

UNIVERSITY OF  
**WATERLOO**



**Secretariat**

# Senate Undergraduate Council

## Open Session

September 17, 2024

Needles Hall

NH 3318 / Zoom

200 University Avenue West

Waterloo, ON, N2L 3G1

# UNIVERSITY OF WATERLOO



## Secretariat

### 2024 09 17 Senate Undergraduate Council Meeting Book

Senate Undergraduate Council Meeting Book

#### Governance Resources

[Link to Governance Resources](#)

#### Open Session

1:00 pm

#### 1. Conflict of Interest

1.1 Conflict of Interest

Declaration

3

#### Consent Agenda

Motion: To approve the items on the consent agenda, listed as item 2-3 below.

#### 2. Minutes of June 17, 2024 Meeting

2.1 2024-06-17 SUC Minutes

Decision (SUC)

4

#### 3. Curricular Submissions - Consent

3.1 Curriculum Sub Committee Report - Consent

6

3.2 Faculty of Mathematics [Benoit Charbonneau]

Decision (SUC)

7

#### Regular Agenda

#### 4. Business Arising from the Minutes

Oral/Input

1:05 pm

#### 5. Curricular Submissions - Regular

5.1 Curriculum Subcommittee Report - Regular

42

5.2 Faculty Mathematics [Benoit Charbonneau]

Decision (1 SEN-R &  
2 SEN-C)

43

1:15 pm

#### 6. Waterloo Values

Oral/Information

[Link to Waterloo Values \[Melanie Will\]](#)

1:45 pm

#### 7. Curriculum Subcommittee Pilot [David DeVidi]

Oral/Discussion

#### 8. Other Business

Oral/Input

#### 9. Meeting Adjournment

Oral/Input

# Excerpt from Senate Bylaw 1

## 8. Declarations of conflict of interest

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

**University of Waterloo**  
**SENATE UNDERGRADUATE COUNCIL**  
**Minutes of the June 17, 2024 Meeting**  
**[in agenda order]**

**Present:** Katherine Acheson, Avery Akkerman, Maya Baboolal, Victoria Chu, Cecilia Cotton, Laura Deakin, David DeVidi (chair), Leeann Ferries, Alysia Kolentsis, E-Therng Lee, Carol Ann MacGregor, Kristiina Montero, Catherine Newell Kelly, Cynthia Richard, Helena Shilomboleni, Chris Vigna, Johanna Wandel, Tim Weber-Kraljevski (secretary), Richard Wikkerink.

**Resources/Guests:** Christy Barbeau, Jennifer Coghlin, Angela Christelis, Robert Hill, Danielle Jeanneault, Carrie MacKinnon, Erika Macmillan, Charlotte Petkovic, Kyle Scholz, Diana Skrzydlo.

**Absent:** Chole Ding\*, Jason Grove\*, Namrah Hasan, Grace Marshall, Nicholas Pfeifle, Brandon Que\*, William Wong.  
\*Regrets

**Organization of Meeting:** Dave DeVidi took the chair, and Tim Weber-Kraljevski acted as secretary. The secretary advised that a quorum was present. The agenda was approved without formal motion.

The chair welcomed new members and invited guests to the meeting.

**1. CONFLICT OF INTEREST**

No conflicts of interest were declared.

**CONSENT AGENDA**

A motion was heard to approve consent agenda as presented. Ferries and Deakin. Carried.

**2. MINUTES OF THE MAY 14, 2024 MEETING**

The minutes were accepted as distributed.

**3. CURRICULAR SUBMISSIONS**

Council approved item 3 a.-f. as presented.

**REGULAR AGENDA**

**4. BUSINESS ARISING FROM THE MINUTES**

The Chair encouraged members to volunteer to serve on the Academic Quality Enhancement (AQuE) Committee.

**5. CURRICULUM SUBMISSIONS**

**a. Faculty of Arts:** Acheson provided an overview of the proposed major modifications to Anthropology. A motion was heard to recommend Senate approve the proposed major modifications to Anthropology (Bachelor of Arts – Four-Year General and Bachelor of Arts– Honours) as presented. Acheson and MacGregor. Carried. Acheson provided an overview of the proposed major modifications to Religious Studies. A motion was heard to recommend Senate approve the proposed major modifications to to Religious Studies (Bachelor of Arts – Four-Year General, Bachelor of Arts– Honours, and Bachelor of Arts – Three-Year General as presented. Acheson and Montero. Carried. Acheson provided an overview of the proposed major modifications to Sexuality, Marriage, and Family Studies. A motion was heard to recommend Senate approve the proposed major modifications to Sexuality, Marriage, and Family Studies

(Bachelor of Arts – Four-Year General, and Bachelor of Arts– Honours) as presented. Acheson and MacGregor. Carried. Lastly Acheson provided an overview of the proposed regulation revisions. A motion was heard to recommend Senate approve the proposed academic regulation revisions to Arts: Averages and Academic Standings, as presented. Acheson and Wandel. Carried.

