attributes and Competence Enhancement (PACE) Milestone

- The PACE milestone includes the following three components: PACE Days, BME Research Day, and Seminar Requirement. The requirements for the three components are outlined below:
- Professional Attributes and Competence Enhancement (PACE) Component 1: PACE Days
    - Students are required to attend and participate in PACE Days to complete the following modules:
        - Module 1: Research Design and Planning Ideas
        - Module 2: Professional Presentations
        - Module 3: Scientific Writing
        - Module 4: Vision Development
        - Module 5: Proposal Writing and Peer Review
    - If a Ph D student completed Module 1: Research Design and Planning Ideas, Module 2: Professional Presentations, and Module 3: Scientific Writing as part of the MASc in Biomedical Engineering program, they are only required to complete Module 4: Vision Development and Module 5: Proposal Writing and Peer Review.
- Professional Attributes and Competence Enhancement (PACE) Component 2: BME Research Day
    - Students are required to give either an oral or poster presentation at the BME Research Day each year that they are enrolled in the Ph D in Biomedical Engineering Program.
    - The BME Research Day occurs annually, which students are typically required to attend.
    - Students are exempt from presenting at the BME Research Day the year(s) they are presenting at the BME Seminar Series.
- Professional Attributes and Competence Enhancement (PACE) Component 3: Seminar Requirement
    - Students are required to attend an average of 4 seminars per term, except for their final term. The seminars attended are to be endorsed by the Biomedical Engineering Graduate Program.
    - Students are required to present at least two research seminars in the BME Seminar Series.

Ph D Comprehensive Examination I and Comprehensive Examination II

- Students are required to meet the University-level Ph D Comprehensive Examination minimum requirements outlined in the "Minimum requirements for the Ph D degree" section of the Graduate Studies Academic Calendar (GSAC), with certain noted differences that are specific to the Faculty of Engineering Comprehensive Examination minimum requirements:
    - Comprehensive examination purpose: Consistent with University-level minimum requirements.
    - Timing: Students must follow the Faculty of Engineering completion timelines.
    - Committee: Students must follow the Faculty of Engineering committee composition guidelines which differ from the University-level minimum requirements in both number of committee members and committee makeup.
    - Who Chairs an examination: Students must follow the Faculty of Engineering Chair guidelines whereby the Chair is normally selected from outside of the student's home department.
    - Format / Content: Consistent with University-level minimum requirements but with additional information provided in the Faculty of Engineering Comprehensive Examination minimum requirements.
    - Academic integrity: Consistent with University-level minimum requirements.
- In addition to the University-level and Faculty-level Ph D Comprehensive Examination minimum requirements, Ph D students in the Biomedical Engineering graduate program are also required to meet the following requirements:
    - Students must successfully complete (pass) the Comprehensive Background Examination (Comprehensive Exam I (Background)) and the Comprehensive Proposal Examination (Comprehensive Exam II (Proposal) which are conducted by the Department for each candidate.
    - The first exam, the Comprehensive Background Examination, will be held before the end of the third term (fourth term if transferring from an incomplete MASc). The main objective of this examination is to satisfy the Department that the candidate has a broad knowledge of their field and a thorough technical background to pursue their research; the candidate will be questioned on their background preparation.
    - The second exam, the Comprehensive Proposal Examination, will be held no later than the student's sixth term and only after the Background Comprehensive Examination has been successfully completed. The main objective of this examination is to examine and approve the written thesis proposal.
    - The result of these examinations is the identification of an Advisory Committee which has examined and approved the candidate's background and thesis proposal and is willing to assist the supervisor with the

subsequent research program.
    - Students who do not complete either Comprehensive Examination by the stated deadline, or fail either exam on their second attempt, will be required to withdraw from the program.
    - It is the supervisor's responsibility to assemble the advisory committee.

Ph D Thesis

- Students may choose to pursue one (1) of the following Graduate Research Fields:
    - Biomaterials, Tissue Engineering, and Drug Delivery
    - Biomechanics and Rehabilitation
    - Biomedical Signals and Devices
    - Biomedical Imaging Technology
    - Biomedical Informatics
- Candidates are expected to attend annual meetings with their Advisory Committee and complete term reports to provide updates on their progress.
- 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 concentrated in the area of the Graduate Research Field. The BME graduate program, represented by the student's supervisor and examining committee, must assess whether a student's completed research warrants the field designation at the time of degree completion.
- Candidates are expected to maintain continuous registration until the thesis is submitted to Graduate Studies and Postdoctoral Affairs. Under exceptional circumstances, inactive terms or a leave of absence may be requested for a prior specified period with program approval. The role of a supervisor is to assist a candidate in establishing a research problem with an appropriate scope, to suggest alternative general approaches to the solution of a problem and to provide general advice on the structure and content of a thesis. It is imperative that the engineering code of ethics be strictly observed in the supervisor-candidate relationship.
- The Ph D degree in the Faculty of Engineering is awarded to a candidate who has successfully completed a program of advanced study and conducted original research. The program of research and its findings must be presented in the form of a thesis and submitted to the University for public examination prior to its oral defense.
- The writer of a thesis must demonstrate a critical awareness and understanding of the literature in the research field, exhibit a capability of defining original and useful research problems and a capability of independent thought in solving a research problem. An ability to communicate research results verbally and in writing must be shown. The University of Waterloo allows students to submit theses in English or in French, the latter being governed by certain important constraints. The principles governing the submission of theses in French are specified in the Graduate Studies Academic Calendar. The oral examination of a thesis will assess the ability of a candidate to communicate orally the results of the research and to defend the contents of the thesis.
- Originality in a thesis may be reflected in a number of ways. A candidate may have posed and solved an important new problem or have formulated an existing problem in a novel and useful way. A candidate may offer new and significant insights into problems examined previously by other researchers. Replications of previous investigations may be acceptable if, and only if, they incorporate [significantly new] elements in the design or execution of an experiment.
- Objective criteria describing what is meant by a significant contribution to knowledge are difficult to specify. One way of gauging a candidate's contribution is to consider the extent to which parts of the thesis might be published in peer-reviewed technical journals with an international stature or as a monograph by an acceptable publisher. The ultimate test of the acceptability of a thesis is the ability of a candidate to satisfy, through an oral examination, to a university-appointed committee of research specialists in the general field of study, that a significant research contribution has been made and communicated adequately.

Existing

Milestone Requirements

Professional Attributes and Competence Enhancement (PACE) Milestone

- The PACE milestone includes the following three components: PACE Days, BME Research Day, and Seminar Requirement. The requirements for the three components are outlined below:
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        - Module 3: Scientific Writing
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    - Who Chairs an examination: Students must follow the Faculty of Engineering Chair guidelines whereby the Chair is normally selected from outside of the student's home department.
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    - The first exam, the Comprehensive Background Examination, will be held before the end of the third term (fourth term if transferring from an incomplete MASc). The main objective of this examination is to satisfy the Department that the candidate has a broad knowledge of their field and a thorough technical background to pursue their research; the candidate will be questioned on their background preparation.
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    - The result of these examinations is the identification of an Advisory Committee which has examined and approved the candidate's background and thesis proposal and is willing to assist the supervisor with the subsequent research program.
    - Students who do not complete either Comprehensive Examination by the stated deadline, or fail either exam on their second attempt, will be required to withdraw from the program.
    - It is the supervisor's responsibility to assemble the advisory committee.

Ph D Thesis

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    - Biomaterials, Tissue Engineering, and Drug Delivery
    - Biomechanics and Rehabilitation
    - Biomedical Signals and Devices
    - Biomedical Imaging Technology
    - Biomedical Informatics
- Candidates are expected to attend annual meetings with their Advisory Committee and complete term reports to provide updates on their progress.
- 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 concentrated in the area of the Graduate Research Field. The BME graduate program, represented by the student's supervisor and examining committee, must assess whether a student's completed research warrants the field designation at the time of degree completion.
- Candidates are expected to maintain continuous registration until the thesis is submitted to Graduate Studies and Postdoctoral Affairs. Under exceptional circumstances, inactive terms or a leave of absence may be requested for a prior specified period with program approval. The role of a supervisor is to assist a candidate in establishing a research problem with an appropriate scope, to suggest alternative general approaches to the solution of a problem and to provide general advice on the structure and content of a thesis. It is imperative that the engineering code of ethics be strictly observed in the supervisor-candidate relationship.
- The Ph D degree in the Faculty of Engineering is awarded to a candidate who has successfully completed a program of advanced study and conducted original research. The program of research and its findings must be presented in the form of a thesis and submitted to the University for public examination prior to its oral defense.
- The writer of a thesis must demonstrate a critical awareness and understanding of the literature in the research field, exhibit a capability of defining original and useful research problems and a capability of independent thought in solving a research problem. An ability to communicate research results verbally and in writing must be shown. The University of Waterloo allows students to submit theses in English or in French, the latter being governed by certain important constraints. The principles governing the submission of theses in French are specified in the Graduate Studies Academic Calendar. The oral examination of a thesis will assess the ability of a candidate to communicate orally the results of the research and to defend the contents of the thesis.
- Originality in a thesis may be reflected in a number of ways. A candidate may have posed and solved an important new problem or have formulated an existing problem in a novel and useful way. A candidate may offer new and significant insights into problems examined previously by other researchers. Replications of previous investigations may be acceptable if, and only if, they incorporate [significantly new] elements in the design or execution of an experiment.
- Objective criteria describing what is meant by a significant contribution to knowledge are difficult to specify. One way of gauging a candidate's contribution is to consider the extent to which parts of the thesis might be published in peer-reviewed technical journals with an international stature or as a monograph by an acceptable publisher. The ultimate test of the acceptability of a thesis is the ability of a candidate to satisfy, through an oral examination, to a university-appointed committee of research specialists in the general field of study, that a significant research contribution has been made and communicated adequately.

Notes

- Biomedical Engineering website
- Doctor of Philosophy (Ph D) in Biomedical Engineering future graduate students program page

Specializations

Undergraduate Plan Guidelines

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Engineering

Dependencies

There are no dependencies

MASc in Biomedical Engineering - Master of Applied Science (MASc) in Biomedical Engineering

Top

Effective Date and Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2026

Existing

Effective Term and Year

Spring 2026

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-03-02

Quality Assurance Designation
Minor Modification Qad

Is there an impact to existing students?
Yes

Impact on Existing Students

Applicants applying to the BME MASc program for the Fall 2026 term will be required to have a CGPA of 75%. Registered students will be allowed to count these courses as part of their field-specific course requirement. Students will have the option to follow the updated requirements since the changes are considered to be in their favour.

Is the credential name changing?
No

Graduate Co-operative Requirements
Not Applicable

Change to Learning Outcomes
No

Rationale and Background for Change(s)

1) Revise the minimum average admission requirement for the MASc program. We are requesting to change the minimum average admission requirement from 80% to 75%. This will make our program the same as other Faculty of Engineering MASc programs at the University of Waterloo. Additionally, it will make our average requirement more equivalent with other BME masters GPA requirements from other universities across Canada.
2) Add ME 780 topic 45 and ME 641 to field-specific course list. We are requesting to add ME 780 topic 45 and ME 641 to the field-specific course requirement. These courses relate to our fields, and therefore students who take these courses should have them count towards their field-specific course requirement.
3) We are adding BME 700 level courses (BME 721, BME 722, and BME 723) to BME 500 level courses (BME 550, BME 551, and BME 553) to be held with. Therefore, we are requesting that MASc students can take either course (BME 550 or BME 721, BME 551 or BME 722, BME 553 or BME 723) to count towards their field-specific course requirement.

General Program/Plan Information

Faculty

Faculty of Engineering

Academic Unit

Dean of Engineering Office

Graduate Field of Study

Biomedical Engineering

Faculty

Faculty of Engineering

Program/Plan Name

Master of Applied Science (MASc) in Biomedical Engineering

Graduate Credential Type

Master's

Accelerated Program

Not applicable

Study Options (New)

Thesis

Admit Term(s)

Fall, Winter, Spring

Delivery Mode

On-campus

Length of Program

- Students are required to complete the program in accordance with the University program time limits.

Registration Option(s)

Full-time

Graduate Research Fields

- Biomaterials, Tissue Engineering, and Drug Delivery
- Biomechanics and Rehabilitation
- Biomedical Signals and Devices
- Biomedical Imaging Technology
- Biomedical Informatics

Admissions

Admission Requirements: Minimum Requirements

Proposed

Admission Requirements: Minimum Requirements

- MASc applicants must have completed a four-year Honours bachelor's degree (or equivalent) in any field of engineering or a related science discipline at a recognized institution with a minimum 75% overall average.
- Applicants who are deemed by the graduate coordinator, Biomedical Engineering (BME) graduate program director, Admissions Committee or intended advisor to have an inadequate depth of technical BME background may be directed to take additional foundational courses, to be specified at the time of admission.
- English language proficiency (ELP) (if applicable)

Existing

Admission Requirements: Minimum Requirements

- MASc applicants must have completed a bachelor's degree (or equivalent) in any field of engineering or a related science discipline at a recognized institution with a minimum 80% overall average.
- Applicants who are deemed by the graduate coordinator, Biomedical Engineering (BME) graduate program director, Admissions Committee or intended advisor to have an inadequate depth of technical BME background may be directed to take additional foundational courses, to be specified at the time of admission.
- English language proficiency (ELP) (if applicable)

Admission Requirements: Application materials

- Program-specific questions (PSQ)
- Résumé
- Statement of interest
- Transcript(s)

Admission Requirements: References

- Number of references: 2
- Type of references: Academic. Applicants who completed their degree five or more years before the application date may submit 1 academic and 1 professional reference.

Requirements Information

Graduate 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

Thesis Option: Course Requirements

Proposed

Thesis Option: Course Requirements

- Students must complete the following 4 graduate level courses (0.50 unit weight per course) counting towards degree credit from the University of Waterloo:
  - 1 of the following Biomedical Engineering core courses:
    - BME 601 Physiological Systems and Biomedical Design
    - BME 602 Foundations in Biomechanical Engineering
    - BME 603 Engineering Analysis of Living Cells
  - 1 of the following field-specific courses:
    - Biomaterials, Tissue Engineering and Drug Delivery
      - BIOL 636 Advanced Immunology
      - BME 611 Materials Biocompatibility
      - CHE 601 Theory and Application of Transport Phenomena
      - CHE 602 Chemical Reactor Analysis
      - CHE 612 Interfacial Phenomena
      - CHE 620 Applied Engineering Mathematics
      - CHE 640 Principles of Polymer Science
      - CHE 660 Principles of Biochemical Engineering
      - CHE 663 Bioseparations
      - CHE 760 Special Topics in Biochemical Engineering
      - ECE 601 Foundations of Biology in Engineering
      - KIN 657 Human Neuroanatomy
      - PHARM 609 Advanced Pharmacokinetics
      - PHARM 610 Topics in Drug Development
      - PHARM 617 Formulations
      - SYDE 684 Materials Biocompatibility
    - Biomechanics and Rehabilitation
      - AMATH 663 Fluid Mechanics
      - BME 550 Sports Engineering/BME 721 Sports Engineering
      - BME 551 Biomechanics of Human Movement/BME 722 Biomechanics of Human Movement
      - BME 553 Introductory Mechanics of Biomedical and Biological Materials/BME 723 Mechanics of Biomedical and Biological Materials
      - KIN 601 Skeletal Muscle Physiology: Structure & Function
      - KIN 602 Respiratory and Cardiovascular Physiology
      - KIN 603 Cardiac and Vascular Smooth Muscle Physiology
      - KIN 611 Biomechanics of Human Motion
      - KIN 613 Modern Methods in Biomechanical Modeling, Kinematics, and Kinetics
      - KIN 620 Ergonomic Aspects of Occupational Musculoskeletal Injuries
      - ME 621 Applied Finite Element Methods
      - ME 641 System Identification & Adaptive Control
      - ME 662 Advanced Fluid Mechanics
      - ME 663 Computational Fluid Dynamics
      - ME 720 Special Topics in Solid Mechanics Topic 4: Mechanics of Medical Devices
      - ME 720 Special Topics in Solid Mechanics Topic 5: Impact Biomechanics
      - ME 780 Special Topics in Mechatronics Topic 37: Human Movement Neuromechanics
      - ME 780 Special Topics in Mechatronics Topic 45: Collaborative Robotics
      - PHYS 752 Molecular Biophysics
      - SYDE 644 Human Factors Testing
      - SYDE 652 Dynamics of Multibody Systems

- Biomedical Signals and Devices
  - ECE 638 Biosensing: Fundamentals and Applications
  - ECE 770 Special Topics in Antenna and Microwave Theory Topic 4: Computational Methods for Engineering Electromagnetics
  - KIN 653 Human Neuroscience Theory
  - ME 641 System Identification & Adaptive Control
  - ME 646 Design for Additive Manufacturing
  - ME 720 Special Topics in Solid Mechanics Topic 4: Mechanics of Medical Devices
  - ME 739 Manufacturing Processes Topics Topic 3: Materials for Nano & Microelectromechanical Systems
  - ME 765 Special Topics in Fluid Mechanics Topic 22: Microfluidic and MEMS Systems and Applications
  - ME 780 Special Topics in Mechatronics Topic 32: Neural and Rehabilitation Engineering
  - ME 780 Special Topics in Mechatronics Topic 45: Collaborative Robotics
  - NANO 604 Nanomechanics and Molecular Dynamics Simulations
  - SYDE 750 Topics in Systems Modelling Topic 38: Social Robotics
- Biomedical Imaging Technology
  - BME 641 Medical Imaging
  - ECE 607 Fundamentals of Ultrasonics
  - ECE 613 Image Processing and Visual Communication
  - ECE 675 Radiation & Propagation of Electromagnetic Fields
  - ME 720 Special Topics in Solid Mechanics Topic 20: Acoustics
  - PHYS 751 Clinical Applications of Physics in Medicine
  - SYDE 671 Advanced Image Processing
  - SYDE 672 Statistical Image Processing
  - SYDE 675 Pattern Recognition
  - SYDE 677 Medical Imaging
  - SYDE 780 Selected Topics in Engineering Sciences Topic 13: Biomedical Optics
- Biomedical Informatics
  - AMATH 882 Mathematical Cell Biology
  - BIOL 614 Applied Bioinformatics and Genomics
  - BME 651 Big Data Analysis: Health and Biomedical Engineering
  - HLTH 612 Data Structures and Standards in Health Informatics
  - HLTH 615 Requirements Specification and Analysis in Health Systems
  - HLTH 717M Advanced Artificial Intelligence in Health I (0.25 unit weight) and HLTH 718M Natural Language Processing Algorithm and Application in Health (0.25 unit weight)
  - KIN 613 Modern Methods in Biomechanical Modeling, Kinematics, and Kinetics
- BME and health electives (general electives that include topics in more than one research fields)
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  - ECE 608 Quantitative Methods in Biomedical Engineering
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  - KIN 601 Skeletal Muscle Physiology: Structure & Function
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  - KIN 607 Integrative Energy Metabolism in Health and Disease
  - KIN 608 Introduction to Genetics for the Biosciences
  - KIN 612 Instrumentation and Signal Processing in Biophysical Research
  - KIN 646 Physiological and Biochemical Analysis of Nutrition and Health
  - KIN 653 Human Neuroscience Theory
  - KIN 654 Instrumentation in Neuroscience Research
  - MSE 619 Healthcare Analytics
  - SYDE 642 Cognitive Engineering Methods
  - SYDE/ECE 750 Topics in Systems Modelling/Special Topics in Computer Software Topic 37/32: Biology and Computation
  - SYDE 750 Topics in Systems Modelling Topic 39: Embodied Intelligence
- 2 elective courses

- All courses are expected to be completed by the end of term 4.
- All course selections are arranged by the supervisor(s) in consultation with the student and are subject to the approval of the Director or Associate Director, BME graduate program. Students pursuing one the program's Graduate Research Fields, should inform their supervisor(s) of their chosen field(s) to ensure appropriate course selection.
- Note: these requirements are in addition to satisfactory completion of any transitional courses that may be specified at the time of admission.
- Note: The Faculty of Engineering requires that no more than one-half of the courses used for credit toward a graduate degree may be taught by a candidate's supervisor(s). In the case of co-supervision in small research groups, it may be necessary to relax this rule; however, the student's file must contain a statement of formal approval from the BME graduate program director and endorsement from the Associate Dean for Graduate Studies and Postdoctoral Affairs in the Faculty of Engineering.

Existing

Thesis Option: Course Requirements

- Students must complete the following 4 graduate level courses (0.50 unit weight per course) counting towards degree credit from the University of Waterloo:
  - 1 of the following Biomedical Engineering core courses:
    - BME 601 Physiological Systems and Biomedical Design
    - BME 602 Foundations in Biomechanical Engineering
    - BME 603 Engineering Analysis of Living Cells
  - 1 of the following field-specific courses:
    - Biomaterials, Tissue Engineering and Drug Delivery
      - BIOL 636 Advanced Immunology

        - BME 611 Materials Biocompatibility
        - CHE 601 Theory and Application of Transport Phenomena
        - CHE 602 Chemical Reactor Analysis
        - CHE 612 Interfacial Phenomena
        - CHE 620 Applied Engineering Mathematics
        - CHE 640 Principles of Polymer Science
        - CHE 660 Principles of Biochemical Engineering
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        - CHE 760 Special Topics in Biochemical Engineering
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        - PHYS 752 Molecular Biophysics
        - SYDE 644 Human Factors Testing
        - SYDE 652 Dynamics of Multibody Systems
    - Biomedical Signals and Devices
        - ECE 638 Biosensing: Fundamentals and Applications
        - ECE 770 Special Topics in Antenna and Microwave Theory Topic 4: Computational Methods for Engineering Electromagnetics
        - KIN 653 Human Neuroscience Theory
        - ME 646 Design for Additive Manufacturing
        - ME 720 Special Topics in Solid Mechanics Topic 4: Mechanics of Medical Devices
        - ME 739 Manufacturing Processes Topics Topic 3: Materials for Nano & Microelectromechanical Systems
        - ME 765 Special Topics in Fluid Mechanics Topic 22: Microfluidic and MEMS Systems and Applications
        - ME 780 Special Topics in Mechatronics Topic 32: Neural and Rehabilitation Engineering
        - NANO 604 Nanomechanics and Molecular Dynamics Simulations
        - SYDE 750 Topics in Systems Modelling Topic 38: Social Robotics
    - Biomedical Imaging Technology
        - BME 641 Medical Imaging
        - ECE 607 Fundamentals of Ultrasonics
        - ECE 613 Image Processing and Visual Communication
        - ECE 675 Radiation & Propagation of Electromagnetic Fields
        - ME 720 Special Topics in Solid Mechanics Topic 20: Acoustics
        - PHYS 751 Clinical Applications of Physics in Medicine
        - SYDE 671 Advanced Image Processing
        - SYDE 672 Statistical Image Processing
        - SYDE 675 Pattern Recognition
        - SYDE 677 Medical Imaging
        - SYDE 780 Selected Topics in Engineering Sciences Topic 13: Biomedical Optics
    - Biomedical Informatics
        - AMATH 882 Mathematical Cell Biology
        - BIOL 614 Applied Bioinformatics and Genomics
        - BME 651 Big Data Analysis: Health and Biomedical Engineering
        - HLTH 612 Data Structures and Standards in Health Informatics
        - HLTH 615 Requirements Specification and Analysis in Health Systems
        - HLTH 717M Advanced Artificial Intelligence in Health I (0.25 unit weight) and HLTH 718M Natural Language Processing Algorithm and Application in Health (0.25 unit weight)
        - KIN 613 Modern Methods in Biomechanical Modeling, Kinematics, and Kinetics
    - BME and health electives (general electives that include topics in more than one research fields)
        - ECE 603 Statistical Signal Processing
        - ECE 608 Quantitative Methods in Biomedical Engineering
        - ECE 757A Embodied Intelligence
        - KIN 601 Skeletal Muscle Physiology: Structure & Function
        - KIN 606 Molecular Basis of Disease
        - KIN 607 Integrative Energy Metabolism in Health and Disease
        - KIN 608 Introduction to Genetics for the Biosciences
        - KIN 612 Instrumentation and Signal Processing in Biophysical Research
        - KIN 646 Physiological and Biochemical Analysis of Nutrition and Health

        - KIN 653 Human Neuroscience Theory
        - KIN 654 Instrumentation in Neuroscience Research
        - MSE 619 Healthcare Analytics
        - SYDE 642 Cognitive Engineering Methods
        - SYDE/ECE 750 Topics in Systems Modelling/Special Topics in Computer Software Topic 37/32: Biology and Computation
        - SYDE 750 Topics in Systems Modelling Topic 39: Embodied Intelligence
    - 2 elective courses
- All courses are expected to be completed by the end of term 4.
- All course selections are arranged by the supervisor(s) in consultation with the student and are subject to the approval of the Director or Associate Director, BME graduate program. Students pursuing one the program's Graduate Research Fields, should inform their supervisor(s) of their chosen field(s) to ensure appropriate course selection.
- Note: these requirements are in addition to satisfactory completion of any transitional courses that may be specified at the time of admission.
- Note: The Faculty of Engineering requires that no more than one-half of the courses used for credit toward a graduate degree may be taught by a candidate's supervisor(s). In the case of co-supervision in small research groups, it may be necessary to relax this rule; however, the student's file must contain a statement of formal approval from the BME graduate program director and endorsement from the Associate Dean for Graduate Studies and Postdoctoral Affairs in the Faculty of Engineering.

Thesis Option: Milestone Requirements

Proposed

Thesis Option: Milestone Requirements

Professional Attributes and Competence Enhancement (PACE) Milestone

- The PACE milestone includes the following three components: PACE Days, BME Research Day, and Seminar Requirement. The requirements for the three components are outlined below:
- Professional Attributes and Competence Enhancement (PACE) Component 1: PACE Days
    - Students are required to attend and participate in PACE Days to complete the following modules:
        - Module 1: Research Design and Planning Ideas
        - Module 2: Professional Presentations
        - Module 3: Scientific Writing
- Professional Attributes and Competence Enhancement (PACE) Component 2: BME Research Day
    - Students are required to give either an oral or poster presentation at a minimum of one BME Research Day.
    - The BME Research Day occurs annually, which students are typically required to attend.
- Professional Attributes and Competence Enhancement (PACE) Component 3: Seminar Requirement
    - Students are required to attend an average of 4 seminars per term, except for their final term. The seminars attended are to be endorsed by the Biomedical Engineering Graduate Program.
    - Students are required to present at least one research seminar in the BME Seminar Series.

Master's Thesis Proposal

- Students must develop and defend a thesis proposal that will be examined and approved by their supervisor and committee. The thesis proposal must be completed by the end of term 3.

Master's Thesis

- Students may choose to pursue one (1) of the following Graduate Research Fields:
    - Biomaterials, Tissue Engineering, and Drug Delivery
    - Biomechanics and Rehabilitation
    - Biomedical Signals and Devices
    - Biomedical Imaging Technology
    - Biomedical Informatics
- 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 concentrated in the area of the Graduate Research Field. The BME graduate program, represented by the student's supervisor and examining committee, must assess whether a student's completed research warrants the field designation at the time of degree completion.
- Upon approval of the thesis proposal, students will proceed to the research and writing of the thesis. Students must complete and orally defend the thesis by the end of term 6. The thesis and defence will be evaluated by the student's Advisory Committee. The Advisory Committee shall be comprised of: the student's supervisor(s); an additional tenured or tenure track BME graduate faculty member; and at least one additional examiner, excluding BME graduate faculty members from the student's supervisors' home department, whose expertise can support the evaluation of the Master's thesis. At least two of the committee members must be tenured or tenure-track. Consistent with the Faculty of Engineering requirements, a maximum of one committee member with an adjunct appointment or emeritus status is permitted.

Existing

Thesis Option: Milestone Requirements

Professional Attributes and Competence Enhancement (PACE) Milestone

- The PACE milestone includes the following three components: PACE Days, BME Research Day, and Seminar Requirement. The requirements for the three components are outlined below:
- Professional Attributes and Competence Enhancement (PACE) Component 1: PACE Days
  - Students are required to attend and participate in PACE Days to complete the following modules:
    - Module 1: Research Design and Planning Ideas
    - Module 2: Professional Presentations
    - Module 3: Scientific Writing
- Professional Attributes and Competence Enhancement (PACE) Component 2: BME Research Day
  - Students are required to give either an oral or poster presentation at a minimum of one BME Research Day.
  - The BME Research Day occurs annually, which students are typically required to attend.
- Professional Attributes and Competence Enhancement (PACE) Component 3: Seminar Requirement
  - Students are required to attend an average of 4 seminars per term, except for their final term. The seminars attended are to be endorsed by the Biomedical Engineering Graduate Program.
  - Students are required to present at least one research seminar in the BME seminar series.

Master's Thesis Proposal

- Students must develop and defend a thesis proposal that will be examined and approved by their supervisor and committee. The thesis proposal must be completed by the end of term 3.

Master's Thesis

- Students may choose to pursue one (1) of the following Graduate Research Fields:
  - Biomaterials, Tissue Engineering, and Drug Delivery
  - Biomechanics and Rehabilitation
  - Biomedical Signals and Devices
  - Biomedical Imaging Technology
  - Biomedical Informatics
- 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 concentrated in the area of the Graduate Research Field. The BME graduate program, represented by the student's supervisor and examining committee, must assess whether a student's completed research warrants the field designation at the time of degree completion.
- Upon approval of the thesis proposal, students will proceed to the research and writing of the thesis. Students must complete and orally defend the thesis by the end of term 6. The thesis and defence will be evaluated by the student's Advisory Committee. The Advisory Committee shall be comprised of: the student's supervisor(s); an additional tenured or tenure track BME graduate faculty member; and at least one additional examiner, excluding BME graduate faculty members from the student's supervisors' home department, whose expertise can support the evaluation of the Master's thesis. At least two of the committee members must be tenured or tenure-track. Consistent with the Faculty of Engineering requirements, a maximum of one committee member with an adjunct appointment or emeritus status is permitted.

Notes

- Biomedical Engineering website
- Master of Applied Science (MASc) in Biomedical Engineering future graduate students program page

Specializations

Undergraduate Plan Guidelines

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Engineering

Dependencies

There are no dependencies

Graduate Studies
Program Revision Template

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

Faculty: Engineering

Programs: 1) Doctor of Philosophy (PhD) in Biomedical Engineering

2) Master of Applied Science (MASc) in Biomedical Engineering

Program contact name(s): Jaimee Kropf and Nima Maftoon

Form completed by: Jaimee Kropf

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

1. Change the standard ELP requirement test scores to the alternative minimum scores.

Is this a major modification to the program? No

Rationale for change(s):

1. We are requesting to change the standard ELP test scores we accept to the alternative minimum scores. This will align our program scores with most of the other Faculty of Engineering graduate programs at the University of Waterloo.

Proposed effective date: Term: Fall Year: 2026

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#/policy/SJDLMPJAa

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Graduate Studies accepted examinations and required scores	**Graduate Studies accepted examinations and required scores**

Current Graduate Studies Academic Calendar content:

Internet-based TOEFL (iBT) (1-6 score scale)	Internet-based TOEFL (iBT) (effective prior to Winter 2026)	IELTS (Academic)	Cambridge English test (C1 Advanced or C2 Proficiency)	CAEL	PTE (Academic)	EFAS
4.5; writing 5; speaking 5	90; writing 25; speaking 25	7.0; writing 6.5; speaking 6.5	185; minimum 176 in each area	70; 60 per band; 70 writing; 70 speaking	63; writing 65; speaking 65	75% overall in level 400 with at least 70% in EFAS 420, 440 and 460

Graduate Studies accepted examinations and alternative minimum scores

Departments accepting the alternative minimum scores are: Chemical Engineering; Civil and Environmental Engineering; Electrical and Computer Engineering; Mechanical and Mechatronics Engineering; and Systems Design Engineering.

Internet-based TOEFL (iBT) (1-6 score scale)	Internet-based TOEFL (iBT) (effective prior to Winter 2026)	IELTS (Academic)	Cambridge English test (C1 Advanced or C2 Proficiency)	CAEL	PTE (Academic)	EFAS
4.5; writing 4.5; speaking 4; reading 4;	80; writing 22; speaking 20; reading 20;	6.5; writing 6.0; speaking 6.0	176; minimum 169 in each area	60; 60 per band	60; writing 60; speaking 60	75% overall in level 300 with at

Proposed Graduate Studies Academic Calendar content:

Internet-based TOEFL (iBT) (1-6 score scale)	Internet-based TOEFL (iBT) (effective prior to Winter 2026)	IELTS (Academic)	Cambridge English test (C1 Advanced or C2 Proficiency)	CAEL	PTE (Academic)	EFAS
4.5; writing 5; speaking 5	90; writing 25; speaking 25	7.0; writing 6.5; speaking 6.5	185; minimum 176 in each area	70; 60 per band; 70 writing; 70 speaking	63; writing 65; speaking 65	75% overall in level 400 with at least 70% in EFAS 420, 440 and 460

Graduate Studies accepted examinations and alternative minimum scores

Departments accepting the alternative minimum scores are: Biomedical Engineering, Chemical Engineering; Civil and Environmental Engineering; Electrical and Computer Engineering; Mechanical and Mechatronics Engineering; and Systems Design Engineering.

Internet-based TOEFL (iBT) (1-6 score scale)	Internet-based TOEFL (iBT) (effective prior to Winter 2026)	IELTS (Academic)	Cambridge English test (C1 Advanced or C2 Proficiency)	CAEL	PTE (Academic)	EFAS
4.5; writing 4.5; speaking 4; readin	80; writing 22; speaking 20; readin	6.5; writing 6.0; speaking 6.0	176; minimum 169 in each area	60; 60 per band	60; writing 60; speaking 60	75% overall in level 300 with

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
listening 4 listening 18 least 70% in EFAS 320, 340 and 360	g 4; listening 4 g 20; listening 18 at least 70% in EFAS 320, 340 and 360

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

Applicants applying to the BME programs for the Fall 2026 term will be required to have the alternative minimum ELP test scores.

Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 02/24/26
Department/School approval date (mm/dd/yy): 03/02/26
Graduate Faculty Sub-Committee approval date (mm/dd/yy): 03/25/26
Faculty Council approval date (mm/dd/yy): 04/21/26
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):

Graduate Studies
Program Revision Template

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

Faculty: Engineering

Programs:

1) Master of Engineering (MEng) in Chemical Engineering - Co-operative Program

2) Master of Engineering (MEng) in Chemical Engineering - Health Technologies - Co-operative Program

3) Master of Engineering (MEng) in Electrical and Computer Engineering - Co-operative Program

4) Master of Engineering (MEng) in Electrical and Computer Engineering - Health Technologies - Co-operative Program

5) Master of Applied Science (MASc) in Management Science and Engineering - Co-operative Program

6) Master of Management Science (MMSc) - Co-operative Program

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

8) Master of Engineering (MEng) in Systems Design Engineering - Health Technologies - Co-operative Program

Program contact name(s): Christopher Nielsen (Associate Dean), Jeff Gostick (CHE Graduate Officer), Hany Aziz (ECE Graduate Officer), Sibel Alumur Alev (MSE Graduate Officer), Nasser Lashgarian Azad (SYDE Graduate Officer)

Form completed by:

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

Replacing the Department supported "Graduate Studies Work Report" milestone with the CEE supported "Graduate WIL Reflective Report" milestone.

Is this a major modification to the program? No

Rationale for change(s):

A work/reflective report is a required degree milestone for CEE-supported co-op programs. CEE has developed an alternative to the "Graduate Studies Work Report" milestone called a "Graduate WIL Reflective Report" milestone which Departments may choose to adopt. This option simplifies the administration of the milestone and provides more consistent experience for students across units. There is no additional cost to students or to CEE supported co-op programs.

Proposed effective date: Term: Fall Year: 2026

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/rJixyCCs3

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/HyJub_6Jgl

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/S1ig1RCo2

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/r1jC9bBtex

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/S1HslJCAi2

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/HyDogJCAi3

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/SJCJNKp1xe

https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/programs/rJ7aCngYgg

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
1) MEng in Chemical Engineering - Co-operative Program **2) MEng in Chemical Engineering - Health Technologies - Co-operative Program** ~~**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.~~	**1) MEng in Chemical Engineering - Co-operative Program** **2) MEng in Chemical Engineering - Health Technologies - Co-operative Program** **3) MEng in Electrical and Computer Engineering - Co-operative Program** **4) MEng in Electrical and Computer Engineering - Health Technologies - Co-operative Program** **5) Master of Engineering (MEng) in Systems Design Engineering - Health Technologies - Co-operative Program** **Graduate WIL Reflective Report** The Graduate WIL Reflective Report requires students to critically reflect on their co-op work term experience, connecting academic knowledge to practical tasks and professional development. Students must complete one reflective report per required work term. The report is administered, evaluated, and graded by the Centre for Work-Integrated Learning.
1) MEng in Electrical and Computer Engineering - Co-operative Program **2) MEng in Electrical and Computer Engineering - Health Technologies - Co-operative Program** ~~**Graduate Studies Work Report**~~ • ~~Students must complete one or two work-term placements. A work report must be submitted to the Department for review and credit by the end of each work term.~~	
1) Master of Applied Science (MASc) in Management Science and Engineering - Co-operative Program **2) Master of Management Science (MMSc) - Co-operative Program** **3) Master of Management Science (MMSc) - Health Technologies - Co-operative Program** ~~**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~~	**1) Master of Applied Science (MASc) in Management Science and Engineering - Co-operative Program** **2) Master of Management Science (MMSc) - Co-operative Program** **3) Master of Management Science (MMSc) - Health Technologies - Co-operative Program** **Graduate WIL Reflective Report I and Graduate WIL Reflective Report II** The Graduate WIL Reflective Report requires students to critically reflect on their co-op work term experience, connecting academic knowledge to practical tasks and professional development. Students must complete one reflective report per required work term. The report is administered, evaluated, and graded by the Centre for Work-Integrated Learning.

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
~~must be submitted to the Department for review to earn credit for the work report.~~	
Master of Engineering (MEng) in Systems Design Engineering - Health Technologies - Co-operative Program **~~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.~~	

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

Effective Spring 2026, students will complete the Graduate WIL Reflective Report milestone instead of the Graduate Studies Work Report milestone. Students have been informed about the milestone changes.

Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 04/09/26
Department/School approval date (mm/dd/yy):
Graduate Faculty Sub-Committee approval date (mm/dd/yy): 03/25/26
Faculty Council approval date (mm/dd/yy): 04/21/26
Senate Graduate Council (SGC) approval date (mm/dd/yy):

Date 2026/05/11

Show Empty Fields

Meeting Information

Agenda Page Title
SGC - Faculty of Mathematics - Consent Agenda - May 25, 2026

Career Level
Graduate,

Faculty/Unit
Mathematics

Date
2026-05-25

Summary

Course Proposals:

1) Statistics and Actuarial Science

3 courses being inactivated

7 course revisions

Program Proposals:

1) Statistics and Actuarial Science

1.1) Master of Quantitative Finance (MQF)

a. *Adding a transfer-in only Master's Research Paper (MRP) option to the MQF program that does not include the internship milestone requirement. The existing MRP option that includes the internship milestone requirement is being retained and will be identified as "Master of Quantitative Finance (MQF) - Internship" in the Calendar. Adding a description to the MRP milestone requirement. Updating the minimum average required for admission. (attached)*

1.2) PhD in Actuarial Science and Quantitative Finance

a. *Adding a newly created course (STAT 903) to the Probability and Statistics breadth category.*

1.3) PhD in Statistics

1.4) PhD in Statistics - Biostatistics

a. *Adding a newly created course (STAT 903) to the Mathematical Statistics and Probability breadth category.*

Attachment(s)

- MQF Program Revision - Adding transfer in option without internship - Reviewed by GSPA.pdf

Course Proposals

Courses: Retire

Code	Title	Type	Workflow Step

ACTSC 615	Economics	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 625	Casualty and Health Insurance Mathematics	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 635	Profession Communications in Actuarial Science	Courses	SGC, Senate Graduate Council (SGC)

Courses: New
No proposals have been added.

Courses: Changes

Code	Title	Type	Workflow Step
ACTSC 611	Interest Theory	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 614	Professional Communications in Actuarial Science	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 621	Accounting, Investment Science, and Corporate Finance	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 624	Casualty and Health Insurance Mathematics	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 631	Pricing and Hedging Financial Derivatives	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 633	Quantitative Risk Management	Courses	SGC, Senate Graduate Council (SGC)
ACTSC 634	Economics	Courses	SGC, Senate Graduate Council (SGC)

Programs & Plans Proposals

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
PhD in Actuarial Science & Quantitative Finance	Doctor of Philosophy (PhD) in Actuarial Science and Quantitative Finance	Programs	SGC, Senate Graduate Council (SGC)
PhD in Statistics	Doctor of Philosophy (PhD) in Statistics	Programs	SGC, Senate Graduate Council (SGC)
PhD in Statistics-Biostatistics	Doctor of Philosophy (PhD) in Statistics - Biostatistics	Programs	SGC, Senate Graduate Council (SGC)

Regulations Proposals

Regulations: Retire
No proposals have been added.

Regulations: New
No proposals have been added.

Regulations: Changes
No proposals have been added.

ACTSC 615 - Economics

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13393

Offering Number
1

Proposal Details

Proposal Type
Retire

Academic Unit Approval
2026-04-10

Last Offering of Course
-

Retired Impact
No

Rationale for Change

Amending the 615 course number to 634 only to keep numbering consistent as a result of the MAct Sc program change. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
615

Title
Economics

Abbreviated Title

Economics

Description
Micro: Supply and demand; utility theory and risk aversion; production choices; competition; Macro: Fiscal and monetary policy; exchange rates; factors affecting inflation, unemployment, exchange rates and economic growth; introductory game theory; introduction to insurance economics.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 625 - Casualty and Health Insurance Mathematics

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Spring 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13398

Offering Number
1

Proposal Details

Proposal Type
Retire

Academic Unit Approval
2026-04-10

Last Offering of Course
-

Retired Impact
No

Rationale for Change

Amending the 625 course number to 624 only to keep numbering consistent as a result of the MAct Sc program change. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case-by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty

Faculty of Mathematics

Academic Unit

Department of Statistics and Actuarial Science

Subject Code

ACTSC

Number

625

Title

Casualty and Health Insurance Mathematics

Abbreviated Title

Casualty and Health Ins. Math

Description

Frequency and severity models; compound distributions, calculation of moments and probabilities using recursion; Bayesian estimation and credibility; claims reserving for non-life insurance using run-off triangle methods, introductory ruin theory.

Units

0.50

Exceptions to Fees or Academic Progress Units

No

Components

Lecture Tutorial

Primary Component

Lecture

Grading Information

Grading Basis

Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?

No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 635 - Profession Communications in Actuarial Science

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13403

Offering Number
1

Proposal Details

Proposal Type
Retire

Academic Unit Approval
2026-04-10

Last Offering of Course
-

Retired Impact
No

Rationale for Change

Updating the 635 course number to 614 to remain consistent with existing course numbering as the course is moving from the third term to the first. Also updating the title due to a typo and the description to provide additional detail on the course. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case-by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
635

Title
Profession Communications in Actuarial Science

Abbreviated Title
Communications in Act Sc

Description

Elements of writing. Written project on an advanced topic, with a communications focus. Presentations: preparation and delivery.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 611 - Interest Theory

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Winter 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13389

Offering Number
1

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-04-10

Unit Weight/Number Changes
No

Rationale for Change

The new title is more informative of what is being taught in the course, and there will no longer be a Financial Mathematics II or III course in the program, so the title does not make sense.

Course Information

Faculty

Faculty of Mathematics

Academic Unit

Department of Statistics and Actuarial Science

Subject Code

ACTSC

Number

611

Title

Proposed

Title
Interest Theory

Existing

Title
Financial Mathematics I

Abbreviated Title

Proposed

Abbreviated Title
Interest Theory

Existing

Abbreviated Title
Financial Mathematics I

Description

Proposed

Description
Time value of money; simple and compound interest and discount; real returns; equations of value; loan schedules; valuation of fixed coupon bonds; valuation of real return bonds; term structure of interest rates; no arbitrage pricing; valuation of forward contracts; valuation of interest rate swaps. Duration and Immunization.

Existing

Description
Time value of money; simple and compound interest and discount; real returns; equations of value; loan schedules; valuation of fixed coupon bonds; valuation of real return bonds; term structure of interest rates; no arbitrage pricing; valuation of forward contracts; valuation of interest rate swaps. Duration and Immunization

Units

0.50

Exceptions to Fees or Academic Progress Units

No

Components

Lecture Tutorial

Primary Component

Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 614 - Professional Communications in Actuarial Science

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13392

Offering Number
1

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-04-10

Unit Weight/Number Changes
No

Rationale for Change

Updating the 635 course number to 614 to remain consistent with existing course numbering as the course is moving from the third term to the first. Also updating the title due to a typo and the description to provide additional detail on the course. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case-by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty

Academic Unit

Faculty of Mathematics

Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
614

Title

Proposed

Title
Professional Communications in Actuarial Science

Existing

Title
Corporate Finance and Accounting

Abbreviated Title

Proposed

Abbreviated Title
Prof Comm Act Sci

Existing

Abbreviated Title
Corporate Finance and Account

Description

Proposed

Description
Development of professional communication skills for actuarial practice. Topics emphasize presentations, professional correspondence, job search materials, and communication of actuarial analysis. Instruction focuses on iterative practice and feedback in professional contexts, including guest lectures by actuarial practitioners. Selected topics may include broader professional competencies such as teamwork, leadership, or project communication.

Existing

Description
Principles of financial accounting; construction and analysis of accounts. Sustainability reporting. Financial planning; capital budgeting, assessment of capital projects; long term financing; short term finance and planning

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components

Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

Top

ACTSC 621 - Accounting, Investment Science, and

Corporate Finance

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Spring 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13406

Offering Number
1

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-04-10

Unit Weight/Number Changes
No

Rationale for Change

To reduce the number of required courses in the program from 15 to 11 we are combining some topics that were covered in multiple courses. The new version of ACTSC 621 includes topics from the old versions of 621 and 614 and streamlines coverage for the SOA's Verification of Educational Experience Credit for Accounting and Finance. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case-by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
621

Title

Proposed

Title
Accounting, Investment Science, and Corporate Finance

Existing

Title
Financial Mathematics II

Abbreviated Title

Proposed

Abbreviated Title
Acct, Inv Sci, Corp Fin

Existing

Abbreviated Title
Financial Mathematics II

Description

Proposed

Description
This course provides an introduction to the core principles of accounting, investment science, and corporate finance. It covers foundational accounting topics like financial statements and planning, as well as essential valuation techniques including Net Present Value (NPV), other investment rules, and capital budgeting. Students will explore risk and return frameworks, including Mean-Variance Optimization, the Capital Asset Pricing Model (CAPM), Modern Portfolio Theory (MPT), and Arbitrage Pricing Theory (APT). Core corporate finance topics include capital structure theory through Modigliani-Miller (MM) propositions, Weighted average cost of capital (WACC), long-term financing, and the valuation of levered firms.

Existing

Description
Mean-Variance portfolio theory; utility based portfolio theory; Capital-Asset Pricing Method, Arbitrage Pricing Theory, Efficient Markets Hypotheses; Capital structure and dividend policy; introduction to options with applications in corporate finance. Behavioural finance.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?

No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 624 - Casualty and Health Insurance Mathematics

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Spring 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13397

Offering Number
1

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-04-10

Unit Weight/Number Changes
No

Rationale for Change

Amending the 625 course number to 624 only to keep numbering consistent as a result of the MAct Sc program change. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case-by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
624

Title

Proposed

Title
Casualty and Health Insurance Mathematics

Existing

Title
Stochastic Processes for Actuarial Science

Abbreviated Title

Proposed

Abbreviated Title
Casualty and Health Ins. Math

Existing

Abbreviated Title
Stoch Proc. for Act Sc.

Description

Proposed

Description
Frequency and severity models; compound distributions, calculation of moments and probabilities using recursion; Bayesian estimation and credibility; claims reserving for non-life insurance using run-off triangle methods, introductory ruin theory.

Existing

Description
Counting processes; Markov processes and Kolmogorov equations; Brownian motion and geometric Brownian motion; Ito's lemma Monte Carlo simulation.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 631 - Pricing and Hedging Financial Derivatives

Top

Effective Date & Career

Career	Effective Term and Year	Quest Course ID	Offering Number
Graduate	Proposed	13399	1

Effective Term and Year
Fall 2027

Existing

Effective Term and Year
Spring 2024

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-04-10

Unit Weight/Number Changes
No

Rationale for Change

To reduce the number of required courses in the program from 15 to 11 we are combining some topics that were covered in multiple courses. The new version of ACTSC 631 includes topics from the old versions of 624 and 631 and streamlines coverage on stochastic processes and financial derivatives. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case-by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
631

Title

Proposed

Title
Pricing and Hedging Financial Derivatives

Existing

Title
Financial Mathematics III

Abbreviated Title

Proposed

Abbreviated Title
Price Hedge Fin Deriv

Existing

Abbreviated Title
Financial Mathematics III

Description

Proposed

Description
This course provides a structured introduction to financial derivatives, from basic option strategies to advanced pricing models. The course explores model-independent properties such as put-call parity and convexity, binomial trees, risk-neutral valuation, and the Black-Scholes framework. It also covers basic stochastic calculus and Itô's lemma. Topics extend to option Greeks, hedging, and interest rate models. The curriculum blends theoretical foundations with practical applications.