**6. TEACHING INNOVATION INCUBATOR PROJECTS**

Scholz presented on the progress on the following five Teaching Innovation Incubator projects: Interdisciplinary Graduate Student and Design and LED “Wicked Problems” courses; Accelerating Integration of Sustainability into the Curriculum; Accessible Education; Adapting Student-Led Individually Created Courses (SLICCS) to encourage self-directed learning; and Evaluating Learn Tools – Creator+ and Performance+. Scholz also spoke to the future direction of the Teaching Innovation Incubator. Members discussed: the future of the Wicked Problems project; how SLICCS work and the potential with interdisciplinary capstones; potential future calls for projects; and using Learning Innovation and Teaching Enhancement (LITE) grants as pilots for future Teaching Innovation Incubators Projects.

**7. STREAMLINED AND EXPEDITED APPROVAL POSSIBILITIES**

The Chair, Barbeau, Hill, and Skrzydlo presenting on streaming and expediting approval processes, focusing on the course outline project, new programs and ‘strategic curriculum management’, and approval of multi-faculty programs, and inviting members to identify other opportunities to make approval processes more efficient and discuss guardrails that would be needed to put in place. Members discussed: the course outline project; what should be included within a course description and their purpose; what constitutes a editorial change; change frequency in which course descriptions are updated; strategies for flagging out of date course descriptions; and process for when instructors not following the rules.

**8. AVPA AND TEACHING FELLOWS**

This item was combined with the previous item.

**9. OTHER BUSINESS**

There was no other business.

With no other business, Council moved into confidential session. The only item was the approval of the confidential minutes of the May 14, 2024 meeting, which were approved. There was no other business.

**12. ADJOURNMENT**

With no further business, the meeting adjourned. The next meeting is Tuesday, September 17, 2024, 1:00 p.m. to 2:30 p.m. in NH 3318

June 28, 2024

Tim Weber-Kraljevski  
Associate University Secretary

**For Approval****Consent Agenda****Open Session**

**To:** **Senate Undergraduate Council**

**Sponsor:** David DeVidi, Associate Vice-President, Academic  
**Contact Information:** [david.devidi@uwaterloo.ca](mailto:david.devidi@uwaterloo.ca)

**Presenter:** David DeVidi, Associate Vice-President, Academic  
**Contact Information:** [david.devidi@uwaterloo.ca](mailto:david.devidi@uwaterloo.ca)

**Date of Meeting:** **September 17, 2024**

**Agenda Item Identification:** **Approval of Curricular Items on Behalf of Senate**

**Recommendation/Motion:**

To approve the included curricular items on behalf of Senate, as presented.

**Summary:**

The SUC Curriculum Subcommittee has reviewed and agreed, via an e-vote which closed on June 28, 2024, to recommend to SUC for approval as part of the consent agenda, the items included in the appendix of this report. These items include course changes, and minor plan modifications from the Faculty of Mathematics. The Faculty of Mathematics is also bringing forward course ownership changes for information.

In addition to the appendix, the material is also available to view within Quali Curriculum Management (CM) via the following links:

- [Faculty of Mathematics – Consent Agenda Submissions](#)

Please note that items linking to the Quali CM platform can only be accessed by Committee members and other campus members who have received training. If you do not have access to the system, please refrain from clicking the above Quali CM link. If you believe you should have access to view the agenda package content in the platform, reach out to the Council secretary via: [senate@uwaterloo.ca](mailto:senate@uwaterloo.ca).

**Documents Included:**

- Appendix A: Faculty of Mathematics Report

# SUC - 2024-09 - Consent Agenda - Faculty of Mathematics

**Agenda Page Title**

SUC - 2024-09 - Consent Agenda - Faculty of Mathematics

<b>Date</b>	<b>Time</b>	<b>Location</b>
09/17/2024	1:00pm - 3:00pm	Needles Hall 3318

**Description**

**1. Course Changes**

- **CO 432** - Update prerequisites.
- **CO 486** - Proposal to make course repeatable, up to three completions.
- **PMATH 343** - Update to prerequisites, antirequisites, and description.