Existing

Description
Binomial and lattice models for option pricing. Black-Scholes option pricing. Hedging option greeks. Exotic options. Term structure models including Vasicek, Cox-Ingersoll-Ross, Hull-White, Black-Derman-Toy. Interest rate options.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 633 - Quantitative Risk Management

Top

Effective Date & Career

Career	Effective Term and Year	Quest Course ID	Offering Number
Graduate		13401	1

Proposed

Effective Term and Year
Fall 2027

Existing

Effective Term and Year
Spring 2024

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-04-10

Unit Weight/Number Changes
No

Rationale for Change

Amending the 634 course number to 633 only to keep numbering consistent as a result of the MAct Sc program change.

Course Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
633

Title

Proposed

Title
Quantitative Risk Management

Existing

Title
Actuarial Risk Management

Abbreviated Title

Proposed

Abbreviated Title

Quantitative Risk Management

Existing

Abbreviated Title
Actuarial Risk Management

Description

Proposed

Description
This course combines enterprise and quantitative risk management to provide a comprehensive coverage of risk management science with applications in finance, insurance and corporate governance. Topics covered include: risk taxonomy; risk measures; extreme value theory; copulas; stress and scenario testing; interest rate risk management, credit risk management; regulation, including Basel, Basel 3 and Solvency 2; risk adjusted return; capital allocation.

Existing

Description
This course considers actuarial risk management in the context of practical applications in life and non-life insurance, and in pensions. Topics covered include the role of the actuary; methods for pricing and reserving in life and non-life insurance; regulatory capital; risk transfer through reinsurance or securitization; product development; model risk and governance; pension risk management; embedded options in life insurance.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add

Consent to Drop

No consent required

No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

ACTSC 634 - Economics

Top

Effective Date & Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2027

Existing

Effective Term and Year
Spring 2024

Quest Course ID
13402

Offering Number
1

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-04-10

Unit Weight/Number Changes
No

Rationale for Change

Amending the 615 course number to 634 only to keep numbering consistent as a result of the MAct Sc program change. Course numbering in the program has always been sequential by term to ensure that students enroll in the correct courses. Students in the old version of the program would not normally overlap with students in the new version as they will degree complete prior to the start of the new program. The academic calendar for each cohort will continue to show the correct versions of the courses for each year so we will retain the ability to confirm which students took which versions of the courses after they degree complete. In the unlikely event that a student overlaps with the new program due to a leave of absence, we will handle that on a case by-case basis to ensure that the student does not have duplicate course numbers on their transcript.

Course Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Subject Code
ACTSC

Number
634

Title

Proposed
Title Economics
Existing
Title Quantitative Risk Management

Abbreviated Title

Proposed
Abbreviated Title Economics
Existing
Abbreviated Title Quantitative Risk Management

Description

Proposed

Description
Micro: Supply and demand; utility theory and risk aversion; production choices; competition; Macro: Fiscal and monetary policy; exchange rates; factors affecting inflation, unemployment, exchange rates and economic growth; introductory game theory; introduction to insurance economics.

Existing

Description
This course combines enterprise and quantitative risk management to provide a comprehensive coverage of risk management science with applications in finance, insurance and corporate governance. Topics covered include: risk taxonomy; risk measures; extreme value theory; copulas; stress and scenario testing; interest rate risk management, credit risk management; regulation, including Basel, Basel 3 and Solvency 2; risk adjusted return; capital allocation.

Units
0.50

Exceptions to Fees or Academic Progress Units
No

Components
Lecture Tutorial

Primary Component
Lecture

Grading Information

Grading Basis
Numerical Grading Basis

Cross-Listing Information

Is this course cross-listed?
No

Repeatable Courses

Can this course be repeated for credit?
No

Enrolment Rules

Consent to Add
No consent required

Consent to Drop
No consent required

Prerequisites

- **Enrolled in:**
  - **Master of Actuarial Science (MActSc) - Master of Actuarial Science (MActSc)**

Corequisites

Antirequisites

Course Notes

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

There are no dependencies

PhD in Actuarial Science & Quantitative Finance - Doctor of Philosophy (PhD) in Actuarial Science and Quantitative Finance

Top

Effective Date and Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2026

Existing

Effective Term and Year
Spring 2026

Proposal Details

Proposal Type
Change

Quality Assurance Designation
Minor Modification Qad

Is there an impact to existing students?
Yes

Impact on Existing Students

Current students may choose to take STAT 903 as one of their required courses if they have not yet completed their course requirements.

Is the credential name changing?
No

Graduate Co-operative Requirements
Not Applicable

Change to Learning Outcomes
No

Rationale and Background for Change(s)

Adding a newly created course to the Probability and Statistics breadth category. Techniques in high-dimensional probability, the subject of STAT 903, have become standard tools in the modern theory of data science and machine learning. Adding this course to the theoretical breadth requirement for the Ph D programs, which requires that students successfully complete one course from each of the categories in Table 1 below, will give students an alternative to STAT 901 if they have already completed it or another equivalent course during their Master's degree.

General Program/Plan Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Graduate Field of Study
Statistics and Actuarial Science

Faculty
Faculty of Mathematics

Program/Plan Name
Doctor of Philosophy (Ph D) in Actuarial Science and Quantitative Finance

Graduate Credential Type
PhD

Accelerated Program
Not applicable

Admit Term(s)
Fall

Delivery Mode
On-campus

Registration Option(s)
Full-time, Part-time

Graduate Research Fields

- Actuarial Science Practice
- Actuarial Science Theory
- Finance
- Probability

Admissions

Admission Requirements: Minimum Requirements

- A Master's degree in statistics or actuarial science, completed or expected.
- At least an overall 78% average from a Canadian university (or its equivalent).
- An interview may be required.
- English language proficiency (ELP) (if applicable)

Admission Requirements: Application materials

- Program-specific questions (PSQ)
- Résumé
- Statement of interest
- Transcript(s)

Admission Requirements: References

- Number of references: 3
- Type of references: normally from academic sources

Requirements Information

Graduate Degree Requirements

- Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).

Graduate Course Requirements

No Rules

Graduate Course Requirements

Proposed

Graduate Course Requirements

- Students entering the Ph D in Actuarial Science and Quantitative Finance program with a Master's degree must complete 6 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must include the following:
  - ACTSC 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below to demonstrate breadth:
    - 1 course in Insurance Mathematics
    - 1 course in Probability and Statistics
    - 1 course in Finance and Risk Management
  - 2 graduate-level (800 and 900 level) STAT or ACTSC courses
- Additional constraint: 3 of the required 6 courses must be 900-level (including ACTSC 900) and 3 of the courses must have a ACTSC subject code.
- Exemptions can be made to the required courses at the discretion of the Associate Chair for Graduate Studies.

- Students entering the Ph D in Actuarial Science and Quantitative Finance program without a Master's degree must

complete 9 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must meet the following criteria to demonstrate breadth:
    - ACTSC 900 Ph D Research Skills
    - 3 courses from each of the categories listed in Table 1 below:
        - 1 course in Insurance Mathematics
        - 1 course in Probability and Statistics
        - 1 course in Finance and Risk Management
    - 5 graduate-level (800 and 900 level) STAT or ACTSC courses.
- Additional constraint: 3 of the required 9 courses must be 900-level (including ACTSC 900) and 3 of the courses must have a ACTSC subject code.
- Exemptions can be made to the required breadth courses at the discretion of the Associate Chair for Graduate Studies.

- Table 1: List of the three categories required for breadth requirements and their courses:

Category	Courses
Insurance Mathematics	ACTSC 854, ACTSC 855, ACTSC 962
Probability and Statistics	ACTSC 965, STAT 831, STAT 841, STAT 850, STAT 901, STAT 902, STAT 903
Finance and Risk Management	ACTSC 964, ACTSC 970, ACTSC 971, ACTSC 972, ACTSC 974, STAT 906

Existing

Graduate Course Requirements

- Students entering the Ph D in Actuarial Science and Quantitative Finance program with a Master's degree must complete 6 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must include the following:
    - ACTSC 900 Ph D Research Skills
    - 3 courses from each of the categories listed in Table 1 below to demonstrate breadth:
        - 1 course in Insurance Mathematics
        - 1 course in Probability and Statistics
        - 1 course in Finance and Risk Management
    - 2 graduate-level (800 and 900 level) STAT or ACTSC courses
- Additional constraint: 3 of the required 6 courses must be 900-level (including ACTSC 900) and 3 of the courses must have a ACTSC subject code.
- Exemptions can be made to the required courses at the discretion of the Associate Chair for Graduate Studies.
- Students entering the Ph D in Actuarial Science and Quantitative Finance program without a Master's degree must complete 9 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must meet the following criteria to demonstrate breadth:
    - ACTSC 900 Ph D Research Skills
    - 3 courses from each of the categories listed in Table 1 below:
        - 1 course in Insurance Mathematics
        - 1 course in Probability and Statistics
        - 1 course in Finance and Risk Management
    - 5 graduate-level (800 and 900 level) STAT or ACTSC courses.
- Additional constraint: 3 of the required 9 courses must be 900-level (including ACTSC 900) and 3 of the courses must have a ACTSC subject code.
- Exemptions can be made to the required breadth courses at the discretion of the Associate Chair for Graduate Studies.

- Table 1: List of the three categories required for breadth requirements and their courses:

Category	Courses
Insurance Mathematics	ACTSC 854, ACTSC 855, ACTSC 962
Probability and Statistics	ACTSC 965, STAT 831, STAT 841, STAT 850, STAT 901, STAT 902
Finance and Risk Management	ACTSC 964, ACTSC 970, ACTSC 971, ACTSC 972, ACTSC 974, STAT 906

Milestone Requirements

Research Presentation

- Students are expected to deliver at least 3 seminars during their program. The purpose of this requirement is to provide students with an opportunity to improve their presentation skills. Each seminar should be attended by one, or preferably two, departmental faculty members.

Ph D Comprehensive Examination

- The Ph D Comprehensive Examination is divided into two stages: Stage I and Stage II. Students must complete Stage I

before they can proceed to Stage II.
- The Stage I requirement consists of courses in the “breadth requirement” and ACTSC 900 Ph D Research Skills. The breadth requirement ensures that students have sufficient breadth of knowledge to undertake research at the Ph D level.
- The Stage II requirement, also referred to as the thesis proposal defense, is a diagnostic oral examination, the purpose of which is to test a student's preparedness to undertake thesis research in their specific field.

Ph D Comprehensive Examination I

- By the end of their fourth term, students are required to (a) take at least 5 graduate level courses including their 900-level course requirements, (b) complete their required breadth requirements (see Table 1 above), and (c) ACTSC 900.
- Students must achieve a grade of at least 75% in each breadth requirement course. Topics courses will be assigned to the appropriate category by the Graduate Officer.
- The Graduate Officer may require students to take additional courses beyond the minimum number of courses noted above in the offer letter to the student (i.e., six courses for Ph D students with a Masters, or nine courses for Ph D students without a Masters).
- Students must take ACTSC 900 that requires students to prepare a portfolio and undertake an oral exam by the end of their third term. Each student will be examined by the instructor and a ACTSC 900 committee, which includes the supervisor(s) and at least two other departmental Faculty members. This committee will evaluate the student according to a common grading scheme and all grades in the class will be moderated by the instructor to ensure consistency across committees. If the committee and instructor determine that the student has not reached the required standard for a passing grade, then they will prepare detailed comments on the weaknesses that need to be addressed in the portfolio and the oral exam. The student will then address these issues, resubmit the portfolio and retake the oral exam by the end of the following term. If the student fails the course for a second time, they will be required to withdraw from the program.

Ph D Comprehensive Examination II

- Students are required to meet the University-level Ph D Comprehensive Examination minimum requirements, with certain noted differences that are specific to the Faculty of Mathematics Comprehensive Examination minimum requirements:
  - Comprehensive examination purpose: Consistent with University-level minimum requirements.
  - Timing: Consistent with University-level minimum requirements.
  - Committee: Consistent with University-level minimum requirements. Note: The Faculty of Mathematics wishes to use the option to have the committee approved by a delegate of the Associate Dean, namely by the Graduate Officer or the Graduate Operations Committee in the home department of the student.
  - Who Chairs an examination: Consistent with University-level minimum requirements.
  - Format / Content: Consistent with University-level minimum requirements.
  - Academic integrity: In the Faculty of Mathematics, when a student needs to submit a written document to their comprehensive examination committee prior to the examination, they are required to sign an acknowledgement form affirming their work does not violate the University policy on Academic Integrity. Students are also encouraged to use a plagiarism detection software and include its report with the submission of their written document. Furthermore, the comprehensive examination committee may require the student to use such software and include the report it generated with the submission of their written component.

- In addition to the University-level and Faculty-level Ph D Comprehensive Examination minimum requirements, students in the Ph D in Actuarial Science and Quantitative Finance program are also required to meet the following requirements:
  - Submit a written thesis proposal to the committee prior to the examination and present it during the comprehensive (Stage II) examination. The thesis proposal is orally presented to the public, followed by questioning from the student's Stage II Committee and any other members of the university community who may be present.
  - The Stage II Comprehensive Examination Committee consists of the supervisor(s) and at least two additional faculty members from the Department. The composition of the Stage II Committee must be approved by the Graduate Operations Committee, and the Associate Chair for Graduate Studies will act as a neutral chair of the Committee of examiners, or will appoint a faculty member to serve in that capacity.

Ph D Thesis

- The Ph D thesis and thesis examination are the culmination of the candidate's research efforts as a graduate student.
- The examination is divided into two stages:
  - Optional Departmental Thesis Presentation
  - University Thesis Defense
- Departmental Thesis Presentation: Ph D students are encouraged to present the results of their research before interested members of the department. This departmental thesis presentation is intended to fulfil several purposes. Students have an opportunity to practice their presentation skills and to gain valuable experience in answering questions about their work in a public setting. As well, faculty and graduate students who are interested in the thesis topic are provided with an overview of the student's research prior to the actual thesis examination.
- Ph D Thesis Examination: the student shall defend the thesis in an oral examination before an Examining Committee, which shall consist of the supervisor(s), two faculty members in the Department, one faculty member from outside the Department, and an external examiner familiar with the student's research field. The Committee is approved by the Faculty Graduate Operations Committee.
- Students must submit the Ph D thesis to Graduate Studies and Postdoctoral Affairs (GSPA) after it has been accepted by the Department and Faculty.

Notes

- Department of Statistics and Actuarial Science website
- Doctor of Philosophy (Ph D) in Actuarial Science future graduate students program page

Specializations

Undergraduate Plan Guidelines

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

Prerequisites

- ACTSC 900 - PhD Research Skills — View Program
- ACTSC 856 - Statistical Learning in Actuarial Science — View Program
- ACTSC 967 - Foundations of Insurance Economics — View Program

PhD in Statistics - Doctor of Philosophy (PhD) in Statistics

Top

Effective Date and Career

Career

Effective Term and Year

Graduate

Proposed

Effective Term and Year
Fall 2026

Existing

Effective Term and Year
Spring 2026

Proposal Details

Proposal Type
Change

Quality Assurance Designation
Minor Modification Qad

Is there an impact to existing students?
Yes

Impact on Existing Students

Current students may choose to take STAT 903 as one of their required courses if they have not yet completed their course requirements.

Is the credential name changing?
No

Graduate Co-operative Requirements
Not Applicable

Change to Learning Outcomes
No

Rationale and Background for Change(s)

Adding a newly created course to the Mathematical Statistics and Probability breadth category. Techniques in high-dimensional probability, the subject of STAT 903, have become standard tools in the modern theory of data science and machine learning. Adding this course to the theoretical breadth requirement for the Ph D programs, which requires that students successfully complete one course from each of the categories in Table 1 below, will give students an alternative to STAT 901 if they have already completed it or another equivalent course during their Master's degree.

General Program/Plan Information

Faculty

Faculty of Mathematics

Academic Unit

Department of Statistics and Actuarial Science

Graduate Field of Study

Statistics and Actuarial Science

Faculty
Faculty of Mathematics

Program/Plan Name
Doctor of Philosophy (Ph D) in Statistics

Graduate Credential Type
PhD

Accelerated Program
Not applicable

Admit Term(s)
Fall

Delivery Mode
On-campus

Registration Option(s)
Full-time, Part-time

Graduate Research Fields

- Computational Statistics
- Finance
- Industrial Statistics
- Probability
- Statistical Theory and Methods

Admissions

Admission Requirements: Minimum Requirements

- A Master's degree in statistics or actuarial science, completed or expected.
- At least an overall 78% average from a Canadian university (or its equivalent).
- An interview may be required.
- English language proficiency (ELP) (if applicable)

Admission Requirements: Application materials

- Program-specific questions (PSQ)
- Résumé
- Statement of interest
- Transcript(s)

Admission Requirements: References

- Number of references: 3
- Type of references: normally from academic sources

Requirements Information

Graduate Degree Requirements

- Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).

Graduate Course Requirements

No Rules

Graduate Course Requirements

Proposed

Graduate Course Requirements

- Students entering the Ph D program with a Master's degree must complete 6 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must include the following:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below to demonstrate breadth:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 2 graduate-level (800 and 900 level) STAT or ACTSC courses;
- Additional constraint: 3 of the required 6 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.
- Exemptions can be made to the required courses at the discretion of the Associate Chair for Graduate Studies.

- Students entering the Ph D program without a Master's degree must complete 9 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must meet the following criteria to demonstrate breadth:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 5 graduate-level (800 and 900 level) STAT or ACTSC courses.
- Additional constraint: 3 of the required 9 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.
- Exemptions can be made to the required breadth courses at the discretion of the Associate Chair for Graduate Studies.

- Table 1: List of the three categories required for breadth requirements and their courses.

Category	Courses
Applied Statistics	STAT 830, STAT 831, STAT 835, STAT 836, STAT 854, STAT 910, STAT 923, STAT 929, STAT 931, STAT 932, STAT 935, STAT 936, STAT 938, STAT 974
Computing	STAT 840, STAT 841, STAT 842, STAT 844, STAT 906
Mathematical Statistics and Probability	STAT 901, STAT 902, STAT 903, STAT 908

Existing

Graduate Course Requirements

- Students entering the Ph D program with a Master's degree must complete 6 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must include the following:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below to demonstrate breadth:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 2 graduate-level (800 and 900 level) STAT or ACTSC courses;
- Additional constraint: 3 of the required 6 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.
- Exemptions can be made to the required courses at the discretion of the Associate Chair for Graduate Studies.

- Students entering the Ph D program without a Master's degree must complete 9 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must meet the following criteria to demonstrate breadth:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 5 graduate-level (800 and 900 level) STAT or ACTSC courses.
- Additional constraint: 3 of the required 9 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.
- Exemptions can be made to the required breadth courses at the discretion of the Associate Chair for Graduate Studies.

- Table 1: List of the three categories required for breadth requirements and their courses.

Category	Courses
Applied Statistics	STAT 830, STAT 831, STAT 835, STAT 836, STAT 854, STAT 910, STAT 923, STAT 929, STAT 931, STAT 932, STAT 935, STAT 936, STAT 938, STAT 974
Computing	STAT 840, STAT 841, STAT 842, STAT 844, STAT 906

Category	Courses
Mathematical Statistics and Probability	STAT 901, STAT 902, STAT 908

Milestone Requirements

Research Presentation

- Students are expected to deliver at least 3 seminars during their program. The purpose of this requirement is to provide students with an opportunity to improve their presentation skills. Each seminar should be attended by one, or preferably two, departmental faculty members.

Ph D Comprehensive Examination

- The Ph D Comprehensive Examination is divided into two stages: Stage I and Stage II. Students must complete Stage I before they can proceed to Stage II.
- The Stage I requirement consists of courses in the “breadth requirement” and STAT 900 Ph D “Research Skills. The breadth requirement ensures that students have sufficient breadth of knowledge to undertake research at the Ph D level.
- The Stage II requirement, also referred to as the thesis proposal defense, is a diagnostic oral examination, the purpose of which is to test a student's preparedness to undertake thesis research in their specific field.

Ph D Comprehensive Examination I

- By the end of their fourth term, students are required to (a) take at least 5 graduate level courses including their 900-level course requirements, (b) complete their required breadth requirements (see Table 1 above), and (c) STAT 900.
- Students must achieve a grade of at least 75% in each breadth requirement course. Topics courses will be assigned to the appropriate category by the Graduate Officer.
- The Graduate Officer may require students to take additional courses beyond the minimum number of courses noted above in the offer letter to the student (i.e., six courses for Ph D students with a Masters, or nine courses for Ph D students without a Masters).
- Students must take STAT 900 that requires students to prepare a portfolio and undertake an oral exam by the end of their third term. Each student will be examined by the instructor and a STAT 900 committee, which includes the supervisor(s) and at least two other departmental Faculty members. This committee will evaluate the student according to a common grading scheme and all grades in the class will be moderated by the instructor to ensure consistency across committees. If the committee and instructor determine that the student has not reached the required standard for a passing grade, then they will prepare detailed comments on the weaknesses that need to be addressed in the portfolio and the oral exam. The student will then address these issues, resubmit the portfolio and retake the oral exam by the end of the following term. If the student fails the course for a second time, then they will be required to withdraw from the program.

Ph D Comprehensive Examination II

- Students are required to meet the University-level Ph D Comprehensive Examination minimum requirements, with certain noted differences that are specific to the Faculty of Mathematics Comprehensive Examination minimum requirements:
  - Comprehensive examination purpose: Consistent with University-level minimum requirements.
  - Timing: Consistent with University-level minimum requirements.
  - Committee: Consistent with University-level minimum requirements. Note: The Faculty of Mathematics wishes to use the option to have the committee approved by a delegate of the Associate Dean, namely by the Graduate Officer or the Graduate Operations Committee in the home department of the student.
  - Who Chairs an examination: Consistent with University-level minimum requirements.
  - Format / Content: Consistent with University-level minimum requirements.
  - Academic integrity: In the Faculty of Mathematics, when a student needs to submit a written document to their comprehensive examination committee prior to the examination, they are required to sign an acknowledgement form affirming their work does not violate the University policy on Academic Integrity. Students are also encouraged to use a
    plagiarism detection software and include its report with the submission of their written document. Furthermore, the comprehensive examination committee may require the student to use such software and include the report it generated with the submission of their written component.

- In addition to the University-level and Faculty-level Ph D Comprehensive Examination minimum requirements, students in the Ph D in Statistics program are also required to meet the following requirements:
  - Submit a written thesis proposal to the committee prior to the examination and present it during the comprehensive (Stage II) examination. The thesis proposal is orally presented to the public, followed by questioning from the student's Stage II Committee and any other members of the university community who may be present.
  - The Stage II Comprehensive Examination Committee consists of the supervisor(s) and at least two additional faculty members from the Department. The composition of the Stage II Committee must be approved by the Graduate Operations Committee, and the Associate Chair for Graduate Studies will act as a neutral chair of the Committee of examiners, or will appoint a faculty member to serve in that capacity.

Ph D Thesis

- The Ph D thesis and thesis examination are the culmination of the candidate's research efforts as a graduate student.
- The examination is divided into two stages:
  - Optional Departmental Thesis Presentation
  - University Thesis Defense

- Departmental Thesis Presentation: Ph D students are encouraged to present the results of their research before interested members of the department. This departmental thesis presentation is intended to fulfil several purposes. Students have an opportunity to practice their presentation skills and to gain valuable experience in answering questions about their work in a public setting. As well, faculty and graduate students who are interested in the thesis topic are provided with an overview of the student's research prior to the actual thesis examination.
- Ph D Thesis Examination: the student shall defend the thesis in an oral examination before an Examining Committee, which shall consist of the supervisor(s), two faculty members in the Department, one faculty member from outside the Department, and an external examiner familiar with the student's research field. The Committee is approved by the Faculty Graduate Operations Committee.
- Students must submit the Ph D thesis to Graduate Studies and Postdoctoral Affairs (GSPA) after it has been accepted by the Department and Faculty.

Notes

- Department of Statistics and Actuarial Science website
- Doctor of Philosophy (Ph D) in Statistics future graduate students program page

Specializations

Undergraduate Plan Guidelines

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

Prerequisites

- STAT 900 - PhD Research Skills

View Program

PhD in Statistics-Biostatistics - Doctor of Philosophy (PhD) in Statistics - Biostatistics

Top

Effective Date and Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Fall 2026

Existing

Effective Term and Year
Spring 2026

Proposal Details

Proposal Type
Change

Quality Assurance Designation
Minor Modification Qad

Is there an impact to existing students?
Yes

Impact on Existing Students

Current students may choose to take STAT 903 as one of their required courses if they have not yet completed their course requirements.

Is the credential name changing?
No

Graduate Co-operative Requirements
Not Applicable

Change to Learning Outcomes
No

Rationale and Background for Change(s)

Adding a newly created course to the Mathematical Statistics and Probability breadth category. Techniques in high-dimensional probability, the subject of STAT 903, have become standard tools in the modern theory of data science and machine learning. Adding this course to the theoretical breadth requirement for the Ph D programs, which requires that students successfully complete one course from each of the categories in Table 1 below, will give students an alternative to STAT 901 if they have already completed it or another equivalent course during their Master's degree.

General Program/Plan Information

Faculty
Faculty of Mathematics

Academic Unit
Department of Statistics and Actuarial Science

Graduate Field of Study
Statistics and Actuarial Science

Faculty
Faculty of Mathematics

Program/Plan Name
Doctor of Philosophy (Ph D) in Statistics - Biostatistics

Graduate Credential Type
PhD

Accelerated Program
Not applicable

Admit Term(s)
Fall

Delivery Mode
On-campus

Registration Option(s)
Full-time, Part-time

Graduate Research Fields

- Biostatistics
- Computational Statistics
- Probability
- Statistical Theory and Methods

Admissions

Admission Requirements: Minimum Requirements

- A Master's degree in statistics or actuarial science, completed or expected.
- At least an overall 78% average from a Canadian university (or its equivalent).
- An interview may be required.
- English language proficiency (ELP) (if applicable)

Admission Requirements: Application materials

- Program-specific questions (PSQ)
- Résumé
- Statement of interest
- Transcript(s)

Admission Requirements: References

- Number of references: 3
- Type of references: normally from academic sources

Requirements Information

Graduate Degree Requirements

- Students must complete the course and milestone requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).

Graduate Course Requirements

No Rules

Graduate Course Requirements

Proposed

Graduate Course Requirements

- Students entering the Ph D program with a Master's degree must complete 6 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must include the following:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below to demonstrate breadth:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 2 graduate-level (800 and 900 level) STAT or ACTSC courses;
- Additional constraint: 3 of the required 6 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.
- Exemptions can be made to the required courses at the discretion of the Associate Chair for Graduate Studies.

- Students entering the Ph D program without a Master's degree must complete 9 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must meet the following criteria to demonstrate breadth:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 5 graduate-level (800 and 900 level) STAT or ACTSC courses.
- Additional constraint: 3 of the required 9 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.
- Exemptions can be made to the required breadth courses at the discretion of the Associate Chair for Graduate Studies.

- Table 1: List of the three categories required for breadth requirements and their courses.

Category	Courses
Applied Statistics	STAT 830, STAT 831, STAT 835, STAT 836, STAT 854, STAT 910, STAT 923, STAT 929, STAT 931, STAT 932, STAT 935, STAT 936, STAT 938, STAT 974
Computing	STAT 840, STAT 841, STAT 842, STAT 844, STAT 906
Mathematical Statistics and Probability	STAT 901, STAT 902, STAT 903, STAT 908

Existing

Graduate Course Requirements

- Students entering the Ph D program with a Master's degree must complete 6 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must include the following:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below to demonstrate breadth:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 2 graduate-level (800 and 900 level) STAT or ACTSC courses;
- Additional constraint: 3 of the required 6 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.

- Exemptions can be made to the required courses at the discretion of the Associate Chair for Graduate Studies.

- Students entering the Ph D program without a Master's degree must complete 9 one-term (0.50 unit weight) courses with an overall average of at least 75%. These courses must meet the following criteria to demonstrate breadth:
  - STAT 900 Ph D Research Skills
  - 3 courses from each of the categories listed in Table 1 below:
    - 1 course in Applied Statistics
    - 1 course in Computing
    - 1 course in Mathematical Statistics and Probability
  - 5 graduate-level (800 and 900 level) STAT or ACTSC courses.
- Additional constraint: 3 of the required 9 courses must be 900-level (including STAT 900) and 3 of the courses must have a STAT subject code.
- Exemptions can be made to the required breadth courses at the discretion of the Associate Chair for Graduate Studies.

- Table 1: List of the three categories required for breadth requirements and their courses.

Category	Courses
Applied Statistics	STAT 830, STAT 831, STAT 835, STAT 836, STAT 854, STAT 910, STAT 923, STAT 929, STAT 931, STAT 932, STAT 935, STAT 936, STAT 938, STAT 974
Computing	STAT 840, STAT 841, STAT 842, STAT 844, STAT 906
Mathematical Statistics and Probability	STAT 901, STAT 902, STAT 908

Milestone Requirements

Research Presentation

- Students are expected to deliver at least 3 seminars during their program. The purpose of this requirement is to provide students with an opportunity to improve their presentation skills. Each seminar should be attended by one, or preferably two, departmental faculty members.

Ph D Comprehensive Examination

- The Ph D Comprehensive Examination is divided into two stages: Stage I and Stage II. Students must complete Stage I before they can proceed to Stage II.
- The Stage I requirement consists of courses in the “breadth requirement” and STAT 900 Ph D “Research Skills. The breadth requirement ensures that students have sufficient breadth of knowledge to undertake research at the Ph D level.
- The Stage II requirement, also referred to as the thesis proposal defense, is a diagnostic oral examination, the purpose of which is to test a student's preparedness to undertake thesis research in their specific field.

Ph D Comprehensive Examination I

- By the end of their fourth term, students are required to (a) take at least 5 graduate level courses including their 900-level course requirements, (b) complete their required breadth requirements (see Table 1 above), and (c) STAT 900.
- Students must achieve a grade of at least 75% in each breadth requirement course. Topics courses will be assigned to the appropriate category by the Graduate Officer.
- The Graduate Officer may require students to take additional courses beyond the minimum number of courses noted above in the offer letter to the student (i.e., six courses for Ph D students with a Masters, or nine courses for Ph D students without a Masters).
- Students must take STAT 900 that requires students to prepare a portfolio and undertake an oral exam by the end of their third term. Each student will be examined by the instructor and a STAT 900 committee, which includes the supervisor(s) and at least two other departmental Faculty members. This committee will evaluate the student according to a common grading scheme and all grades in the class will be moderated by the instructor to ensure consistency across committees. If the committee and instructor determine that the student has not reached the required standard for a passing grade, then they will prepare detailed comments on the weaknesses that need to be addressed in the portfolio and the oral exam. The student will then address these issues, resubmit the portfolio and retake the oral exam by the end of the following term. If the student fails the course for a second time, then they will be required to withdraw from the program.

Ph D Comprehensive Examination II

- Students are required to meet the University-level Ph D Comprehensive Examination minimum requirements, with certain noted differences that are specific to the Faculty of Mathematics Comprehensive Examination minimum requirements:
  - Comprehensive examination purpose: Consistent with University-level minimum requirements.
  - Timing: Consistent with University-level minimum requirements.
  - Committee: Consistent with University-level minimum requirements. Note: The Faculty of Mathematics wishes to use the option to have the committee approved by a delegate of the Associate Dean, namely by the Graduate Officer or the Graduate Operations Committee in the home department of the student.
  - Who Chairs an examination: Consistent with University-level minimum requirements.
  - Format / Content: Consistent with University-level minimum requirements.
  - Academic integrity: In the Faculty of Mathematics, when a student needs to submit a written document to their comprehensive examination committee prior to the examination, they are required to sign an acknowledgement

form affirming their work does not violate the University policy on Academic Integrity. Students are also encouraged to use a
plagiarism detection software and include its report with the submission of their written document. Furthermore, the comprehensive examination committee may require the student to use such software and include the report it generated with the submission of their written component.

- In addition to the University-level and Faculty-level Ph D Comprehensive Examination minimum requirements, students in the Ph D in Statistics program are also required to meet the following requirements:
  - Submit a written thesis proposal to the committee prior to the examination and present it during the comprehensive (Stage II) examination. The thesis proposal is orally presented to the public, followed by questioning from the student's Stage II Committee and any other members of the university community who may be present.
  - The Stage II Comprehensive Examination Committee consists of the supervisor(s) and at least two additional faculty members from the Department. The composition of the Stage II Committee must be approved by the Graduate Operations Committee, and the Associate Chair for Graduate Studies will act as a neutral chair of the Committee of examiners, or will appoint a faculty member to serve in that capacity.

Ph D Thesis

- The Ph D thesis and thesis examination are the culmination of the candidate's research efforts as a graduate student.
- The examination is divided into two stages:
  - Optional Departmental Thesis Presentation
  - University Thesis Defense
- Departmental Thesis Presentation: Ph D students are encouraged to present the results of their research before interested members of the department. This departmental thesis presentation is intended to fulfil several purposes. Students have an opportunity to practice their presentation skills and to gain valuable experience in answering questions about their work in a public setting. As well, faculty and graduate students who are interested in the thesis topic are provided with an overview of the student's research prior to the actual thesis examination.
- Ph D Thesis Examination: the student shall defend the thesis in an oral examination before an Examining Committee, which shall consist of the supervisor(s), two faculty members in the Department, one faculty member from outside the Department, and an external examiner familiar with the student's research field. The Committee is approved by the Faculty Graduate Operations Committee.
- Students must submit the Ph D thesis to Graduate Studies and Postdoctoral Affairs (GSPA) after it has been accepted by the Department and Faculty.

Notes

- Department of Statistics and Actuarial Science website
- Doctor of Philosophy (Ph D) in Statistics - Biostatistics future graduate students program page

Specializations

Undergraduate Plan Guidelines

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Mathematics

Dependencies

Prerequisites

- STAT 900 - PhD Research Skills

View Program

Graduate Studies
Program Revision Template

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

Faculty: Mathematics

Program: Master of Quantitative Finance (MQF)

Program contact name(s): Heather McLaughlin and Alex Scheid

Form completed by: Heather McLaughlin

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

Adding a transfer-in only Master's Research Paper (MRP) option to the MQF program that does not include the internship milestone requirement. The existing MRP option that includes the internship milestone requirement is being retained and will be identified as "Master of Quantitative Finance (MQF) - Internship" in the Calendar. Adding a description to the MRP milestone requirement. Updating the minimum average required for admission.

Is this a major modification to the program? No

Rationale for change(s):

Students that do not find an internship are currently ineligible to graduate. The program is adding a transfer-in only MRP option without the internship milestone requirement, so that students who are unable to find a position can degree complete. Due to course sequencing, students will not be able to degree complete early, and should work on their Master's Research paper during this term.

We are updating the description of the Master's Research Paper milestone to better reflect the requirements and align with the other programs in the Department.

We have reduced the required average for admission from 80% to 78% to align with the rest of the programs in the Department. Over the past few years, we have been accepting students with GPAs of 78% - 80% as non-standard admissions and have found no evidence that students with a lower GPA struggle in the program.

Proposed effective date: Term: Winter Year: 2027

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=Statistics%20and%20Actuarial%20Science

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Master of Quantitative Finance (MQF) **Admit term(s)**	**Master of Quantitative Finance (MQF)** **Admit term(s)**

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

• Fall
 	
Delivery mode
• On-campus
 	
Registration option(s)
• Full-time
 	
Study option(s)
• Master's Research Paper
• Thesis
 	
Graduate research fields
• Mathematical and Computational Finance
• Statistics and Probability
 	
Admission requirements: Minimum requirements
• ~~An overall 80% average from a Canadian University (or its equivalent).~~
• ~~A four-year honour's Bachelor's degree (or equivalent) with a strong background in quantitative methods. Such a background may be in mathematics, statistics, actuarial science, computer science, economics, engineering, physics, provided there is a strong component of high level mathematics in the program. Strong communication skills are also highly desirable.~~
• ~~An interview and diagnostic test may be required.~~
• ~~English language proficiency (ELP)~~ (~~if applicable~~)
 	
~~**Admission requirements: Application materials**~~
• ~~Program-specific questions (PSQ)~~
• ~~Résumé~~
• ~~Transcript(s)~~
 	
~~**Admission requirements: References**~~
• ~~Number of references: 2~~
• ~~Type of references: normally from academic sources~~
 	
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).
• ~~Note: All students are admitted to the Master's Research Paper study option. Students can apply to transfer to the Thesis study option after completing at least one academic term.~~
	• Fall
	
	Delivery mode
	• On-campus
	
	Registration option(s)
	• Full-time
	
	Study option(s)
	• Master's Research Paper
	• Thesis
	
	Graduate research fields
	• Mathematical and Computational Finance
	• Statistics and Probability
	
	Admission requirements: Minimum requirements
	• Students in the Master of Quantitative Finance (MQF) - Internship program can apply to transfer to the Master of Quantitative Finance (MQF) Program Thesis study option after completing at least one academic term. The transfer must be approved by the student's supervisor, the Program Director and Associate Chair Graduate Studies.
	• Students in the Master of Quantitative Finance (MQF) - Internship program can apply to transfer to the Master of Quantitative Finance (MQF) Program Master's Research Paper study option normally after the third term. The transfer must be approved by the Program Director and Associate Chair Graduate Studies.
	
	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
	• Required courses:
	  ○ ACC 770 Finance 1/ACTSC 970 Finance 1
	  ○ ACC 771 Finance 2/ACTSC 971 Finance 2
	• Elective courses:
	  ○ 2 courses (0.50 unit weight) approved by the student's academic advisor.
	• Students must obtain an overall average of at least 75% in the courses presented in fulfilment of the degree requirements.

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

~~The transfer must be approved by the student's supervisor and the Graduate Chair.~~
 	
Thesis option: Course requirements
• Required courses:
  ○ ACC 770 Finance 1/ACTSC 970 Finance 1
  ○ ACC 771 Finance 2/ACTSC 971 Finance 2
• Elective courses:
  ○ 2 courses (0.50 unit weight) approved by the student's academic advisor.
• Students must obtain an overall average of at least 75% in the courses presented in fulfilment of the degree requirements.
 	
Thesis option: Milestone requirements
 	
Master's Thesis
• Students will be required to submit a thesis proposal by the end of their second term of study.
 	
Master's Research Paper option: Course requirements
• Required courses:
  ○ ACC 770 Finance 1/ACTSC 970 Finance 1
  ○ ACC 771 Finance 2/ACTSC 971 Finance 2
  ○ ACC 772 Finance 3/ACTSC 972 Finance 3
  ○ ACTSC 969 Stochastic Calculus for Quantitative Finance
  ○ STAT 850 Estimation and Hypothesis Testing
  ○ STAT 906 Computer Intensive Methods for Stochastic Models in Finance
  ○ STAT 974/ACTSC 974 Financial Econometrics
• Elective courses: students are required to take 2 additional graduate level courses (0.50 unit weight) approved by the student's academic advisor.
• By the end of term two, students must have successfully completed five courses. These courses must include ACC 770/ACTSC 970, ACC 771/ACTSC 971, and STAT 850. Students that do not meet this progress requirement may be required to withdraw from the program.
• Students must obtain an overall average of at least 75% in the courses presented in fulfilment of the degree requirements.
	Thesis option: Milestone requirements
	
	Master's Thesis
	• Students will be required to submit a thesis proposal by the end of their second term of study.
	
	Master's Research Paper option: Course requirements
	• Required courses:
	  ○ ACC 770 Finance 1/ACTSC 970 Finance 1
	  ○ ACC 771 Finance 2/ACTSC 971 Finance 2
	  ○ ACC 772 Finance 3/ACTSC 972 Finance 3
	  ○ ACTSC 969 Stochastic Calculus for Quantitative Finance
	  ○ STAT 850 Estimation and Hypothesis Testing
	  ○ STAT 906 Computer Intensive Methods for Stochastic Models in Finance
	  ○ STAT 974/ACTSC 974 Financial Econometrics
	• Elective courses: students are required to take 2 additional graduate level courses (0.50 unit weight) approved by the student's academic advisor.
	• By the end of term two, students must have successfully completed five courses. These courses must include ACC 770/ACTSC 970, ACC 771/ACTSC 971, and STAT 850. Students that do not meet this progress requirement may be required to withdraw from the program.
	• Students must obtain an overall average of at least 75% in the courses presented in fulfilment of the degree requirements.
	
	Master's Research Paper option: Milestone requirements
	
	Master's Research Paper
	• <u>Students must complete a research paper that will be graded on a credit/no-credit basis.</u>

	Master of Quantitative Finance (MQF) <u>- Internship</u> **Admit term(s)** • Fall **Delivery mode**

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Master's Research Paper option: Milestone requirements ~~**Graduate Studies Internship**~~ • ~~The Master's Research Paper option consists of two academic terms (fall and winter), followed by a required work term in the spring term, and then one additional academic term (fall).~~ **Master's Research Paper**	• On-campus **Registration option(s)** • Full-time **Program type(s)** • Internship **Study option(s)** • Master's Research Paper **Graduate research fields** • Mathematical and Computational Finance • Statistics and Probability **Admission requirements: Minimum requirements** • An overall 78% average from a Canadian University (or its equivalent). • A four-year honour's Bachelor's degree (or equivalent) with a strong background in quantitative methods. Such a background may be in mathematics, statistics, actuarial science, computer science, economics, engineering, physics, provided there is a strong component of high-level mathematics in the program. Strong communication skills are also highly desirable. • An interview and diagnostic test may be required. • English language proficiency (ELP) (if applicable) **Admission requirements: Application materials** • Program-specific questions (PSQ) • Résumé • Transcript(s) **Admission requirements: References** • Number of references: 2 • Type of references: normally from academic sources **Degree requirements** • Students must complete the course and milestone requirements listed below ~~associated with their chosen study option~~ in addition to the Graduate Academic Integrity Module (Graduate AIM). **Master's Research Paper option: Course requirements** • Required courses:

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
	○ ACC 770 Finance 1/ACTSC 970 Finance 1 ○ ACC 771 Finance 2/ACTSC 971 Finance 2 ○ ACC 772 Finance 3/ACTSC 972 Finance 3 ○ ACTSC 969 Stochastic Calculus for Quantitative Finance ○ STAT 850 Estimation and Hypothesis Testing ○ STAT 906 Computer Intensive Methods for Stochastic Models in Finance ○ STAT 974/ACTSC 974 Financial Econometrics • Elective courses: students are required to take 2 additional graduate level courses (0.50 unit weight) approved by the student's academic advisor. • By the end of term two, students must have successfully completed five courses. These courses must include ACC 770/ACTSC 970, ACC 771/ACTSC 971, and STAT 850. Students that do not meet this progress requirement may be required to withdraw from the program. • Students must obtain an overall average of at least 75% in the courses presented in fulfilment of the degree requirements. **Master's Research Paper option: Milestone requirements** **Graduate Studies Internship** • The Master's Research Paper option consists of two academic terms (fall and winter), followed by a required work term in the spring term, and then one additional academic term (fall). **Master's Research Paper** • Students must complete a research paper that will be graded on a credit/no-credit basis.

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

Students currently registered in the program will be eligible to transfer into the non-internship option if they are unsuccessful in finding an internship during their third term.

Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 03/31/26
Department/School approval date (mm/dd/yy):
Graduate Faculty Sub-Committee approval date (mm/dd/yy): 03/30/26
Faculty Council approval date (mm/dd/yy): 04/28/26

Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):

Memo

DATE: May 11, 2026

TO: Tony Ly, Governance Officer

FROM: Justin Wan, Interim Associate Vice-President, Graduate Studies and Postdoctoral Affairs (GSPA)
Marianne Simm, Director, GSPA

RE: Graduate Studies Academic Calendar (GSAC) updates

Consent agenda items for approval:

1) Section 7.4.6 Minimum requirements for PhD degree: Thesis defence
2) Section 11.5 Graduate Certificate in Work-Integrated Learning
3) Section 14.3 University responsibilities regarding supervisory relationships

1) Section 7.4.6 Minimum requirements for PhD degree: Thesis defence

Description and rationale for proposed changes:

The proposed revisions to this section relate to the grievance subsection. The wording is being updated to align with changes coming under the Policy 70 updates. Specifically, grievances as related to a thesis examination outcome review are being revised to identify this and note that such requests fall outside of Policy 70.

Proposed effective date: Term: Fall Year: 2026

Current **Graduate Studies Academic Calendar (GSAC)** page:
https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/policy/SyKVQuwRp

Current Calendar copy	Proposed Calendar copy
7.4.6 Minimum requirements for PhD degree: Thesis defence **Procedural guidelines** The thesis defence is an oral examination of the student by the student's PhD Thesis Examining Committee, chaired by an impartial faculty member with Sole-Supervisory Privilege Status (SSPS2) from outside the candidate's department and preferably from outside of the Faculty. The candidate, the supervisor(s), members of the examining committee, and the Chair are essential participants that must attend the defence (physically or remotely). Any member of the University may attend a defence, unless the defence is restricted to the examining committee. The Chair is responsible for the proper conduct of the examination. Candidates first present their thesis orally with whatever aids are required to make an effective presentation. This presentation should be limited to no more than thirty minutes with the focus being on the main contributions and conclusions of the work. The presentation is followed by questioning. Normally, the round of questioning begins with the external examiner, followed by other members, then the internal external member,	**7.4.6 Minimum requirements for PhD degree: Thesis defence** **Procedural guidelines** The thesis defence is an oral examination of the student by the student's PhD Thesis Examining Committee, chaired by an impartial faculty member with Sole-Supervisory Privilege Status (SSPS2) from outside the candidate's department and preferably from outside of the Faculty. The candidate, the supervisor(s), members of the examining committee, and the Chair are essential participants that must attend the defence (physically or remotely). Any member of the University may attend a defence, unless the defence is restricted to the examining committee. The Chair is responsible for the proper conduct of the examination. Candidates first present their thesis orally with whatever aids are required to make an effective presentation. This presentation should be limited to no more than thirty minutes with the focus being on the main contributions and conclusions of the work. The presentation is followed by questioning. Normally, the round of questioning begins with the external examiner, followed by other members, then the internal external member,

the internal member, and ends with the supervisor(s). The Chair is encouraged to administer the exam in such a way that a period is set aside at the end of the examination for questions from non-Committee members. If the exam duration has exceeded normal limits, the Chair may at their discretion preclude questions from non-committee members. If the Chair of the PhD Thesis Examining Committee is unsure of the appropriateness or relevance of a question, they should ask the members of the Committee whether any of them wishes to have the candidate answer the question, thus in effect making the question posed one which would be authorized by a member of the Committee. The Chair, with agreement of the Examining Committee, will decide when to conclude the questioning. The candidate and audience will be asked to leave the room (either physically or remotely) and the Examining Committee will deliberate in a closed session. The Graduate Officer, Departmental Chair, Faculty Associate Dean, Graduate Studies and Associate Vice-President, Graduate Studies and Postdoctoral Affairs may attend the closed session. Once a decision is made, the candidate is invited back into the room and informed by the Chair of the Committee's decision. The Chair will provide a report to the Associate Vice-President, Graduate Studies and Postdoctoral Affairs on the conduct of the examination, any issues or problems that arose, and the decision of the Examining Committee. **Format for defences** The University provides the option for students to complete their thesis defence in person, in a fully remote, or hybrid format. The decision on the format of the defence will be upon agreement between the supervisor and student. Chairs should be prepared to support either an in-person or remote defence. It is the responsibility of the Chair to ensure the	the internal member, and ends with the supervisor(s). The Chair is encouraged to administer the exam in such a way that a period is set aside at the end of the examination for questions from non-Committee members. If the exam duration has exceeded normal limits, the Chair may at their discretion preclude questions from non-committee members. If the Chair of the PhD Thesis Examining Committee is unsure of the appropriateness or relevance of a question, they should ask the members of the Committee whether any of them wishes to have the candidate answer the question, thus in effect making the question posed one which would be authorized by a member of the Committee. The Chair, with agreement of the Examining Committee, will decide when to conclude the questioning. The candidate and audience will be asked to leave the room (either physically or remotely) and the Examining Committee will deliberate in a closed session. The Graduate Officer, Departmental Chair, Faculty Associate Dean, Graduate Studies and Associate Vice-President, Graduate Studies and Postdoctoral Affairs may attend the closed session. Once a decision is made, the candidate is invited back into the room and informed by the Chair of the Committee's decision. The Chair will provide a report to the Associate Vice-President, Graduate Studies and Postdoctoral Affairs on the conduct of the examination, any issues or problems that arose, and the decision of the Examining Committee. **Format for defences** The University provides the option for students to complete their thesis defence in person, in a fully remote, or hybrid format. The decision on the format of the defence will be upon agreement between the supervisor and student. Chairs should be prepared to support either an in-person or remote defence. It is the responsibility of the Chair to ensure the

structure of the defence supports the integrity of the process and all can participate appropriately and equally either in-person or virtually. Chairs will receive, regardless of format of delivery, a standard Chair package in electronic format from the Faculty Administrative Assistant that is coordinating the examination, one week prior to the defence. The Chair package will include the following: 1. Report of the Chair, 2. PhD Thesis Committee Composition, 3. PhD Thesis Examination Report, 4. External Examiner's Report, 5. Committee Members' Reports, 6. A guide to chairing a PhD thesis examination, 7. Instructions for the defence, including location of in person defence or process for remote defences. Chairs will document the conduct of the examination on the "Report of the Chair" form. This form will be made available in Word format and/or in fillable .pdf so that defence Chairs can complete it electronically. Chairs will document the decision of the examination on the "PhD Thesis Examination Report" and "Report of the Chair" forms. These forms will be made available in Word format and/or in fillable .pdf so that defence Chairs can complete them electronically. Outcomes of the defence, regardless of format of delivery, will be communicated orally to the student by the Chair on behalf of the committee at the conclusion of the in-camera deliberations. **Participation through electronic media (remote participation)** In situations where a student and their supervisor collaboratively decide to hold the defence in a remote format, Faculties will internally provide logistical guidelines on setting up remote defences. Please contact the Faculty Administrative Assistant to obtain Faculty-specific procedures.	structure of the defence supports the integrity of the process and all can participate appropriately and equally either in-person or virtually. Chairs will receive, regardless of format of delivery, a standard Chair package in electronic format from the Faculty Administrative Assistant that is coordinating the examination, one week prior to the defence. The Chair package will include the following: 1. Report of the Chair, 2. PhD Thesis Committee Composition, 3. PhD Thesis Examination Report, 4. External Examiner's Report, 5. Committee Members' Reports, 6. A guide to chairing a PhD thesis examination, 7. Instructions for the defence, including location of in person defence or process for remote defences. Chairs will document the conduct of the examination on the "Report of the Chair" form. This form will be made available in Word format and/or in fillable .pdf so that defence Chairs can complete it electronically. Chairs will document the decision of the examination on the "PhD Thesis Examination Report" and "Report of the Chair" forms. These forms will be made available in Word format and/or in fillable .pdf so that defence Chairs can complete them electronically. Outcomes of the defence, regardless of format of delivery, will be communicated orally to the student by the Chair on behalf of the committee at the conclusion of the in-camera deliberations. **Participation through electronic media (remote participation)** In situations where a student and their supervisor collaboratively decide to hold the defence in a remote format, Faculties will internally provide logistical guidelines on setting up remote defences. Please contact the Faculty Administrative Assistant to obtain Faculty-specific procedures.