**2. Minor Program/Plan Modifications**


- **Mathematical Studies (Business Specialization)** - Expansion of choices to satisfy statistics requirement.

**3. Changing Course Ownership (For Information)**

- **COMM 400** - Ownership switching to SAS.
- **COMM 431** - Ownership switching to SAS.
- **COMM 432** - Ownership switching to SAS.

**Attachment(s)**

**Course Proposals**

<b>Code</b>	<b>Title</b>	<b>Type</b>	<b>Workflow Step</b>	
CO 432	Information Theory and Applications	Course	SUC Subcommittee, SUC Curricular Subcommittee   Under Review	
CO 486	Topics in Quantum Information	Course	SUC Subcommittee, SUC Curricular Subcommittee   Under Review	
PMATH 343	Introduction to the Mathematics of Quantum Information	Course	SUC Subcommittee, SUC Curricular Subcommittee   Under Review	
COMM 400	Entrepreneurship, Technology and the Emerging Information Economy	Course	UG committee, Faculty of Mathematics   Under Review	
COMM 431	Project Management	Course	UG committee, Faculty of Mathematics   Under Review	
COMM 432	Electronic Business	Course	UG committee, Faculty of Mathematics   Under Review	

## Program/Plan Proposals

**Code**

**Title**

**Type**

**Workflow Step**



MS-Business  
Specialization

Business  
Specialization

Program

SUC Subcommittee, SUC Curricular  
Subcommittee | Under Review

## Regulations Proposals

No proposals have been added.



# CO 432 Information Theory and Applications

Under Review | Fall 2025

## Proposal Information

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### Status

Active

### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

### Changes

- Effective Term and Year
- Prerequisites

## Effective Date & Career

---

### Career ⓘ

Undergraduate

### Important! ⓘ

### Quest Course ID

16487

Proposed

### Effective Term and Year ⓘ

Fall 2025

### Offering Number

1

Existing

### Effective Term and Year ⓘ

Fall 2023

## Proposal Details

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### Proposal Type ⓘ

Change

### Academic Unit Approval

03/14/2024

### Rationale for Change

The primary background required for this course is in combinatorics and probability. Some of the applications covered in the course assume prior exposure to algorithms, complexity, or optimization. For this reason, CO 250 or CO 255 were also included as prerequisites. CS 231 or CS 341 would serve the same purpose and provide an alternative path to the course, thereby opening up the course to a wider set of students.

Passed at UAC on 20240325

Passed at MFC on 20240528

### Consultations

### Supporting Documentation

## Course Information

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#### Faculty

Faculty of Mathematics

#### Academic Unit

Department of Combinatorics and Optimization

#### Subject Code

CO

#### Number

432

#### Course Level

400

#### Title

Information Theory and Applications

#### Abbreviated Title

Info Theory & Applications

#### Description

Basics of information theory; Shannon entropy, KL divergence, and mutual information; basic properties of entropic quantities; chain rule, Pinsker's Inequality, Data Processing Inequality; compression; Channel Coding Theorem; error-correction; applications to combinatorics, optimization, cryptography, and computer science.

#### Units

0.50

#### Undergraduate Communication Requirement Identifier

No

#### Components

Lecture

#### Primary Component

Lecture

## Grading Information

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#### Standard Course Grading

Yes

# Cross-Listing Information

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Is this course cross-listed? ⓘ

No

# Repeatable Courses

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Can this course be repeated for credit? ⓘ

No

# Enrolment Rules

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Consent to Add ⓘ

No consent required

Consent to Drop ⓘ

No consent required

Prerequisites ⓘ

- Complete all of the following
  - Must have completed at least 1 of the following:
    - CO250 - Introduction to Optimization (0.50)
    - CO255 - Introduction to Optimization (Advanced Level) (0.50)
    - **CS231 - Algorithmic Problem Solving (0.50)**
    - **CS341 - Algorithms (0.50)**
  - Must have completed at least 1 of the following:
    - MATH239 - Introduction to Combinatorics (0.50)
    - MATH249 - Introduction to Combinatorics (Advanced Level) (0.50)
  - Must have completed at least 1 of the following:
    - STAT230 - Probability (0.50)
    - STAT240 - Probability (Advanced Level) (0.50)
  - Students must be in level 3A or higher