As there are limitations to supporting hybrid defences, the expectation is that only one participant may participate remotely, with the balance of the committee in-person, unless there has been specific approval from the Faculty Associate Dean, Graduate Studies. The Chair, student and supervisor must all be present in person for any hybrid defence arrangement. If any one of these individuals are not able to be physically present, the defence should be held in a remote format with everyone participating remotely. Any member of the PhD Thesis Examining Committee, including the external examiner, participating by remote connection must make allowances for the possibility of a failed connection. In the event that remote connection is lost, the Chair will determine whether or not the duration of the disruption has had a material impact on the committee member's ability to assess the candidate's defence. If there has not been a material impact, and the connection has been reestablished, then the examiner may cast their vote as if the loss of communication had not occurred. If there has been a material impact, and there was a report submitted in advance, the report will be read by the Chair and the vote indicated in the report will be counted. When there is no such report, the vote may be nullified. The Chair’s report must note the lost connection, including the timing and whether or not the vote was included in the decision. Normally the defence can proceed as long as the supervisor, external examiner and two other committee members are present and subject to the agreement of the candidate and supervisor. The decision as to when to postpone the defence, if the technology fails, will be up to the Chair of the defence. **Absent committee members** It is expected that all members of the PhD Examining Committee attend the defence (physically or remotely). If a committee member is unable to attend a defence being held in person, that member may be given the option to participate remotely. The	As there are limitations to supporting hybrid defences, the expectation is that only one participant may participate remotely, with the balance of the committee in-person, unless there has been specific approval from the Faculty Associate Dean, Graduate Studies. The Chair, student and supervisor must all be present in person for any hybrid defence arrangement. If any one of these individuals are not able to be physically present, the defence should be held in a remote format with everyone participating remotely. Any member of the PhD Thesis Examining Committee, including the external examiner, participating by remote connection must make allowances for the possibility of a failed connection. In the event that remote connection is lost, the Chair will determine whether or not the duration of the disruption has had a material impact on the committee member's ability to assess the candidate's defence. If there has not been a material impact, and the connection has been reestablished, then the examiner may cast their vote as if the loss of communication had not occurred. If there has been a material impact, and there was a report submitted in advance, the report will be read by the Chair and the vote indicated in the report will be counted. When there is no such report, the vote may be nullified. The Chair’s report must note the lost connection, including the timing and whether or not the vote was included in the decision. Normally the defence can proceed as long as the supervisor, external examiner and two other committee members are present and subject to the agreement of the candidate and supervisor. The decision as to when to postpone the defence, if the technology fails, will be up to the Chair of the defence. **Absent committee members** It is expected that all members of the PhD Examining Committee attend the defence (physically or remotely). If a committee member is unable to attend a defence being held in person, that member may be given the option to participate remotely. The

alternative option may be to move the entire defence to a remote format. In cases where a committee member is unable to attend either remotely or in person, and sufficient time allows, it is preferably to secure a new committee member to replace the unavailable committee member. In the case of an unanticipated, last-minute emergency absence of a committee member, the defence can proceed subject to the agreement of the candidate and the supervisor(s) as long as the following committee members are available (in person or virtually) to present their votes: • Supervisor • External Examiner • Two other members of the committee Any exceptions to this regulation must be approved by the Faculty Associate Dean, Graduate Studies. **Decision** The decision of the PhD Thesis Examining Committee is based both on the thesis and on the candidate's ability to defend it. The decision of the Examining Committee is made by majority vote. Should the external examiner’s vote differ from that of the majority, or if there is a tie vote, the decision shall be deferred and referred to the Associate Vice-President, Graduate Studies and Postdoctoral Affairs. The Associate Vice-President will consult with the Faculty Associate Deans, Graduate Studies and will make the final determination. The following decisions are open to the PhD Thesis Examining Committee: **A. Accepted** The thesis and the oral defence have been completed to the satisfaction of the examining committee. The thesis may require typographical and/or minor editorial corrections to be made to the satisfaction of the supervisor and submitted and approved in UWSpace within one month of the date of the defence. If more time is required to make	alternative option may be to move the entire defence to a remote format. In cases where a committee member is unable to attend either remotely or in person, and sufficient time allows, it is preferably to secure a new committee member to replace the unavailable committee member. In the case of an unanticipated, last-minute emergency absence of a committee member, the defence can proceed subject to the agreement of the candidate and the supervisor(s) as long as the following committee members are available (in person or virtually) to present their votes: • Supervisor • External Examiner • Two other members of the committee Any exceptions to this regulation must be approved by the Faculty Associate Dean, Graduate Studies. **Decision** The decision of the PhD Thesis Examining Committee is based both on the thesis and on the candidate's ability to defend it. The decision of the Examining Committee is made by majority vote. Should the external examiner’s vote differ from that of the majority, or if there is a tie vote, the decision shall be deferred and referred to the Associate Vice-President, Graduate Studies and Postdoctoral Affairs. The Associate Vice-President will consult with the Faculty Associate Deans, Graduate Studies and will make the final determination. The following decisions are open to the PhD Thesis Examining Committee: **A. Accepted** The thesis and the oral defence have been completed to the satisfaction of the examining committee. The thesis may require typographical and/or minor editorial corrections to be made to the satisfaction of the supervisor and submitted and approved in UWSpace within one month of the date of the defence. If more time is required to make

these corrections, the Committee should consider whether a Category B decision is merited. If the thesis is not submitted within this timeline, the student will be withdrawn from the program. Any extension to the time limits must be requested in writing and approved by the Graduate Officer and Faculty Associate Dean, Graduate Studies. **B. Accepted conditionally** The oral defence has been completed to the satisfaction of the examining committee. The thesis is acceptable but requires content changes which are minor enough that reexamination is not required. The PhD Thesis Examining Committee's report must include a brief outline of the nature of the changes required and must indicate the time by which the changes are to be completed. Changes must be completed to the satisfaction of the full Committee or a subset of the committee that will include at least one member who is not the student's supervisor(s). The revised thesis must be submitted and approved in UWSpace within four months of the date of the defence or the student will be withdrawn from the program. Any extension to the time limits must be requested in writing and approved by the Graduate Officer and Faculty Associate Dean, Graduate Studies. **C. Reexamination** Reexamination is required in either of the following situations: • The oral defence is not to the satisfaction of the Examining Committee. The PhD thesis examination requires that the candidate demonstrates their mastery and expertise and engages meaningfully in scholarly discourse in their chosen area. If the candidate fails to satisfy these requirements, the Examining Committee may require reexamination. The PhD Thesis Examining Committee's report must contain a recommended set of activities that aims to improve the candidate's abilities to present their	these corrections, the Committee should consider whether a Category B decision is merited. If the thesis is not submitted within this timeline, the student will be withdrawn from the program. Any extension to the time limits must be requested in writing and approved by the Graduate Officer and Faculty Associate Dean, Graduate Studies. **B. Accepted conditionally** The oral defence has been completed to the satisfaction of the examining committee. The thesis is acceptable but requires content changes which are minor enough that reexamination is not required. The PhD Thesis Examining Committee's report must include a brief outline of the nature of the changes required and must indicate the time by which the changes are to be completed. Changes must be completed to the satisfaction of the full Committee or a subset of the committee that will include at least one member who is not the student's supervisor(s). The revised thesis must be submitted and approved in UWSpace within four months of the date of the defence or the student will be withdrawn from the program. Any extension to the time limits must be requested in writing and approved by the Graduate Officer and Faculty Associate Dean, Graduate Studies. **C. Reexamination** Reexamination is required in either of the following situations: • The oral defence is not to the satisfaction of the Examining Committee. The PhD thesis examination requires that the candidate demonstrates their mastery and expertise and engages meaningfully in scholarly discourse in their chosen area. If the candidate fails to satisfy these requirements, the Examining Committee may require reexamination. The PhD Thesis Examining Committee's report must contain a recommended set of activities that aims to improve the candidate's abilities to present their

research and respond to inquiries related to their studies. • The written thesis requires modifications of a substantial nature, the need for which makes the acceptability of the thesis questionable. The PhD Thesis Examining Committee's report must contain an outline of the modifications expected and indicate the time by which the changes are to be completed. In this case, the revised thesis must be resubmitted to the Faculty Graduate Office for reexamination. Reexamination must occur within one year of the date of the first defence. Normally, reexamination will follow the same procedures as for the initial submission except that the display period may be reduced or eliminated at the discretion of the Associate Dean. Normally, the same PhD Thesis Examining Committee will serve, with the exception that in some circumstances, a new External Examiner can be found. A decision to reexamine is open only once for each candidate. **D. Failed** If after reexamination the candidate does not achieve Category A or B, then the student will be withdrawn from the program. The PhD Thesis Examining Committee shall report the reasons for rejection to the Faculty Associate Dean, Graduate Studies, who will confirm the decision in writing to the student within one week of the date of the examination, as well as the requirement to withdraw. **Deferral of decision** If the PhD Thesis Examining Committee is not prepared to reach a decision concerning the thesis at the time of the thesis defence, it is the responsibility of the Chair to determine what additional information is required by the Committee to reach a decision, to arrange to obtain this information for the Committee, and to call another meeting of the Committee as soon as the required information is available. It is also the responsibility of the Chair to inform the candidate that the decision is	research and respond to inquiries related to their studies. • The written thesis requires modifications of a substantial nature, the need for which makes the acceptability of the thesis questionable. The PhD Thesis Examining Committee's report must contain an outline of the modifications expected and indicate the time by which the changes are to be completed. In this case, the revised thesis must be resubmitted to the Faculty Graduate Office for reexamination. Reexamination must occur within one year of the date of the first defence. Normally, reexamination will follow the same procedures as for the initial submission except that the display period may be reduced or eliminated at the discretion of the Associate Dean. Normally, the same PhD Thesis Examining Committee will serve, with the exception that in some circumstances, a new External Examiner can be found. A decision to reexamine is open only once for each candidate. **D. Failed** If after reexamination the candidate does not achieve Category A or B, then the student will be withdrawn from the program. The PhD Thesis Examining Committee shall report the reasons for rejection to the Faculty Associate Dean, Graduate Studies, who will confirm the decision in writing to the student within one week of the date of the examination, as well as the requirement to withdraw. **Deferral of decision** If the PhD Thesis Examining Committee is not prepared to reach a decision concerning the thesis at the time of the thesis defence, it is the responsibility of the Chair to determine what additional information is required by the Committee to reach a decision, to arrange to obtain this information for the Committee, and to call another meeting of the Committee as soon as the required information is available. It is also the responsibility of the Chair to inform the candidate that the decision is

pending. Candidates are not normally present at this second meeting of the Committee. **Academic integrity and the PhD Thesis** The University considers academic integrity to be an integral part of all scholarship. Anyone who believes that a thesis contains content that constitutes an academic integrity violation shall make the Associate Dean, Graduate Studies in the student's home Faculty aware of the perceived academic integrity violation as soon as the concern is discovered. The Associate Dean shall: 1. Acknowledge receipt of the concern; 2. Communicate to the supervisor and the student that a concern has been brought forward, and seek their input in the process of resolving the concern; 3. Investigate to the extent possible the validity of the concern; 4. If warranted, postpone the defence pending the resolution of the alleged academic integrity violation; 5. Engage the Research Integrity group in the Office of Research if the nature of the academic integrity violation may include the improper treatment of intellectual property – core contributions to the research presented in the thesis. 6. Pursue disciplinary actions, as appropriate, as described in University Policy 71 – Student Discipline. ~~**Grievance**~~ ~~A request for reexamination of a graduate thesis is a type of academic grievance, as per Policy 70 – Student Petitions and Grievances.~~ A student who wishes to request a reexamination of their thesis should contact the Associate Vice-President, Graduate Studies and Postdoctoral Affairs, who will form a committee of Associate Deans, Graduate. This committee will determine the appropriate course of action, which may involve a reexamination of the thesis or the denial of the student's request.	pending. Candidates are not normally present at this second meeting of the Committee. **Academic integrity and the PhD Thesis** The University considers academic integrity to be an integral part of all scholarship. Anyone who believes that a thesis contains content that constitutes an academic integrity violation shall make the Associate Dean, Graduate Studies in the student's home Faculty aware of the perceived academic integrity violation as soon as the concern is discovered. The Associate Dean shall: 1. Acknowledge receipt of the concern; 2. Communicate to the supervisor and the student that a concern has been brought forward, and seek their input in the process of resolving the concern; 3. Investigate to the extent possible the validity of the concern; 4. If warranted, postpone the defence pending the resolution of the alleged academic integrity violation; 5. Engage the Research Integrity group in the Office of Research if the nature of the academic integrity violation may include the improper treatment of intellectual property – core contributions to the research presented in the thesis. 6. Pursue disciplinary actions, as appropriate, as described in University Policy 71 – Student Discipline. **Examination outcome review** A student who wishes to request a reexamination of their thesis should contact the Associate Vice-President, Graduate Studies and Postdoctoral Affairs, who will form a committee of Associate Deans, Graduate. This committee will determine the appropriate course of action, which may involve a reexamination of the thesis or the denial of the student's request. Note: This process falls outside of Policy 70.

2) Section 11.5 Graduate Certificate in Work-Integrated Learning

Description and rationale for proposed changes:

The proposed revisions to this section will clarify the approval pathway for the Graduate Certificate in WIL. Since the Graduate Certificate in WIL is a type of Graduate Certificate of Participation, the approval pathways for both credentials should be aligned for consistency. All Graduate Certificates in WIL approved by a Department and Faculty must be reported to Senate Graduate Council (SGC) for information.

Proposed effective date: Term: Fall Year: 2026

Current **Graduate Studies Academic Calendar (GSAC)** page:
https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/policy/Sk0m3D7tex

Current Calendar copy	Proposed Calendar copy
11.5 Graduate Certificate in Work-Integrated Learning A Graduate Certificate in Work-Integrated Learning (WIL) is a Graduate Certificate of Participation that recognizes the student's completion of a minimum of 150 hours of work-integrated learning that includes career curriculum, professional skills curriculum, and reflection on practice where the majority of the time students are engaged in authentic work on problems, processes, and/or projects producing work reflecting professional practice with a host organization. Graduate Certificates in WIL must align to the requirements and standards of Graduate work-integrated learning. Programs offering a Graduate Certificate in WIL may include additional WIL courses or milestones outside of their degree requirements in order to meet the Graduate Certificate in WIL requirements and standards. The Graduate Certificate in WIL will formally integrate the student's academic studies with (1) paid or unpaid quality WIL experiences, (2) engaged external partnerships, and (3) program-relevant student learning outcomes related to employability, agency, knowledge and skill mobility, and life-long learning. Graduate Certificates in WIL can include course-level WIL, applied research, and other	**11.5 Graduate Certificate in Work-Integrated Learning** A Graduate Certificate in Work-Integrated Learning (WIL) is a Graduate Certificate of Participation that recognizes the student's completion of a minimum of 150 hours of work-integrated learning that includes career curriculum, professional skills curriculum, and reflection on practice where the majority of the time students are engaged in authentic work on problems, processes, and/or projects producing work reflecting professional practice with a host organization. Graduate Certificates in WIL must align to the requirements and standards of Graduate work-integrated learning. Programs offering a Graduate Certificate in WIL may include additional WIL courses or milestones outside of their degree requirements in order to meet the Graduate Certificate in WIL requirements and standards. The Graduate Certificate in WIL will formally integrate the student's academic studies with (1) paid or unpaid quality WIL experiences, (2) engaged external partnerships, and (3) program-relevant student learning outcomes related to employability, agency, knowledge and skill mobility, and life-long learning. Graduate Certificates in WIL can include course-level WIL, applied research, and other

WIL experiences but cannot include program-level WIL (i.e., internships or co-op). Before a new Graduate Certificate in WIL is approved, it must undergo a quality assurance review by the Centre for Work-Integrated Learning. ~~Existing programs that offer a Graduate Certificate in WIL, guidelines, and approval processes for each component of the Certificate are available at the Centre for Work-integrated Learning website~~.	WIL experiences but cannot include program-level WIL (i.e., internships or co-op). Before a new Graduate Certificate in WIL is approved, it must undergo a quality assurance review by the Centre for Work-Integrated Learning. Proposals for Graduate Certificates in WIL require Department and Faculty approval and are completed in conjunction with a master's or doctoral program. All Graduate Certificates in WIL approved by a Department and Faculty must be reported to Senate Graduate Council (SGC) for information.

3) Section 14.3 University responsibilities regarding supervisory relationships

Description and rationale for proposed changes:

The proposed revisions will align some of the text in section 14.3.B with section 14.3.A. In cases where a student wishes to end the relationship with their supervisor outlined in section 14.3.B, the funding wording is a bit different than when the supervisor wishes to end the relationship outlined in section 14.3.A. In some Faculties, the responsibility for graduate student funding rests with individual faculty members rather than with departments or the Faculty. The proposed revisions will accommodate established practices of all Faculties.

Proposed effective date: Term: Fall Year: 2026

Current **Graduate Studies Academic Calendar (GSAC)** page:
https://uwaterloo.ca/academic-calendar/graduate-studies/catalog#/policy/HylA6o106

Current Calendar copy	Proposed Calendar copy
14.3 University responsibilities regarding supervisory relationships In instances when a graduate student is progressing satisfactorily but when the relationship between the student and their supervisor becomes untenable, it is important that there is clarity on expectations and responsibilities for both the student and the supervisor moving forward. This section provides direction to this end. This section does not apply to students that have a documented history of not having met academic progress expectations including research goals. Rather, information for supporting students who are not meeting academic expectations is provided in the Guide for Graduate Research and Supervision and in the Guidelines for evaluating and providing feedback on graduate student progress in PhD and research Masters programs. Note that a loss of funding is not normally a valid reason for a faculty member to end a supervisory relationship. In those cases, it is the responsibility of the supervisor, the department/school (Graduate Officer) or program, and the Faculty to secure funding to support the student to the end of the funding commitment as articulated in the student's offer of admission or to the University-	**14.3 University responsibilities regarding supervisory relationships** In instances when a graduate student is progressing satisfactorily but when the relationship between the student and their supervisor becomes untenable, it is important that there is clarity on expectations and responsibilities for both the student and the supervisor moving forward. This section provides direction to this end. This section does not apply to students that have a documented history of not having met academic progress expectations including research goals. Rather, information for supporting students who are not meeting academic expectations is provided in the Guide for Graduate Research and Supervision and in the Guidelines for evaluating and providing feedback on graduate student progress in PhD and research Masters programs. Note that a loss of funding is not normally a valid reason for a faculty member to end a supervisory relationship. In those cases, it is the responsibility of the supervisor, the department/school (Graduate Officer) or program, and the Faculty to secure funding to support the student to the end of the funding commitment as articulated in the student's offer of admission or to the University-

mandated program time limits. In some instances, funding for students is provided at the Faculty level. It is also essential to ensure that if a student is struggling within their program that every effort is made to assist the student and direct them to relevant resources on campus (e.g. Counselling Services). A. In cases where the supervisor wishes to discontinue the relationship: The supervisor will have provided the student with ongoing, constructive feedback such that the student has had an opportunity to react to and address the supervisor's concerns. Normally, a student should have a minimum of two terms with the supervisor in order to evaluate the goodness of fit between student and supervisor before a final determination is made on discontinuing the relationship. When the supervisor starts the process of ending the supervisory relationship, the supervisor shall communicate in writing to the student the rationale for the discontinuation. The intention of this communication is for the student to have the opportunity to meaningfully reflect on the situation and consider how this may influence future choices. If the student wishes to continue at the University of Waterloo, the University makes the following commitments in support of the student: 1. The previous supervisor will not take actions that negatively influence the likelihood of the student finding a new supervisor; 2. The supervisor, department/school or Faculty will provide funding at least at the University minimum levels to the student for up to two terms while the student seeks a new supervisor (within or outside the Faculty); these will be aligned with important University dates. The intention is to provide the student with as close to two full terms as possible and should be provided in a manner that will support and benefit the student. This	mandated program time limits. In some instances, funding for students is provided at the Faculty level. It is also essential to ensure that if a student is struggling within their program that every effort is made to assist the student and direct them to relevant resources on campus (e.g. Counselling Services). A. In cases where the supervisor wishes to discontinue the relationship: The supervisor will have provided the student with ongoing, constructive feedback such that the student has had an opportunity to react to and address the supervisor's concerns. Normally, a student should have a minimum of two terms with the supervisor in order to evaluate the goodness of fit between student and supervisor before a final determination is made on discontinuing the relationship. When the supervisor starts the process of ending the supervisory relationship, the supervisor shall communicate in writing to the student the rationale for the discontinuation. The intention of this communication is for the student to have the opportunity to meaningfully reflect on the situation and consider how this may influence future choices. If the student wishes to continue at the University of Waterloo, the University makes the following commitments in support of the student: 1. The previous supervisor will not take actions that negatively influence the likelihood of the student finding a new supervisor; 2. The supervisor, department/school or Faculty will provide funding at least at the University minimum levels to the student for up to two terms while the student seeks a new supervisor (within or outside the Faculty); these will be aligned with important University dates. The intention is to provide the student with as close to two full terms as possible and should be provided in a manner that will support and benefit the student. This

is provided that the student is within their program limits. 3. The Graduate Officer in the student's home department/school or program will: 1. assist the student in developing materials (CV, research statement, etc.) that can be presented to potential new supervisors; 2. contact academic colleagues and arrange meetings between potential supervisors and the student; 3. serve as a temporary supervisor (the meaning of which is to sign forms, ensure courses are correct, but not provide academic input) until a new supervisor is found or the student's program ends; 4. address issues around access to research, office space and direct students to campus resources regarding data ownership and authorship. 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to obtain a new supervisor will be given the opportunity to voluntarily withdraw from their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw".	is provided that the student is within their program limits. 3. The Graduate Officer in the student's home department/school or program will: 1. assist the student in developing materials (CV, research statement, etc.) that can be presented to potential new supervisors; 2. contact academic colleagues and arrange meetings between potential supervisors and the student; 3. serve as a temporary supervisor (the meaning of which is to sign forms, ensure courses are correct, but not provide academic input) until a new supervisor is found or the student's program ends; 4. address issues around access to research, office space and direct students to campus resources regarding data ownership and authorship. 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to obtain a new supervisor will be given the opportunity to voluntarily withdraw from their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw".
B. In cases where a student wishes to discontinue the relationship: There are numerous reasons as to why a student may want to discontinue their relationship with their supervisor. Should there be reasons that relate to University Policy, options through those avenues should be shared with the student by the Graduate Officer. However, the University recognizes that sometimes there is not a good fit between the student and their supervisor. Hence, the student should have the	B. In cases where a student wishes to discontinue the relationship: There are numerous reasons as to why a student may want to discontinue their relationship with their supervisor. Should there be reasons that relate to University Policy, options through those avenues should be shared with the student by the Graduate Officer. However, the University recognizes that sometimes there is not a good fit between the student and their supervisor. Hence, the student should have the

opportunity to find another supervisor to continue their graduate studies at the University of Waterloo. The Graduate Officer in the student's home department/school or program will have actively been engaged with the student and the supervisor in an effort to sustain the relationship. When those efforts are deemed to not have been successful, and the student wishes to stay at the University of Waterloo, the University makes the following commitments in support of the student: 1. The previous supervisor, faculty members, and staff in the student's home department/school or program will not take actions that negatively influence the likelihood of the student finding a new supervisor; 2. The department/school or Faculty will provide funding at least at the University minimum level for a maximum of one term while the student seeks a new supervisor (within or outside the Faculty) provided the student is within their program limits; 3. The Graduate Officer in the student's home department/school or program will serve as a temporary supervisor during this period [see A. 3 (c, d), in the previous section]. 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to find a new supervisor will be given the opportunity to voluntarily withdraw from their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw". If there is uncertainty regarding which of the above two scenarios apply to the situation, the default will be to extend funding for two terms. More information is provided in the Guide for Graduate Research and Supervision	opportunity to find another supervisor to continue their graduate studies at the University of Waterloo. The Graduate Officer in the student's home department/school or program will have actively been engaged with the student and the supervisor in an effort to sustain the relationship. When those efforts are deemed to not have been successful, and the student wishes to stay at the University of Waterloo, the University makes the following commitments in support of the student: 1. The previous supervisor, faculty members, and staff in the student's home department/school or program will not take actions that negatively influence the likelihood of the student finding a new supervisor; 2. The supervisor, department/school or Faculty will provide funding at least at the University minimum level for a maximum of one term while the student seeks a new supervisor (within or outside the Faculty) provided the student is within their program limits; 3. The Graduate Officer in the student's home department/school or program will serve as a temporary supervisor during this period [see A. 3 (c, d), in the previous section]. 4. The department/school or Faculty will communicate in writing the date by which a new supervisor must be in place and the implications of not meeting this date. Typically, students who are unable to find a new supervisor will be given the opportunity to voluntarily withdraw from their program. In cases where the student opts not to voluntarily withdraw, the department/school or program may reach a decision of "required to withdraw". If there is uncertainty regarding which of the above two scenarios apply to the situation, the default will be to extend funding for two terms. More information is provided in the Guide for Graduate Research and Supervision

regarding the pathways for graduate students to obtain support.	regarding the pathways for graduate students to obtain support.

Prior to form submission, review the instructions. For questions about the form submission, contact Trevor Clews, Graduate Studies and Postdoctoral Affairs (GSPA).

Faculty: Graduate Studies

Effective date: Term: Fall Year: 2026

Milestone

Note: milestone changes also require the completion/submission of the Graduate Studies Program Revision Template.

☐ New: Choose an item.

☐ Inactivate: Choose an item.

☐ Revise: from Choose an item. to Choose an item.

Course

Note: some course changes also require the completion/submission of the Graduate Studies Program Revision Template.

☐ New: Complete all course elements below

☐ Inactivate: Complete the following course elements:
Course subject code, Course number, Course title

☒ Revise: Complete all course elements below to reflect the proposed change(s) and identify the course elements being revised (*e.g. Course description, Course title*):

Updating the course description and removing the WATER 601 prerequisite.

Course elements (complete as indicated above. Review the glossary of terms for details on course elements)

Course subject code: WATER

Course number: 602

Course title (max. 100 characters including spaces): Integrated Water Management Project

Course short title (max. 30 characters including spaces): Integrated Water Project

Grading basis: Numerical

Course credit weight: 0.50

Course consent required: Department

Course description:

Current description: This course builds on WATER 601 and focuses on the Grand River Watershed. The course normally includes a six to eight day field trip held at the beginning of the term, followed by one or two seminar sessions during the first month of the term. The field trip will allow students to examine specific watershed components, landscapes, infrastructure and conditions from interdisciplinary perspectives. Students will travel

across the watershed and meet water practitioners, managers, scientists, volunteers and others concerned with watershed health to learn first-hand about watershed issues and management approaches. Based on the interactive field trips and supporting materials, a multidisciplinary group project will be required where students identify an approach to investigating an emerging watershed issue.

Proposed description: This course focuses on the Grand River Watershed. The course normally includes a six to eight day field trip held at the beginning of the term, followed by one or two seminar sessions during the first month of the term. The field trip will allow students to examine specific watershed components, landscapes, infrastructure and conditions from interdisciplinary perspectives. Students will travel across the watershed and meet water practitioners, managers, scientists, volunteers and others concerned with watershed health to learn first-hand about watershed issues and management approaches. Based on the interactive field trips and supporting materials, a multidisciplinary group project will be required where students identify an approach to investigating an emerging watershed issue.

Course component(s): Project (PRJ) Reading (RDG) Seminar (SEM) Choose an item.

Primary course component: Seminar (SEM)

Requisites (identify antirequisites, corequisites, or prerequisites if applicable to the course): N/A

Special topics course: Yes ☐ No ☒
Special topics course total completions allowed (max. 30):
Can students enrol in multiple sections of the same special topics course in the same term? Yes ☐ No ☐

Cross-listed course: Yes ☐ No ☒
If yes, list the course subject code(s) and number(s) that this course is/will be cross-listed with:
Note: cross-listed courses must share all course elements except the subject code(s), course number(s), and requisites, and require a separate Graduate Studies Course/Milestone form submission for each course.

Rationale for request:

The WATER 601 prerequisite is being removed from WATER 602 since there is limited connection between the content of the courses and as such, it is not necessary for students to take them in sequence. Removing this requirement will reduce barriers to participation, particularly benefiting Architecture students and international students. A shift may occur in the order in which students choose to take these courses. Students generally prefer to complete required courses during the first year of their program. While PhD students typically have more scheduling flexibility, offering both courses within one year would be especially beneficial for master's students. The field course may be more effective as the first course, as it helps build enthusiasm and allows students to complete course requirements earlier. The proposed revisions were approved by the Collaborative Water Program Committee in October 2025.

Form completed by:
Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 05/11/26
Department/School approval date (mm/dd/yy):
Graduate Faculty Sub-Committee approval date (mm/dd/yy):
Faculty Council approval date (mm/dd/yy):

UNIVERSITY OF WATERLOO | Graduate Studies and Postdoctoral Affairs

May 11, 2026

TO: Ashley Day, Associate University Secretary
Tony Ly, Governance Officer

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

RE: Agenda items for Senate Graduate Council – May 2026

Awards for Consent

a) Bonnie Ho Entrance Award in Masters of Accounting - trust

An award, valued at $5,000 will be awarded annually to a full-time graduate student entering the Masters of Accounting program in the School of Accounting and Finance in the Faculty of Arts. Selection will be based on academic excellence in their undergraduate program combined with extracurricular involvement or participation in volunteer activities. Students will be selected based on their application for admission to the program and additional essay requested by the School. This award was established in memory of Bonnie Ho, who graduated with a Masters of Accounting in 2003.

The period of this defined term award will be from 2026 to 2030.
Total gift = $25,000

b) Bahar and Ali Graduate Scholarship for International Women in Computer Science – endowment

Scholarships valued at up to $1,800 will be awarded to women-identifying students registered full time in a master's or doctoral program in the David R. Cheriton School of Computer Science in the Faculty of Mathematics, wherein women are underrepresented. Selection, normally made in the winter term, will be based on academic achievement and a written reflection of how the applicant's experiences have informed their path in computer science and how this scholarship would contribute to their success in their graduate program at UWaterloo.

UNIVERSITY OF WATERLOO | Senate

For Information **Open Session**

To:	Senate Graduate Council
From:	Tony Ly Governance Officer
Date of Meeting:	May 25, 2026
Agenda Item:	**3.4. Senate Graduate Council: Annual Review**

Summary

This memo serves as a formal notice of the annual review for the Senate Graduate Council (SGC) terms of reference. This review reflects the University's ongoing commitment to effective and transparent governance practices, and follows recent reviews of other Senate standing committees and councils.

The purpose of the review is to ensure that the Council's composition, mandate, and responsibilities remain effective and aligned with Senate's overall mandate and the University's bicameral governance model. This review of SGC is currently being conducted in parallel with the work of the Senate Engagement Working Group, allowing for coordination and sharing of findings and recommendations.

Next Steps

The Secretariat will work with the Chair of SGC to prioritize any changes. SGC members are invited to send their feedback about the Council's membership composition, mandate, and responsibilities. Please send your comments or feedback to senate@uwaterloo.ca.

Documentation Included:

- Appendix A: Senate Graduate Council Terms of Reference

Appendix A: Senate Graduate Council Terms of Reference

1. Membership

The membership of this council shall consist of the following:

Ex-officio

- President and Vice-Chancellor
- Vice-President, Academic and Provost
- Associate Vice-President, Graduate Studies and Postdoctoral Affairs, who shall chair the council
- Vice-President, Research and International
- University Librarian or designate
- The Dean of each Faculty or designate, who shall normally be an associate dean responsible for graduate studies

Appointed by Senate

- One (1) associate dean responsible for research
- Six (6) Faculty Senators, one from each Faculty
- Up to four (4) additional members holding regular faculty appointments
- One (1) faculty member from the Affiliated and Federated Institutions of Waterloo
- Three (3) graduate students, one of whom is the Graduate Student Association President or designate
- One (1) postdoctoral scholar

For members appointed by Senate, the aim is to have broad and inclusive representation from all Faculties.

Resources (non-voting)

- Director, Student and Faculty Relations
- Director, Quality Assurance and Continuous Improvement
- Director, Graduate Studies and Postdoctoral Affairs
- University Secretary or designate

2. Responsibilities

Consistent with Senate's responsibilities for the establishment of educational policies, provide advice and guidance on matters related to graduate education and studies at the university.

Receive for information and make recommendation to Senate as appropriate with respect to governance, regulations, polices, and matters relating to graduate education and Studies at the University.

Consider, study and review all proposals for new graduate programs, the deletion of graduate programs, and/or major modifications to existing graduate programs, and make recommendations to Senate thereon.

On behalf of Senate, consider and approve all new graduate courses, the deletion of graduate courses, and proposed minor modifications 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.

On behalf of Senate, consider and approve all new graduate scholarships and awards, and proposed changes to existing graduate scholarships and awards. Any matter of controversy that might arise may be referred to Senate.

The Committee shall review its terms of reference on an annual basis and make recommendations to Senate thereon. A comprehensive review shall be undertaken every five years.

3. Meetings

The council shall normally hold at least four (4) regular meetings during each year, to be scheduled in the period from September to June.

Special meetings may be called by the chair of the council.

Joint meetings of this council and the Senate Research and Innovation Council shall normally be held at least once annually to consider strategic matters of shared interest.

Date 2026/05/05

Show Empty Fields

Meeting Information

Agenda Page Title
SGC - Arts - Regular Agenda - May 25, 2026

Career Level
Graduate,

Faculty/Unit
Arts

Date
2026-05-25

Summary

Program Proposals:

1) School of Accounting and Finance

1.1) Master of Accounting (MAcc)
a) Degree requirements continue to include eight approved courses; learning outcomes and course descriptions for the courses are being revised.
b) Revising the admission requirements to expand eligibility from four specified UW undergraduate programs (Bachelor of Accounting & Financial Management, Bachelor of Math/Chartered Professional Accountancy Studies, Bachelor of Science/ Chartered Professional Accountancy Studies, or Bachelor of Sustainability & Financial Management) to applicants holding any four-year Honours Bachelor's degree (or equivalent), with at least a 75% average across all courses taken.
c) Expanding program delivery to include a Toronto option that leverages existing educational space and extends the program's reach into the highly populated Greater Toronto Area, attracting both full-time and part-time students.
d) Revising the tuition structure from a per-term amount to a per-course amount.
e) Updating admission intake to occur in each of the three academic terms: Spring, Fall and Winter.

Attachment(s)

Course Proposals

Courses: Retire
No proposals have been added.

Courses: New
No proposals have been added.

Courses: Changes
No proposals have been added.

Programs & Plans Proposals

Programs & Plans: Retire

No proposals have been added.

Programs & Plans: Major Modifications

Code	Title	Type	Workflow Step
Master of Accounting (MAcc)	Master of Accounting (MAcc)	Programs	SGC, Senate Graduate Council (SGC)

Programs & Plans: Minor Modifications
No proposals have been added.

Regulations Proposals

Regulations: Retire
No proposals have been added.

Regulations: New
No proposals have been added.

Regulations: Changes
No proposals have been added.

Master of Accounting (MAcc) - Master of Accounting (MAcc)

Top

Effective Date and Career

Career
Graduate

Effective Term and Year

Proposed

Effective Term and Year
Spring 2027

Existing

Effective Term and Year
Spring 2025

Proposal Details

Proposal Type
Change

Academic Unit Approval
2026-02-26

Quality Assurance Designation
Major Modification Qad

Major Modification Categories

Add new off-site location
Change course/program requirements
Change program objectives and/or program-level learning outcomes
Significant changes to admission requirements where it affects learning outcomes

Is there an impact to existing students?
No

Is the credential name changing?
No

Graduate Co-operative Requirements
Not Applicable

Change to Learning Outcomes
Yes

Learning Outcomes Change Details

Refer to rationale.

Rationale and Background for Change(s)

Proposed changes:
1) Degree requirements continue to include eight approved courses; learning outcomes and course descriptions for the courses are being revised.
2) Revise the admission requirements to expand eligibility from four specified UW undergraduate programs (Bachelor of Accounting & Financial Management, Bachelor of Math/Chartered Professional Accountancy Studies, Bachelor of Science/ Chartered Professional Accountancy Studies, or Bachelor of Sustainability & Financial Management) to applicants holding any four-year Honours Bachelor's degree (or equivalent), with at least a 75% average across all courses taken.
3) Expand program delivery to include a Toronto option that leverages existing educational space and extends the program's reach into the highly populated Greater Toronto Area, attracting both full-time and part-time students.
4) Revise the tuition structure from a per-term amount to a per-course amount.
5) Update admission intake to occur in each of the three academic terms: Spring, Fall and Winter.

Rationale:
The rationale for these changes reflects the revised learning outcomes of the Chartered Professional Accountants (CPA) Professional Education Program, which will be fully integrated into the curriculum. At the same time, the program is undertaking a comprehensive update of its overall curriculum to ensure continued relevance and academic strength.

In parallel, expanded admission eligibility supports institutional growth objectives by broadening access beyond current pathways and enabling the program to attract a larger, high-quality applicant pool. Building on the program's strong reputation, these changes are expected to drive substantive enrolment growth and associated revenue, strengthening the program's financial contributions to the University. This change has been recommended in the last two cyclical reviews by external reviewers.

Leveraging existing space to expand delivery into the Greater Toronto Area (GTA) further advances the University's strategic priorities by increasing reach, visibility, and impact. The GTA location is particularly attractive to both full-time students, due to the region's high population, and part-time students, given its proximity to major financial and business districts, allowing professionals to conveniently balance work and study.

In addition, the tuition structure will be adjusted from a per-term to a per-course basis, accommodating both full- and part-time students. The total tuition amount will remain the same.

The introduction of two additional intake periods (adding Spring and Fall) to the current Winter intake aligns strategically with the timing of undergraduate degree completions at UW (non-SAF students) and at other Canadian universities. By coordinating admissions with these graduation cycles, the program can more effectively attract new students who will be pursuing advanced accounting education, supporting the expansion of the MAcc program to new student markets.

Collectively, these enhancements position the program for long-term growth, sustainability, and long-term success.

General Program/Plan Information

Faculty

Faculty of Arts

Academic Unit

School of Accounting and Finance

Graduate Field of Study

Accounting and Finance

Faculty

Faculty of Arts

Program/Plan Name

Master of Accounting (MAcc)

Graduate Credential Type

Master's

Accelerated Program

Not applicable

Study Options (New)

Master's Research Paper / Coursework

Admit Term(s)

Proposed

Admit Term(s)
Fall, Winter, Spring

Existing

Admit Term(s)
Winter

Delivery Mode

On-campus

Delivery Mode Information

The program is offered on-campus in Waterloo and off-campus in Toronto.

Length of Program

Proposed

Length of Program

- Full-time: 2 terms (8 months)
- Part-time: 4-5 terms (16-20 months)

Existing

Length of Program

- 2 terms (8 months)

Registration Option(s)

Full-time, Part-time

Registration Options Information

Proposed

Existing

Registration Options Information

Note: direct entry into the MAcc program is only available through the full-time option. Students must obtain approval from the Program Director to transfer to the part-time option, which will be assessed on a case-by-case basis.

Graduate Research Fields

- Information Technology
- Performance Measurement
- Taxation

Additional Program Information

Proposed

Additional Program Information

- This program is accredited by Chartered Professional Accountants (CPA) Ontario, so students registered with CPA Ontario and who successfully complete the CPA Ontario required courses, may be eligible to write the Foundational Development, CPA Core – Common or CPA Core - Licensure, and Leadership exams. Successful completion of either pathway described here qualifies the student to enter the CPA Professional Readiness Course upon completion of relevant work experience.

Existing

Additional Program Information

- This program is accredited by Chartered Professional Accountants (CPA) Canada, so students who successfully complete the program, including all CPA requirements, are exempt from all 6 modules of the CPA Professional Education Program and may proceed directly to the Common Final Examination (CFE).

Admissions

Admission Requirements: Minimum Requirements

Proposed

Admission Requirements: Minimum Requirements

- To be considered for admission to the MAcc program, students must meet the following minimum requirements:
  - Successful completion of a four-year Honours Bachelor's degree, or equivalent, with at least a 75% average across all courses taken.
  - Completion of the following set of courses, or their equivalent which includes completion of CPA Ontario's Knowledge Assessment, with a grade of at least 60% in each course and with at least a 70% average across these courses, calculated using the maximum grade in a course in the case of repeated courses:
    - Advanced Financial Reporting
    - Audit and Assurance
    - Intermediate Financial Reporting 1
    - Intermediate Financial Reporting 2
    - Intermediate Management Accounting
    - Principles of Finance
    - Taxation
- Students who have a strong academic record, but who have some gaps in their Accounting background may be admitted subject to the requirement that they complete a selection of fourth year undergraduate courses or foundational graduate courses as part of their graduate program.

- An interview may also be required.
- Note: Simply meeting these minimum requirements does not guarantee admission to the MAcc program.
- English language proficiency (ELP) (if applicable)

Existing

Admission Requirements: Minimum Requirements

- To be considered for admission to the MAcc program, students must meet these minimum requirements:
  - Successful completion of any of the following University of Waterloo four-year Honours undergraduate degrees, with at least a 75% average across all courses taken in the last two years of the program:
    - Bachelor of Accounting and Financial Management, with completion of the Professional Accountant Specialization
    - Bachelor of Math/Chartered Professional Accountancy Studies
    - Bachelor of Science/Chartered Professional Accountancy Studies, or
    - Bachelor of Sustainability and Financial Management, with completion of the Corporate Sustainability Specialization
  - Completion of the following set of courses, with a grade of at least 60% in each course and with at least a 70% average across all courses, calculated using the maximum grade in a course in the case of repeated courses:
    - AFM 273 Financial Instruments and Capital Markets or AFM 272 Global Capital Markets
    - AFM 274 Introduction to Corporate Finance or AFM 275 Corporate Finance
    - AFM 291 Intermediate Financial Accounting I
    - AFM 311 Professional Ethics or SFM 309 Sustainability and Business Ethics
    - AFM 321 Personal Financial Planning
    - AFM 341 Accounting Information Systems
    - AFM 362 Taxation 1 - Corporate Taxation
    - AFM 373 Cases and Applications in Corporate Finance or AFM 476 Corporate Financial Decision Making
    - AFM 382 Cost Management Systems
    - AFM 391 Intermediate Financial Accounting II
    - AFM 433 Business Strategy or ENBUS 302 Strategies for Environment and Business
    - AFM 451 Audit Strategy
    - AFM 462 Advanced Taxation
    - AFM 482 Performance Measurement and Organization Control
    - AFM 491 Advanced Financial Accounting
- Note: Simply meeting these minimum requirements does not guarantee admission to the MAcc program.
- English language proficiency (ELP) (if applicable)

Admission Requirements: Application materials

Proposed

Admission Requirements: Application materials

- Statement of interest
- Transcript(s)

Existing

Admission Requirements: Application materials

- Transcript(s)

Admission Requirements: References

Proposed

Admission Requirements: References

- Number of references: 2
- Type of references: academic

Existing

Admission Requirements: References

Requirements Information

Graduate 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).

Coursework Option: Course Requirements

Coursework Option: Course Requirements

Proposed

Coursework Option: Course Requirements

- Students must complete 8 approved graduate courses (0.50 unit weight).
- The availability of particular courses depends on sufficient student demand.
- Students must achieve an average of at least 60% in each ACC course and an average of at least 75% across all courses presented in fulfillment of the degree requirements. Students with a first-term average below 75% may be required to withdraw from the program.

Existing

Coursework Option: Course Requirements

- Students must complete 8 approved graduate courses (0.50 unit weight) over two terms.
- The availability of particular courses depends on sufficient student demand.
- Students must achieve an average of at least 60% in each ACC course and an average of at least 75% across all courses presented in fulfillment of the degree requirements. Students with a first-term average below 75% may be required to withdraw from the program.

Master's Research Paper Option: Course Requirements

No Rules

Master's Research Paper Option: Course Requirements

Proposed

Master's Research Paper Option: Course Requirements

- Students must complete 7 approved graduate courses (0.50 unit weight).
- The availability of particular courses depends on sufficient student demand.
- Students must achieve an average of at least 60% in each ACC course and an average of at least 75% across all courses presented in fulfillment of the degree requirements. Students with a first-term average below 75% may be required to withdraw from the program.

Existing

Master's Research Paper Option: Course Requirements

- Students must complete 7 approved graduate courses (0.50 unit weight) over two terms.
- The availability of particular courses depends on sufficient student demand.
- Students must achieve an average of at least 60% in each ACC course and an average of at least 75% across all courses presented in fulfillment of the degree requirements. Students with a first-term average below 75% may be required to withdraw from the program.

Master's Research Paper Option: Milestone Requirements

Master's Research Paper

Notes

- School of Accounting and Finance website

Specializations

Undergraduate Plan Guidelines

Workflow Information

Workflow Path
Committee approvals

Faculty/AFIW Path(s) for Workflow
Faculty of Arts

Dependencies

There are no dependencies

Date 2026/05/11

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Meeting Information

Agenda Page Title
SGC - Faculty of Mathematics - Regular Agenda - May 25, 2026

Career Level
Graduate,

Faculty/Unit
Mathematics

Date
2026-05-25

Summary

Program Proposals:

1) Statistics and Actuarial Science

1.1) Master of Actuarial Science (MActSc)

a. *Changing the entry method of the MActSc regular program/option from direct entry to transfer entry and reducing the number of required courses to 11. (attached)*

1.2) Master of Actuarial Science (MActSc) - Co-operative Program

a. *Adding a direct entry Co-operative program/option to the MActSc program and reducing the number of required courses to 11. Updating the minimum average required for admission. (attached)*
b. *CEE Response to Proposal & Industry and Job Analysis (attached)*

Attachment(s)

- MActSc Program Revision - Transfer in option - Reviewed by GSPA.pdf
- MActSc Program Revision - Co-operative option - Reviewed by GSPA.pdf
- MActSc - Co-op - CEE Response to Proposal & Industry and Job Analysis.pdf

Course Proposals

Courses: Retire
No proposals have been added.

Courses: New
No proposals have been added.

Courses: Changes
No proposals have been added.

Programs & Plans Proposals

Programs & Plans: Retire
No proposals have been added.

Programs & Plans: Major Modifications
No proposals have been added.