Corequisites ⓘ

No Rules

Antirequisites ⓘ

No Rules

# Course Notes

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Fee Statement ⓘ

## Workflow Information

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**Workflow Path** ⓘ

Committee approvals

**Faculty/AFIW Path(s) for Workflow** ⓘ

Faculty of Mathematics

## Dependencies

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**Dependent Courses and Programs/Plans**

COURSE REQUIREMENTS (NO UNITS)

▼ JH-Combinatorics & Optimization - Combinatorics and Optimization (Joint Honours)

[View Programs](#) ➤

▼ H-Combinatorics & Optimization - Combinatorics and Optimization (Bachelor of Mathematics - Honours)

[View Programs](#) ➤

COURSE REQUIREMENTS (UNITS)

▼ Combinatorics & Optimization Minor - Combinatorics and Optimization Minor

[View Programs](#) ➤

# CO 486

## Topics in Quantum Information

Under Review | Fall 2025

### Proposal Information

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#### Status

Active

#### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

#### Changes

- Effective Term and Year
- Can this course be repeated for credit?
- Allow Multiple Enrol in a Term
- Total Completions Allowed

### Effective Date & Career

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#### Career ⓘ

Undergraduate

#### Important! ⓘ

#### Quest Course ID

16488

Proposed

#### Effective Term and Year ⓘ

Fall 2025

#### Offering Number

1

Existing

#### Effective Term and Year ⓘ

Fall 2023

### Proposal Details

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#### Proposal Type ⓘ

Change

#### Academic Unit Approval

03/14/2024

### Rationale for Change ⓘ

CO 486 is not currently coded as repeatable, contrary to the original intent. Students require instructor consent to add the course and typically would be expected to have taken CO 481, PMATH 343 or equivalent courses, which require at least 3A standing. Hence three repetitions seem realistic. Repeatability will be subject to different course content.

Passed at UAC on 20240325

Passed at MFC on 20240528

### Consultations ⓘ

### Supporting Documentation

## Course Information

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#### Faculty ⓘ

Faculty of Mathematics

#### Academic Unit ⓘ

Department of Combinatorics and Optimization

#### Subject Code ⓘ

CO

#### Number ⓘ

486

#### Course Level

400

#### Title ⓘ

Topics in Quantum Information

#### Abbreviated Title ⓘ

Topics: Quantum Info

#### Description ⓘ

The primary objective is to study current work in specific areas of quantum information. Course content may vary from term to term.

#### Units ⓘ

0.50

#### Undergraduate Communication Requirement Identifier

No

#### Components ⓘ

Lecture

#### Primary Component

Lecture

## Grading Information

---

#### Standard Course Grading ⓘ

Yes

## Cross-Listing Information

---

Is this course cross-listed? ⓘ

No

## Repeatable Courses

---

Proposed	Proposed	Proposed
<b>Can this course be repeated for credit?</b> ⓘ	<b>Total Completions Allowed</b>	<b>Allow Multiple Enrol in a Term</b>
Yes	03	Yes
Existing	Existing	Existing
<b>Can this course be repeated for credit?</b> ⓘ	<b>Total Completions Allowed</b>	<b>Allow Multiple Enrol in a Term</b>
No	---	--

## Enrolment Rules

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**Consent to Add** ⓘ

Instructor consent required

**Consent to Drop** ⓘ

No consent required

**Prerequisites** ⓘ

No Rules

**Corequisites** ⓘ

No Rules

**Antirequisites** ⓘ

No Rules

## Course Notes

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**Fee Statement** ⓘ

**Notes** ⓘ

## Workflow Information

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**Workflow Path** ⓘ

Committee approvals

**Faculty/AFIW Path(s) for Workflow** ⓘ

Faculty of Mathematics

# Dependencies

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## Dependent Courses and Programs/Plans

### COURSE REQUIREMENTS (NO UNITS)

▼ JH-Combinatorics & Optimization - Combinatorics and Optimization (Joint Honours)

[View Programs >](#)

▼ H-Combinatorics & Optimization - Combinatorics and Optimization (Bachelor of Mathematics - Honours)

[View Programs >](#)

### COURSE REQUIREMENTS (UNITS)

▼ Combinatorics & Optimization Minor - Combinatorics and Optimization Minor

[View Programs >](#)



# PMATH 343

## Introduction to the Mathematics of Quantum Information

Under Review | Fall 2025

### Proposal Information

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#### Status

Active

#### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

#### Changes

- Description
- Antirequisites
- participants
- Prerequisites
- Effective Term and Year