Programs & Plans: Minor Modifications
No proposals have been added.

Regulations Proposals

Regulations: Retire
No proposals have been added.

Regulations: New
No proposals have been added.

Regulations: Changes
No proposals have been added.

Graduate Studies
Program Revision Template

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

Faculty: Mathematics

Program: Master of Actuarial Science (MActSc)

Program contact name(s): Ben Feng, Heather McLaughlin

Form completed by: Heather McLaughlin

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

Changing the entry method of the MActSc regular program/option from direct entry to transfer entry and reducing the number of required courses to 11.

Is this a major modification to the program? Yes

Rationale for change(s):

In conjunction with the creation of the co-operative version of the program, we are amending the existing version to be transfer-in only with no co-operative requirements/milestones so that students who are unable to locate a work experience will still be able to obtain their degree.

The number of courses offered is also being reduced from 15 to 12, and the number of courses required for the degree is being reduced from 12 to 11. The previous version of the program required students to take 15 courses (5 per term) however students only needed to pass 12 courses to achieve the degree. In our 2024 cyclical review, the review committee recommended that we reduce the number of in-class hours each week. As such, we have reduced the required number of courses to 11 by combining topics that were covered in more than one course and eliminating some topics that were considered non-essential. The proposed course structure maintains the original program learning outcomes. The existing professional actuarial exam exemptions (i.e. course equivalences) are also maintained, with the exception of the IFoA CP1 exam (which had been provided by ACTSC 633). Students were consulted about the reduction in courses and all students except for one agreed that reducing courses was preferable even with the loss of the CP1 exemption. In addition, ACTSC 615 Economics will now be an optional course and not required for the degree. This course maps to the Society of Actuaries Verification of Educational Experience – Economics credit. We have observed in recent cohorts that many students qualified for this recognition based on economics courses taken during their undergraduate degree. Moreover, there are additional courses offered at the University and by third parties that students could take to achieve the credit.

Proposed effective date: Term: Winter Year: 2027

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/B1xWJAAoh

Current Graduate Studies Academic Calendar content:	Proposed Graduate Studies Academic Calendar content:
Admission requirements: Minimum requirements • ~~A four-year honour's Bachelor's degree with an overall 83% average from a Canadian university (or its equivalent).~~ • ~~An interview and diagnostic test may be required.~~ • ~~English language proficiency (ELP)~~ ~~(if applicable)~~ **~~Admission requirements: Application materials~~** • ~~Program-specific questions (PSQ)~~ • ~~Résumé~~ • ~~Statement of interest~~ • ~~Transcript(s)~~ **~~Admission requirements: References~~** • ~~Number of references: 2~~ • ~~Type of references: academic or professional~~ **Degree requirements** • Students must complete the course requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM). **Coursework option: Course requirements** • Students must complete the following ~~15~~ one-term graduate courses: o Fall term: ▪ ACTSC 611 ~~Financial Mathematics I~~ ▪ ACTSC 612 Life Insurance Mathematics I ▪ ACTSC 613 Statistics for Actuarial Science ▪ ACTSC 614 ~~Corporate Finance and Accounting~~ ▪ ~~ACTSC 615 Economics~~ o Winter term: ▪ ACTSC 621 ~~Financial Mathematics II~~ ▪ ACTSC 622 Life Insurance Mathematics II ▪ ACTSC 623 Applied Statistics ▪ ACTSC 624 ~~Stochastic Processes for Actuarial Science~~ ▪ ~~ACTSC 625 Casualty and Health Insurance Mathematics~~ o ~~Spring~~ term: ▪ ACTSC 631 ~~Financial Mathematics III~~ ▪ ACTSC 632 Life Insurance Mathematics III	**Admission requirements:** • Students in the Master of Actuarial Science (MActSc) - Co-operative Program can apply to transfer to the Master of Actuarial Science (MActSc) Program normally in the fourth term and is subject to approval by the Program Director and the Associate Chair of Graduate Studies. **Degree requirements** • Students must complete the course requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM). **Coursework option: Course requirements** • Students must complete the following 11 one-term (0.50 unit weight) graduate level courses with an overall average of at least 70%: o Fall term: ▪ ACTSC 611 Interest Theory ▪ ACTSC 612 Life Insurance Mathematics I ▪ ACTSC 613 Statistics for Actuarial Science ▪ ACTSC 614 Professional Communications in Actuarial Practice o Winter term: ▪ ACTSC 621 Accounting, Investment Science, and Corporate Finance ▪ ACTSC 622 Life Insurance Mathematics II ▪ ACTSC 623 Applied Statistics ▪ ACTSC 624 Casualty and Health Insurance Mathematics o Fall term: ▪ ACTSC 631 Pricing and Hedging Financial Derivatives ▪ ACTSC 632 Life Insurance Mathematics III ▪ ACTSC 633 Quantitative Risk Management - Exemptions to the required courses can be made at the discretion of the Program Director and the Associate Chair for Graduate Studies.

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
▪ ACTSC 633 ~~Actuarial Risk Management~~ ▪ ~~ACTSC 634 Quantitative Risk Management~~ ▪ ~~ACTSC 635 Profession Communications in Actuarial Science~~ • ~~Students are required to pass at least 12 courses, with an average grade of at least 70% with the following progression:~~ o ~~Pass 4 of 5 courses in the Fall term with an average of at least 70%.~~ o ~~Pass 8 of 10 courses in the Fall and Winter terms with an average of at least 70%.~~	

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

Current students will continue to follow the Calendar requirements that were in effect at the time of admission.

Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 03/31/26
Department/School approval date (mm/dd/yy):
Graduate Faculty Sub-Committee approval date (mm/dd/yy): 03/30/26
Faculty Council approval date (mm/dd/yy): 04/28/26
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):

Graduate Studies
Program Revision Template

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

Faculty: Mathematics

Program: Master of Actuarial Science (MActSc) - Co-operative Program (direct entry)

Program contact name(s): Ben Feng, Heather McLaughlin

Form completed by: Heather McLaughlin

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

Adding a direct entry Co-operative program/option to the MActSc program and reducing the number of required courses to 11. Updating the minimum average required for admission.

Is this a major modification to the program? Yes

Rationale for change(s):

Applicants regularly ask us if the MActSc program has a work placement component. It is an important factor when choosing between our program and competitors such as the MFI program at the University of Toronto. In addition, our graduates are primarily competing with undergraduate students in co-op programs when looking for employment after graduation. As such we have decided to add a co-op component to make our program more competitive. Current students were consulted about the possibility and all agreed that work experience is vital to their education and that it would have factored into their decision at the time of application. We have also consulted the program advisory board; all board members welcome this change. The program will retain a transfer-in only option without the co-op requirement, so that in a worst-case-scenario, students who are unable to find a position can still graduate from the program.

The co-op program/option will be supported by Co-operative Education. Attached is the Feasibility Report that was completed by Co-operative Education.

The number of courses offered is also being reduced from 15 to 12, and the number of courses required for the degree is being reduced from 12 to 11. The previous version of the program required students to take 15 courses (5 per term) however they only needed to pass 12 courses to achieve the degree. In our 2024 cyclical review, the review committee recommended that we reduce the number of in-class hours each week. As such, we have reduced the required number of courses to 11 by combining topics that were covered in more than one course and eliminating some topics that were considered non-essential. The proposed course structure maintains the original program learning outcomes. The existing professional actuarial exam exemptions (i.e. course equivalences) are also maintained, with the exception of the IFoA CP1 exam (which had been provided by ACTSC 633). Students were consulted about the reduction in courses and all students except for one agreed that reducing courses was preferable even with the loss of the CP1 exemption. In addition, ACTSC 615 Economics will now be an optional course and not required for the degree. This course maps to the Society of Actuaries Verification of Educational Experience – Economics credit. We have observed in recent cohorts that many students qualified for this recognition based on economics courses taken during their undergraduate degree. Moreover, there are additional courses offered at the University and by third parties that students could take to achieve the credit.

Finally, we have reduced the required average for admission from 83% to 78% to align with the rest of the programs in the Department. Over the past few years, we have been accepting students with GPAs of 78% - 83% as non-standard admissions and have found no evidence that students with a lower GPA struggle in the program.

Proposed effective date: Term: Winter Year: 2027

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=Statistics%20and%20Actuarial%20Science

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
Master of Actuarial Science (MActSc) **Faculty** • Faculty of Mathematics **Academic unit** • Department of Statistics and Actuarial Science **Admit term(s)** • Fall **Delivery mode** • On-campus **Registration option(s)** • Full-time **Study option(s)** • Coursework **Admission requirements: Minimum requirements** • A four-year honour's Bachelor's degree with an overall ~~83%~~ average from a Canadian university (or its equivalent). • An interview and diagnostic test may be required. • English language proficiency (ELP) (if applicable) **Admission requirements: Application materials** • Program-specific questions (PSQ) • Résumé • Statement of interest • Transcript(s) **Admission requirements: References** • Number of references: 2 • Type of references: academic or professional **Degree requirements**	**Master of Actuarial Science (MActSc) - Co-operative Program** **Faculty** • Faculty of Mathematics **Academic unit** • Department of Statistics and Actuarial Science **Admit term(s)** • Fall **Delivery mode** • On-campus **Registration option(s)** • Full-time **Program type(s)** • Co-operative **Study option(s)** • Coursework **Admission requirements: Minimum requirements** • A four-year honour's Bachelor's degree with an overall 78% average from a Canadian university (or its equivalent). • An interview and diagnostic test may be required. • English language proficiency (ELP) (if applicable) **Admission requirements: Application materials** • Program-specific questions (PSQ) • Résumé • Statement of interest • Transcript(s) **Admission requirements: References**

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

• Students must complete the course requirements listed below in addition to the Graduate Academic Integrity Module (Graduate AIM).
 	
Coursework option: Course requirements
• Students must complete the following ~~15~~ one-term graduate courses:
  ○ Fall term:
  ▪ ACTSC 611 ~~Financial Mathematics I~~
  ▪ ACTSC 612 Life Insurance Mathematics I
  ▪ ACTSC 613 Statistics for Actuarial Science
  ▪ ACTSC 614 ~~Corporate Finance and Accounting~~
  ▪ ~~ACTSC 615 Economics~~
  ○ Winter term:
  ▪ ACTSC 621 ~~Financial Mathematics II~~
  ▪ ACTSC 622 Life Insurance Mathematics II
  ▪ ACTSC 623 Applied Statistics
  ▪ ACTSC 624 ~~Stochastic Processes for Actuarial Science~~
  ▪ ~~ACTSC 625 Casualty and Health Insurance Mathematics~~
  ○ Spring term:
  ▪ ACTSC 631 ~~Financial Mathematics III~~
  ▪ ACTSC 632 Life Insurance Mathematics III
  ▪ ACTSC 633 ~~Actuarial Risk Management~~
  ▪ ~~ACTSC 634 Quantitative Risk Management~~
  ▪ ~~ACTSC 635 Profession Communications in Actuarial Science~~
• ~~Students are required to pass at least 12 courses, with an average grade of at least 70% with the following progression:~~
  ○ ~~Pass 4 of 5 courses in the Fall term with an average of at least 70%.~~
  ○ ~~Pass 8 of 10 courses in the Fall and Winter terms with an average of at least 70%.~~
	• Number of references: 2
	• Type of references: academic 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 program includes completion of 1 required work term. The work term takes place in term 3. The work term(s) must meet Co-operative and Experiential Education (CEE) standard work term requirements and Departmental requirements. Note: the program must start and end on an academic term.
	• Students are required to complete WIL 601 Career Foundations for Work-Integrated Learning in their first academic term. Students must complete WIL 601 in addition to the program's course requirements.
	
	Coursework option: Course requirements
	• Students must complete the following 11 one-term (0.50 unit weight) graduate level courses with an overall average of at least 70%:
	  ○ Fall term:
	  ▪ ACTSC 611 Interest Theory
	  ▪ ACTSC 612 Life Insurance Mathematics I
	  ▪ ACTSC 613 Statistics for Actuarial Science
	  ▪ ACTSC 614 Professional Communications in Actuarial Practice
	
	  ○ Winter term:
	  ▪ ACTSC 621 Accounting, Investment Science, and Corporate Finance
	  ▪ ACTSC 622 Life Insurance Mathematics II
	  ▪ ACTSC 623 Applied Statistics
	  ▪ ACTSC 624 Casualty and Health Insurance Mathematics
	
	  ○ Spring term: Co-op Work Term
	
	  ○ Fall term:
	  ▪ ACTSC 631 Pricing and Hedging Financial Derivatives
	  ▪ ACTSC 632 Life Insurance Mathematics III
	  ▪ ACTSC 633 Quantitative Risk Management

Current Graduate Studies Academic Calendar content:	**Proposed Graduate Studies Academic Calendar content**:
	- Exemptions to the required courses can be made at the discretion of the Program Director and the Associate Chair for Graduate Studies. **Coursework option: Milestone requirements** **Graduate WIL Reflective Report** - The Graduate WIL Reflective Report requires students to critically reflect on their co-op work term experience, connecting academic knowledge to practical tasks and professional development. Students must complete one reflective report per required work term. The report is administered, evaluated, and graded by the Centre for Work-Integrated Learning.

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

Current students will continue to follow the Calendar requirements that were in effect at the time of admission.

Reviewed by GSPA (for GSPA use only) ☒ date (mm/dd/yy): 03/31/26
Department/School approval date (mm/dd/yy):
Graduate Faculty Sub-Committee approval date (mm/dd/yy): 03/30/26
Faculty Council approval date (mm/dd/yy): 04/28/26
Senate Graduate & Research Council (SGRC) approval date (mm/dd/yy):

CO-OPERATIVE AND EXPERIENTIAL EDUCATION
Co-operative Education
519-888-4026 | ceehub@uwaterloo.ca

Co-operative & Experiential Education (CEE)

Preliminary Review

Proposed Programs: Actuarial Science – Co-op

Program Effective Date: Fall 2027

Requested by: Statistics and Actuarial Science

Prepared by: Justin Kieffer

Executive Summary

The Department of Statistics and Actuarial Science have expressed intent to add co-operative education to the Master of Actuarial Science program, with the Co-operative Education milestone to be fully administered by Co-operative & Experiential Education (CEE). The proposed launch of the co-op component is currently targeting a first admission of fall 2027. Based on our review, CEE can support the WIL component of this program, with the expectation that the program operates in alignment with existing graduate co-op program requirements.

CEE will require sufficient time (approximately six months) to complete a new program plan and will work with Statistics and Actuarial Science ahead of the program launch to address system and records processing needs, WIL programming and job development opportunities. Industry and job analysis have been completed by CEE and are included as part of this review. Partnership with Statistics and Actuarial Science will be critical to successfully identifying and actioning an opportunity development strategy.

CEE will collaborate with the academic unit and utilize existing staff, resources, and processes across the portfolio, to support this new co-op program, with the understanding of a cap of **20** students in this program for fall 2027.

CEE recommends the Department of Statistics and Actuarial Science consider the following:

- Ensure admission requirements include direct admission to the co-op program so that potential barriers for international students who are required to obtain a co-op work permit to work in Canada are reduced.
- Ensure co-op degree requirements in the graduate calendar are up to date, specifically the number/length of required work terms, typical academic/co-op sequence, the completion of the additive course WIL 601 (two terms ahead of the

work term), and either a program administered work term report, or a CEE administered Graduate Reflective Report (GRR).

- Review the implications of involvement in WIL as related to items such as, but not limited to, student statuses, milestone completion requirements (co-op and work report), fee schedule, funding packages, and scholarships.
- Share existing employer contacts with CEE to manage the ongoing co-op hiring relationship.
- Identify potential employers/preferred industry sectors to support a robust industry and job analysis

CEE, with leadership from the designated Faculty Relations Manager, will:

- Complete an industry and job analysis for the Actuarial Science program as a basis for an Employer Relations opportunity development strategy.
- Collaborate with the Director and Program Manager in Statistics and Actuarial Science to work through the Co-op program plan, as well as processes to support students who may not successfully complete co-op work term requirements.
- Support programs with content for recruitment materials and recommended student communication (e.g., information on resources and supports) ahead of the start of studies and during orientation programming.

Work-Integrated Learning at UW

Work integrated learning (WIL) allows students to apply classroom learning to the workplace and, likewise, connect workplace learning to their degree and areas of specialization. For those students who are seeking a stronger connection between their studies and industry, the University of Waterloo's co-op and WIL programs distinguish it amongst Canadian institutions. Furthermore, CEE provides a robust system of support for students (domestic and international visa) seeking work experiences in Canada or internationally.

Benefits go beyond the students' needs. Industry partners benefit by gaining access to a wider range of undergraduate and graduate students who bring varied experiences personally, professionally, and academically. All stakeholders will benefit from opportunities for idea exchange and strengthened connections between academic research and innovations in industry.

Moving a CEE administered work-integrated learning plan to an existing graduate program aligns with the strategic focus on GradWIL at an institutional level and will continue to reinforce UW as a WIL leader for both undergraduate and graduate programs.

The key components of a quality WIL experience are pedagogy, experience, assessment and reflection, or P.E.A.R. Making sure all four elements are included in the development of program-level WIL are critical for creating a qualify WIL experience.

- Pedagogy – includes the academic course content and the WIL curriculum
- Experience – meaningful and aligned appropriately with the WIL model
- Assessment – including the learning outcomes for the program + Future Ready Talent Framework
- Reflection – on the WIL experience and in alignment with the idea of "purposeful work"

Co-op Program Structure

The Master of Actuarial Science co-op program will follow proposed changes to the existing WIL models based on outcomes of the GradWIL project. All students are responsible for following the procedures, roles and responsibilities of co-op students.

Co-op students will be required to complete WIL 601 prior to their co-op recruitment term (for full-time students, typically completed in their first study term). In WIL 601 students will identify, evaluate and articulate current skillsets and the competencies they are developing in graduate school, as well as critically reflect on their career values and goals.

The Centre for Career Development (CCD) provides career and co-op preparation resources and services (e.g.: resume, cover letter, interview preparation, job search, etc.) for all graduate students. These services are accessed more readily when promoted by the academic program or incorporated into existing courses. Additional collaboration between Statistics and Actuarial Science, Student and Faculty Relations and CCD may be required prior to Fall 2027 to establish how existing services and staff will be utilized.

Co-op work terms must meet standard work term requirements for all Actuarial Science students. Actuarial Science students will have access to the co-op job boards through WaterlooWorks or may arrange their own employment externally, which must be approved by CEE. During the experience, graduate students will be supported by Co-op Advisors through site visits, e-check-ins, and work term ratings. Employers will evaluate the work performance of students via the Student Performance Evaluation (SPE); a rating of 'marginal' or above will grant the milestone for the course.

The program will need to choose between either a program-administered Work Term Report (WTR) or a CEE-administered Graduate Reflective Report; which will also be a requirement for co-op degree completion

To evaluate program effectiveness and WIL outcomes, the CEE Faculty Relations Manager, Mathematics, will monitor and share key metrics annually to ensure program quality.

Sequence

All incoming students will be admitted directly into the co-op program, with a non-co-op option available as a transfer-in option.

Students in the Actuarial Science co-op program will be scheduled for one co-op work term, typically after two academic terms.

Master of Actuarial Science co-op sequence:

Term 1: Fall	Term 2: Winter	Term 3: Spring	Term 4: Fall
Study Term WIL 601	Study Term Co-op recruiting term	Co-op Work Term Work Report/Reflection	Study Term

Admissions

Programs seeking to add a co-op component must create a direct-entry program (plan code). There are a range of benefits to this structure, including CEE's ability to forecast earlier the number of students expected to be scheduled for a work term from the program and adjust employer and student-facing resources as necessary. Most notably, CEE can assist visa students in their work permit applications upon program admission, ensuring work terms are not negatively impacted by processing times.

As the industry and job analysis is completed, CEE will have a clearer picture of where students may find work (employers as well as geographic locations). When marketing the program to prospective students, this information will be key to ensuring students are making an informed choice in choosing the program.

Program Plan Codes

Specific plan codes must exist to differentiate between co-op and non-co-op plans and students. In some instances, plan codes may already exist, while in others, new plan codes will need to be created/approved.

Plan Code	Plan Description	Plan exists
TBD	Master of Actuarial Science, Co-op	N
ACTSCRPM	Actuarial Science, Master of Mathematics (Master's Research Paper)	Y
ACTSMACTSC	Master of Actuarial Science	Y

Degree Requirements

Co-op Graduate students' requirements include successful completion of:

- WIL 601: Career Foundations for Work-Integrated Learning
- Completion of the co-op work term (coded as "Coop" course on transcript) with a Student Performance Evaluation of 'marginal' or better
- Completion of the Graduate WIL Reflective Report. Students must complete one reflective report per work term. The report is administered, evaluated, and graded by the Centre for Work-Integrated Learning.

Students unsuccessful in successfully completing these requirements will be able to transfer to the non-co-op program.

Graduate Student Support

The Centre for Career Development (CCD) is in the Tatham Centre at the Waterloo campus and provides support to all undergrad and grad students, alumni and staff with

co-op, WIL and career planning and preparation. Existing services include 1:1 appointment for resumes, cover letters, interview skills, job search, career planning and others, 1:1 drop-ins, workshops, both on and offline resources and supports all offered through a dedicated team of existing co-op and career staff.

Actuarial Science co-op students will be assigned to a dedicated Co-op Advisor for the entirety of their program. The Co-op Advisor can provide answers to co-op related questions as well as support throughout the job recruitment process.

Job Development

Attached is an industry and job analysis completed by the Faculty Relations Manager (Math) and will include a review of the labour market, job demands, and areas for business development. This analysis will also indicate the internal competition between Master of Actuarial Science Students and other students that may have similar skills (at both the graduate and undergraduate level). Input and engagement from the Statistics and Actuarial Science program will ensure this analysis aligns with the goals of the program and creates key partnerships and facilitate potential co-op opportunities already identified by the program.

Generally, there are two years of lead time needed to develop jobs ahead of the first work term. With strong connections into associated industries, CEE can provide a range of suitable opportunities for students. Graduate students also bring a range of personal, professional, and academic experiences and so while the more experienced students may ultimately be successful in finding co-op employment, they arguably may not be the students to benefit most from the WIL experience.

Best efforts will be made to support graduate students in their job search – for example, CEE has proactively been engaged with Mitacs and the funding they have access to for WIL at the graduate level. Existing services and expertise in CCD will be leveraged to support students in their job search, noting that the new program plan will examine the resources required to provide these supports.

Student Status and Fees

Students are assessed co-op fees and the number of fees assessed are based on the default number of work terms a student is scheduled for. Programs with one co-op work term will have two co-op fees assessed. The first co-op fee is administered during a student's first academic term (typically fall) and assessed again on each employed work term.

The current fee (2026/27) is $836.

International Students and Work Experiences

The CEE international team will support work terms held outside of Canada, adhering to UW and Global Affairs Canada (GAC) travel polices and advisories.

Students studying on a visa must obtain a co-op work permit to find employment for a co-op work term. Applying for a Co-op work permit in Canada can take several months, with recent processing times taking at least six months. Requiring direct admissions to the co-op program allows students to apply earlier and avoid delaying co-op employment.

Co-op Program Plan

Following all levels of academic program approval for these programs and before the first term of admission, a Co-op Program Plan will be required. The Program Plan is a checklist of information, records, system, communications, etc., that ensures CEE administered plans are set-up appropriately and necessary decisions are made. This is a collaborative activity led by a designated Faculty Relations Manager and the academic unit.

Richard Wikkerink

March 27, 2026
Date

Director, Student & Faculty Relations
Co-operative and Experiential Education

Changbao Wu
Changbao Wu (Mar 27, 2026 19:50:21 EDT)

Mar 27, 2026
Date

Changbao Wu

Chair, Statistics and Actuarial Science
Faculty of Mathematics

Gregory Rice
Gregory Rice (Mar 31, 2026 13:35:16 EDT)

Mar 31, 2026
Date

Greg Rice

Associate Chair, Graduate Studies
Faculty of Mathematics

Ben Feng (Mar 27, 2026 16:39:04 EDT)

Mar 27, 2026
Date

Ben Feng

Director – Master of Actuarial Science
Program
Faculty of Mathematics

INDUSTRY AND JOB ANALYSIS FOR MASTER OF ACTUARIAL SCIENCE CO-OP

Prepared by Justin Kieffer, Faculty Relations Manager, Mathematics

August 2025

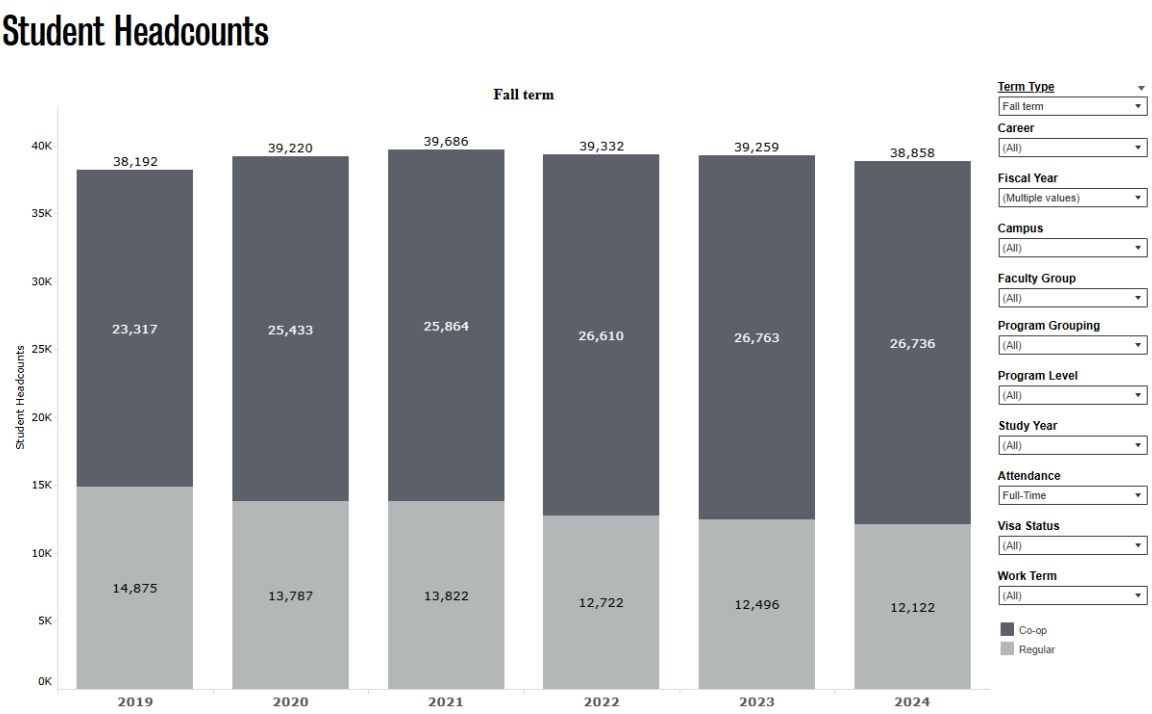
Introduction

Co-operative and Experiential Education (CEE) actively monitors enrollment, labour market and employment changes, noting that the last several years have seen greater volatility and change. Ongoing and additional insights will be provided through regular updates at the faculty and program level and through Cyclical Program Reviews.

The following analysis aims to understand the impacts of adding a MMAth Actuarial Science co-op program administration by CEE.

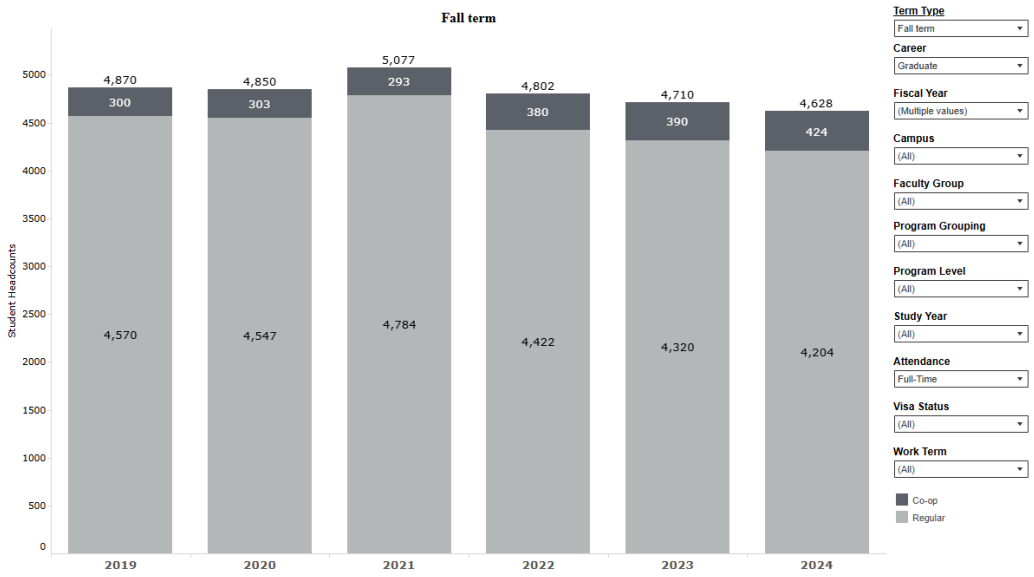
Enrollment

As of fall 2024, approximately 69% or roughly 26,700 students at the University of Waterloo were 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 (69% in 2023 vs 61% in 2019).



Graduate students in co-op programs currently represent a small proportion (~2%) of total co-op enrollment, with 424 total students as of fall 2024. In Math, at the graduate level, the number of students enrolled in co-op (programs supported by CEE and program administered) have remained relatively consistent from 2019 to 2024, averaging 110 students in co-op per year.

Student Headcounts



Adding co-op to the Master of Actuarial Science program administered by CEE will increase the number of co-op students CEE supports by approximately 25 students per year.

Employment Trends

To get a sense of expected employment success for students in the MMath Actuarial Science co-op program, CEE analyzed recent employment data of comparable senior students in comparable undergraduate Mathematics co-op programs.

Programs used for comparison are listed below. Only senior level students (work term four or greater) were included in this analysis.

Undergraduate
Actuarial Science
Data Science/BMath
Financial Analysis & Risk Management
Statistics

All Co-op employment rates in 2020 and 2021 were impacted by the Covid-19 pandemic, however, over the entire reporting period, comparable MMath Actuarial Science programs averaged an employment rate of 98.8%, representing approximately 5,370 employed work terms and comparable programs averaged an employment rate of 97.2%, representing approximately 4,822 work terms.

Employment Rate for Comparable Programs Work Terms 4+

Program Grouping	2018	2019	2020	2021	2022	2023	2024	Overall
Actuarial Science	99.6%	100.0%	98.9%	97.8%	99.5%	99.3%	100.0%	**99.3%**
Data Science/BMath	100.0%	96.6%	94.6%	98.4%	100.0%	97.8%	97.1%	**97.7%**
Financial Analysis & Risk Management	99.2%	98.4%	97.2%	98.2%	99.0%	98.0%	97.6%	**98.2%**
Statistics	99.0%	99.1%	97.1%	94.5%	99.0%	96.8%	97.2%	**97.3%**
Overall	**99.3%**	**99.1%**	**97.6%**	**97.2%**	**99.2%**	**97.9%**	**97.8%**	**98.2%**

Shifting labour markets and economic downturns may indicate that additional efforts are required to support students in their job search. These efforts include ensuring students have access to 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, students will uncover more work opportunities.

Employed Percentage by Employment Status for Overall Comparable Programs Work Terms 4+

Program Grouping	Employed - Interview Process (EI)	Employed - Returning to Previous Employer (ER)	Arranged Own Job - Student Sources (ES)	Arranged Own Job - Existing Employer (EJ)	Arranged Own Job - Flex Work Term (EF)	Employed - Employer Student Direct Job Board (EP)	Overall
Actuarial Science	63.3%	24.2%	1.3%	10.7%	0.1%	0.2%	**1,361**
Data Science/BMath	70.5%	18.6%	4.1%	6.1%	0.0%	0.7%	**295**
Financial Analysis & Risk Management	68.8%	15.7%	4.8%	10.2%	0.4%	0.2%	**1,965**
Statistics	68.5%	18.3%	4.0%	8.2%	0.5%	0.4%	**1,201**
Overall	**67.3%**	**18.9%**	**3.6%**	**9.6%**	**0.3%**	**0.3%**	**4,822**

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. MMath co-op students are generally very 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.

Where Students Work

Analysis by sector indicates strong alignment between the skills developed by students in comparable programs and the sectors in which they worked. It is anticipated that students in MMath Actuarial Science will seek employment in similar types of roles related to actuarial sciences, data, finance, statistics, and business.

Focusing on industries that students in comparable programs were employed, we see strong employment for these students in insurance, banking/finance, accounting, and computer systems design.

Top NAICS Codes for All Comparable Programs Work Terms 4+

Employer NAICS Code	2018 # Emp.	/Rank	2019 # Emp.	/Rank	2020 # Emp.	/Rank	2021 # Emp.	/Rank	2022 # Emp.	/Rank	2023 # Emp.	/Rank	2024 # Emp.	/Rank	Overall 2018 to 2024	Trend	Overall Rank Change
5241 - Insurance carriers	155	1	167	1	135	1	188	1	182	1	176	1	168	1	1,171		0
5221 - Depository credit intermediation	89	2	100	2	61	2	61	2	77	2	46	3	68	2	502		0
5239 - Other financial investment activities	51	3	48	3	48	3	56	3	63	3	68	2	68	2	402		1
5416 - Management, scientific and technical consulting services	27	6	25	6	22	5	46	4	42	4	28	5	39	6	229		0
5211 - Monetary authorities - central bank	34	5	40	4	22	5	25	7	36	5	26	6	41	5	224		0
5415 - Computer systems design and related services	19	7	19	8	14	12	37	5	34	6	36	4	42	4	201		3
5242 - Agencies, brokerages and other insurance related activities	37	4	29	5	39	4	28	6	25	7	17	10	26	13	201		-9
5412 - Accounting, tax preparation, bookkeeping and payroll services	18	8	24	7	16	9	22	9	18	10	18	9	28	9	144		-1
9129 - Other provincial and territorial public administration	13	10	17	10	12	13	17	11	25	7	24	7	35	8	143		2
5132 - Software publishers	7	15	16	11	19	8	24	8	25	7	16	11	27	11	134		4

This is also evident when looking at the largest hiring organizations by volume of students hired in comparable programs.

Top Employers for All Comparable Programs Work Terms 4+

Employer Name	Overall 2018 to 2024
TD Bank Group	227
RBC Financial Group	167
Sun Life	149
Manulife Financial	149
Munich Reinsurance Company	144
Bank of Montreal	113
University of Waterloo	108
The Canada Life Assurance Company	95
Canadian Imperial Bank of Commerce	92
Intact Financial Corporation	90
Scotiabank	89
Loblaw Companies Limited	70
Ontario Teachers' Pension Plan	69
PwC	65
Deloitte	61
Aon plc	57
Milliman Inc	54
Aviva Canada Inc	54
Northbridge (A Fairfax Company)	53
Oliver Wyman	45

Some of the most common job titles held by students in these positions include: Actuarial Analyst, Actuarial Assistant, Data Analyst, Data Scientist, Financial Analyst, Business Analyst, and Risk Management.

Top Job Titles for All Comparable Programs Work Terms 4+

Employer Name	Overall 2018 to 2024
Actuarial Analyst	178
Actuarial Assistant	97
Data Analyst	92
Data Scientist	89
Actuarial Co-op	81
Actuarial Intern	78
Actuarial Student	61
Financial Analyst	44
Actuarial associate	44
Actuarial Analyst Co-op	42
Data Science Intern	36
Actuarial Campus Talent Program	36
Business Finance Co-op	31
Software Engineering	28
Risk Management	28
Data Engineering	28
Actuarial Analyst Intern	28
Business Analyst	24
Research Assistant	22
Junior Data Scientist	22

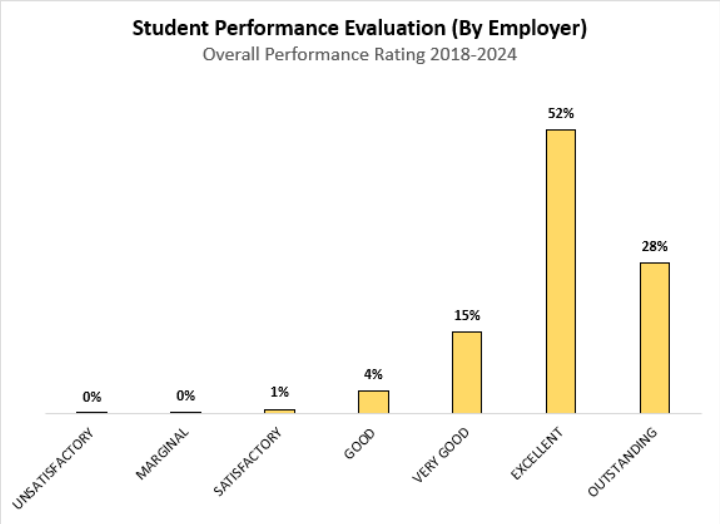
Overall, the number of jobs posted in relevant occupations continue to remain strong, signifying that students in these programs will be presented with a large number of relevant job opportunities to apply for.

Intermediate/Senior Co-op Job Postings to FCS and ESD Job Boards for Top NOC Codes Employing Comparable Programs
Note not including potenital co-op opporunities that would have been posted to Other job board
Note NOC Code 11201 often used as a catch all

	Winter								Spring								Fall								
NOC Code	2018	2019	2020	2021	2022	2023	2024	Winter Total	2018	2019	2020	2021	2022	2023	2024	Spring Total	2018	2019	2020	2021	2022	2023	2024	Fall Total	Overall 2018 to 2024
11100 Financial Auditors and Accountants	22	77	86	74	167	175	99	700	36	49	38	64	75	92	63	417	71	55	50	86	108	82	77	529	1,646
11101 Financial and Investment Analysts	49	152	185	131	200	178	108	1,003	120	111	110	138	189	125	90	883	146	166	100	173	247	130	127	1,089	2,975
11109 Other Financial Officers	3	6	18	8	9	48	31	123	9	4	14	6	37	47	20	137	7	6	11	3	39	22	19	107	367
11201 Professional Occupations in Business Management Consulting	62	245	238	195	240	306	201	1,487	205	217	220	182	279	204	155	1,462	257	276	168	236	318	190	189	1,634	4,583
14201 Banking, Insurance and Other Financial Clerks	1	11	15	2	3	7	4	43	8	10	10	5	7	3	5	48	9	10	3	2	8	1	5	38	129
21210 Mathematicians, Statisticians and Actuaries	22	105	98	66	86	79	51	507	76	73	67	67	73	75	43	474	79	88	52	75	80	55	44	473	1,454
21211 Data Scientists	18	61	107	92	122	94	69	563	52	68	79	84	121	75	79	558	65	66	85	106	110	63	65	560	1,681
21223 Database Analysts and Data Administrators	14	44	90	71	109	86	61	475	49	38	89	69	103	82	64	494	65	55	68	69	113	60	49	479	1,448
21231 Software Engineers and Designers	113	484	543	458	749	553	371	3,271	378	443	606	609	707	413	383	3,539	402	425	324	562	701	367	350	3,131	9,941
41201 Post-Secondary Teaching and Research Assistants	23	91	73	167	86	85	72	597	80	79	74	82	80	81	63	539	103	105	76	104	114	93	85	680	1,816
Total Across Top NOC Codes	327	1,276	1,453	1,264	1,771	1,611	1,067	8,769	1,013	1,092	1,307	1,306	1,671	1,197	965	8,551	1,204	1,252	937	1,416	1,838	1,063	1,010	8,720	26,040
Total Co-op Jobs Posted	3,320	3,369	2,181	3,407	4,218	2,909	2,607	22,011	2,826	3,114	3,294	3,041	3,935	3,278	2,532	22,020	840	3,470	3,617	2,815	4,108	3,686	2,578	21,114	65,145

Student Experience

The percentage of students in comparable programs who received a 'Very Good' to 'Outstanding' rating was 95%, on par with the overall university average of approximately 94%.

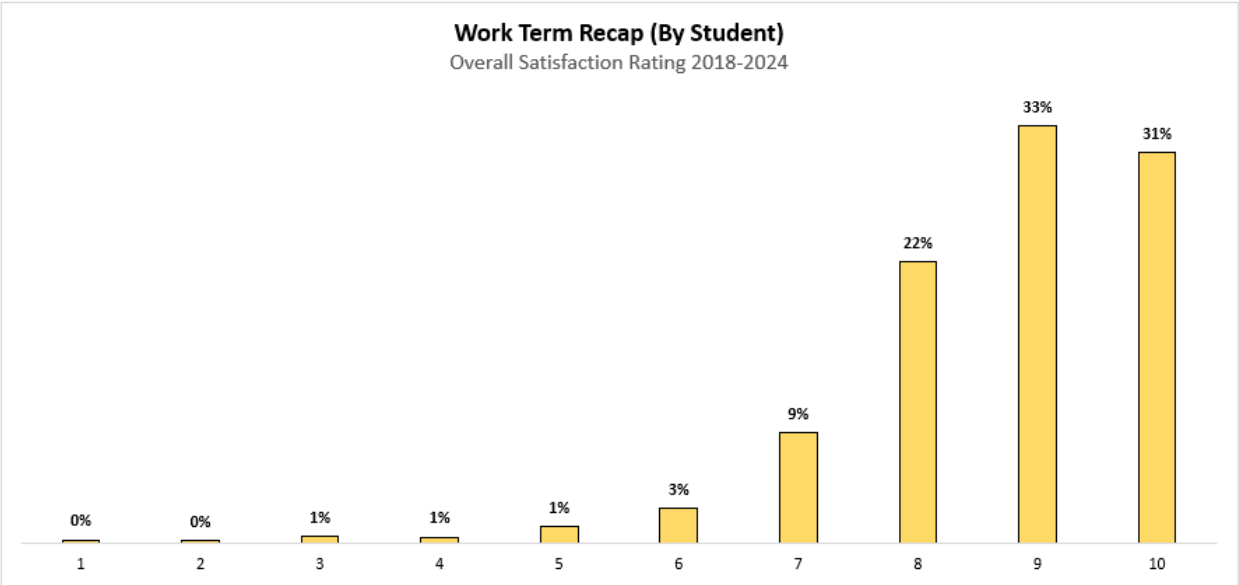


Students in these programs rate their overall average satisfaction and individual work term attributes highly, with 86% of students rating their overall satisfaction with their work term eight out of ten or higher.

Work Term Rating Individual Questions - Comparable Programs WT4+

2018 to 2024

Overall Satisfaction Rating	Avg Rating	Count
Availability of employer support (1-5)	4.58	3,192
Opportunities to learn or develop new skills (1-5)	4.42	3,192
Opportunities to make meaningful contributions at work (1-5)	4.45	3,192
Opportunities to expand your professional network (1-5)	4.26	3,192
Appropriate compensation and/or benefits (1-5)	4.22	3,192
How closely your work was related to your academic program (1-5)	4.16	3,192
How closely your work was realted to the skills you are developing at university (1-5)	4.00	3,192
How likely would you be to recommend a co-op job at this organization? (1-10)	8.61	1,902
I can see myself working at this organization after graduation (1-10)	7.94	1,902



External Industry Projections

External to our co-op data, Statistics Canada Labour Force data shows continued growth from 2018 to 2028 in terms of the number of people employed in the finance and insurance, information, professional scientific and technical services as well as public administration, which are the industries we anticipate Master of Actuarial Science students are most likely to work in.

Employed Count in NAICS Sectors Most Aligned with Top 10 NAICS Codes Employing Comparable Programs

NAICS Code Grouping	2018	2019	2020	2021	2022	2023	2024	Trend	Total
Finance and insurance [52]	848,078	867,428	912,735	963,820	993,707	1,020,545	1,034,808		6,641,121
Information, culture and recreation [51, 71]	773,700	778,744	677,054	715,017	809,350	847,912	843,222		5,444,999
Professional, scientific and technical services [54]	1,470,944	1,556,561	1,567,284	1,699,446	1,818,089	1,895,317	1,976,301		11,983,942
Public administration [91]	937,127	984,245	997,797	1,076,727	1,141,603	1,186,968	1,227,605		7,552,072
Overall	4,029,849	4,186,978	4,154,870	4,455,009	4,762,749	4,950,742	5,081,936		31,622,133

These industries have also seen annual year over year growth in the student talent and emerging talent population subgroups.

Employed Count in NAICS Sectors Most Aligned with Top 10 NAICS Codes Employing Comparable Programs by Population Sub Groups

Population Subgroup	2018	2019	2020	2021	2022	2023	2024	Trend	Total
Established Talent	2,945,172	3,015,083	3,066,920	3,300,700	3,458,145	3,590,043	3,694,247		23,070,309
Emerging Talent	602,998	652,839	639,929	651,538	725,975	754,409	757,354		4,785,041
Student Talent	146,239	143,831	115,311	120,779	164,003	180,208	194,486		1,064,857
Overall	4,029,849	4,186,978	4,154,870	4,455,009	4,762,749	4,950,742	5,081,936		31,622,133

Established Talent: age 30+ and not fill time students
Emerging Talent: age 22-29 and not full time students
Student Talent: Full time students
Note subgroups will not sum to Overall

Employment and Social Development Canada (ESDC) uses the Canadian Occupational Projection System (COPS) and the National Occupational Classification (NOC, 2021 version) to identify occupations that may face labour shortage or labour surplus conditions over the projection period. The latest projections cover the 2024 to 2033 period. Their analysis of occupations expected to align with the Health Technologies program indicates:

Mathematicians, statisticians and actuaries (21210) – **BALANCE**: Over the period 2024-2033, the number of job openings for **Mathematicians, statisticians and actuaries** is expected to total 4,500, which is **relatively similar** to the number of job seekers (5,500).
Because the occupation showed signs of balanced labour market conditions in recent years, and the projected flows of job openings and job seekers are expected to be similar, the occupation is expected to experience **balanced labour market** conditions over the projection period (2024-2033).

Financial and investment analysts (11101) – **BALANCE:** The occupation showed **signs of balanced labour market** conditions in recent years. Indeed, the analysis of key labour market indicators, including job vacancies, employment growth, and the unemployment rate suggests that labour supply was sufficient to meet the labour demand in this occupation over the 2021-2023 period.
Over the period 2024-2033, the number of job openings for **Financial and investment analysts** is expected to total 26,500, which is **relatively similar** to the number of job seekers (31,800). As a result, the occupation is expected to experience **balanced labour market** conditions over the projection period (2024-2033).

Professional occupations in business management consulting (11201) – **BALANCE:** Over the period 2024-2033, the number of job openings for **Professional occupations in business management consulting** is expected to total 61,600, which is **relatively similar** to the number of job seekers (74,400).

Over the period 2024-2033, the number of job openings for **Professional occupations in business management consulting** is expected to total 61,600, which is **relatively similar** to the number of job seekers (74,400).

Conclusion

It is anticipated that students in the MMath Actuarials Science co-op program will be successful from an employment perspective as students will have access to many relevant co-op opportunities and additional support available ensure success.

Work term data indicates that not only will these students secure relevant co-op employment, but they will be highly satisfied with these roles.

CEE's existing relationships with thousands of hiring organizations around the world includes many in the actuarial sciences, finance, insurance and technology sectors. External industry data has shown strong growth in these sectors over the previous five years, and positive projections for the future.

Shifting economic and geopolitical landscapes highlight the importance of collaboration between CEE and the Academic programs to identify potential co-op opportunities and barriers, as well as reviewing employment trends to help ensure program, student and co-op expectations are aligned.

UNIVERSITY OF WATERLOO | Senate

For Information **Open Session**

To:	Senate Graduate Council
From:	Ian VanderBurgh
	AVP, Strategic Enrolment Management
	University Lead, Global Engagement
Date of Meeting:	May 25, 2026
Agenda Item:	**7. Transnational Education Programs**

Recommendation/Motion

This item is being brought forward for information. No action/motion is required.

Summary

The University of Waterloo is exploring a number of activities in support of Transnational Education (TNE). TNE is simply defined as the delivery of educational programs across national borders and encompasses a wide variety of institutional strategies, partnership models and levels of risk.

Proposal/Rationale

The purpose of bringing this item forward for information is to provide Senate Undergraduate Committee/Senate Graduate Committee with an overview of the TNE landscape and possible models, including risks, rewards, and considerations.

Jurisdictional Information

TNE activity will be done in compliance with any relevant legislation, policies or guiding documents.

Governance Path

TNE activities will be undertaken in consultation with the Secretariat to ensure appropriate governance paths are followed.

UNIVERSITY OF WATERLOO | Senate

For Information **Open Session**

To:	Senate Graduate Council
From:	Justin Wan Associate Vice-President, Graduate Studies and Postdoctoral Affairs
Date of Meeting:	May 25, 2026
Agenda Item:	**8. TA/RA Unionization Updates**

Summary

Justin Wan, Associate Vice-President, Graduate Studies and Postdoctoral Affairs, will provide an update about the TA/RA unionization.

Documentation Provided

N/A