Show All ▼

### Effective Date & Career

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#### Career ⓘ

Undergraduate

#### Important! ⓘ

#### Quest Course ID

7665

Proposed

#### Effective Term and Year ⓘ

Fall 2025

#### Offering Number

1

Existing

#### Effective Term and Year ⓘ

Fall 2024

### Proposal Details

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**Proposal Type**

Change

**Academic Unit Approval**

12/06/2023

**Rationale for Change**

The original description was written before the course was taught, and it is a bit out of date. The new description has been rewritten to better match how the current course content and to indicate which topics in quantum information will be covered in this course. With the updated course content, the prerequisites also have changed to reflect the the skills students will need to bring to the course (Linear Algebra 2 and Introduction to Probability, the Real Analysis prerequisite is removed). This will also make the course more accessible to students completing the Quantum Information Option. The anitrequisite of PMATH 399 taken Winter 2019 (a preliminary offering of the course under the topics code) is unnecessary as all students enrolled have completed their undergraduate studies.

Passed at UAC on 20240129

Passed at MFC on 20240528

**Consultations****Supporting Documentation**

## Course Information

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**Faculty**

Faculty of Mathematics

**Academic Unit**

Department of Pure Mathematics

**Subject Code**

PMATH

**Number**

343

**Course Level**

300

**Title**

Introduction to the Mathematics of Quantum Information

**Abbreviated Title**

Intro Math of Quantum Info

Proposed

**Description** ⓘ

Finite dimensional Hilbert spaces. Unitary operators and evolution of closed systems. Hermitian and positive operators, observables, measurements, and the uncertainty principle. Tensor products, entanglement, and Bell inequalities. Superdense coding, teleportation, and the no-cloning theorem. Ensembles of states, density matrices, and the partial trace. Quantum channels, the Choi-Jamiolkowski isomorphism, and the Choi-Krauss representation. Purification and distance between states.

Existing

**Description** ⓘ

Finite dimensional normed vector spaces and inner product spaces. Positive and normal operators, the spectral theorem, and singular value decomposition. Tensor products, finite dimensional C\* algebras, and the GNS representation. Completely positive maps, Stinespring's theorem, the Choi-Jamiolkowski isomorphism, and the Choi-Krauss representation. Entanglement and the Bell and Tsirelson inequalities. Vector states and density matrices, quantum channels, observables, and quantum measurement.

**Units** ⓘ

0.50

**Undergraduate Communication Requirement Identifier**

No

**Components** ⓘ

Lecture

**Primary Component**

Lecture

## Grading Information

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**Standard Course Grading** ⓘ

Yes

## Cross-Listing Information

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**Is this course cross-listed?** ⓘ

No

## Repeatable Courses

---

**Can this course be repeated for credit?** ⓘ

No

## Enrolment Rules

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**Consent to Add** ⓘ

No consent required

**Consent to Drop** ⓘ

No consent required

## Prerequisites

- Complete all of the following
  - **Must have completed at least 1 of the following:**
    - **MATH235 - Linear Algebra 2 for Honours Mathematics (0.50)**
    - **MATH245 - Linear Algebra 2 (Advanced Level) (0.50)**
  - Must have completed at least 1 of the following:
    - ~~AMATH331 - Applied Real Analysis (0.50)~~
    - ~~MATH247 - Calculus 3 (Advanced Level) (0.50)~~
    - ~~PMATH331 - Applied Real Analysis (0.50)~~
    - ~~PMATH333 - Introduction to Real Analysis (0.50)~~
    - ~~PMATH351 - Real Analysis (0.50)~~
    - **STAT230 - Probability (0.50)**
    - **STAT240 - Probability (Advanced Level) (0.50)**
  - ~~Must have completed at least 1 of the following:~~
    - ~~MATH235 - Linear Algebra 2 for Honours Mathematics (0.50)~~
    - ~~MATH245 - Linear Algebra 2 (Advanced Level) (0.50)~~

## Corequisites

No Rules

## Antirequisites

- ~~Complete all of the following~~
  - ~~Not completed nor concurrently enrolled in: PMATH399 (Topic 1: Intro the Math of Quantum Info)~~

# Course Notes

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## Fee Statement

## Notes

# Workflow Information

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## Workflow Path

Committee approvals

## Faculty/AFIW Path(s) for Workflow

Faculty of Mathematics

# Dependencies

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## Dependent Courses and Programs/Plans

There are no dependencies

# MS-Business Specialization Business Specialization

Under Review | Fall 2025

## Proposal Information

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### Status

Active

### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

### Changes

- Additional Constraints
- Course Requirements (no units)
- participants
- Effective Term and Year
- Admin Notes

## Effective Date and Career

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### Career

Undergraduate

### Important! ⓘ

Proposed

**Effective Term and Year ⓘ**

Fall 2025

Existing

**Effective Term and Year ⓘ**

Fall 2024

## Proposal Details

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**Proposal Type**

Change

**Academic Unit Approval**

04/29/2024

**Quality Assurance Designation**

Minor Modification

**Is there an impact to existing students?**

No

**Is the credential name changing?**

No

**Co-operative System of Study and Requirements**

No

**Creating or Changing Invalid Combinations**

No

**Rationale and Background for Change(s)**

The current Math Studies Business Specialization requires students to complete one of STAT321 or STAT322. Many students transfer into Math Studies in later terms and have already taken various Statistics classes more advanced than these ones. Advisors have been making substitutions for this requirement but expanding the options will make it clear to students that the specialization is available to them.

The addition of the note is consistent with how the Department of Statistics and Actuarial Science handles STAT substitutions in their plans. Note that STAT 373 and STAT374/AFM323 are being treated as an allowable substitutions for STAT321 (and not for STAT331).

Approved at UAC on 20240429

Passed at MFC on 20240528

**Consultations (Departmental)**

Consultations with Jeff Orchard (Director, Math Studies), Ilham Akhundov (Director of Undergraduate Math/Business & Accounting Programs), Steve Drekic (Associate Chair - Undergraduate Studies, Department of Statistics and Actuarial Science), Donna Lutz and Michelle Smith (Math Undergraduate Office).

**Supporting Documentation**

## General Program/Plan Information

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**Faculty**

Faculty of Mathematics

**Academic Unit**

Dean of Mathematics Office

**Field of Study** ⓘ

Mathematical Studies

**Faculty** ⓘ

Faculty of Mathematics

**Undergraduate Credential Type** ⓘ

Specialization

**Program/Plan Name** ⓘ

Business Specialization

## Admissions

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**Specialization is available for students in the following majors** ⓘ

- H-Mathematical Studies

**Admissions Entry Point** ⓘ

Declare Plan

**Declaration Requirements** ⓘ

- Before declaring this academic plan, see invalid credential combinations.

## Requirements Information

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**Invalid Combinations** ⓘ

Yes

**List of Invalid Combinations** ⓘ

Management Studies Minor

**Average Requirement** ⓘ

No

**Graduation Requirements** ⓘ

- Complete a total of 12.0 units of math courses, listed below.

**Course Requirements (units)** ⓘ

### Required Courses

No Rules

0

Units to Complete

**Course Requirements (no units)** ⓘ

### Required Courses

- Complete all of the following
  - Complete all the following:
    - AFM101 - Introduction to Financial Accounting (0.50)
    - AFM102 - Introduction to Managerial Accounting (0.50)
    - BUS121W - Critical Thinking and Communication Skills (WLU) (0.50)

- CS330 - Management Information Systems (0.50)
- ECON101 - Introduction to Microeconomics (0.50)
- ECON102 - Introduction to Macroeconomics (0.50)
- Complete 1 of the following:
  - ACTSC221 - Introductory Financial Mathematics (Non-Specialist Level) (0.50)
  - ACTSC231 - Introductory Financial Mathematics (0.50)
  - ACTSC291 - Global Capital Markets and Financial Analytics (0.50)
  - AFM272 - Global Capital Markets and Financial Analytics (0.50)
- Complete 1 of the following:
  - AFM131 - Introduction to Business in North America (0.50)
  - ARBUS101 - Introduction to Business in North America (0.50)
  - BUS111W - Understanding the Business Environment (WLU) (0.50)
- Complete 1 of the following:
  - ARBUS302 - Principles of Marketing (0.50)
  - BUS252W - Introduction to Marketing Management (WLU) (0.50)
  - MGMT244 - Principles of Marketing (0.50)
- Complete 1 of the following:
  - CO227 - Introduction to Optimization (Non-Specialist Level) (0.50)
  - CO250 - Introduction to Optimization (0.50)
  - CO255 - Introduction to Optimization (Advanced Level) (0.50)
- Complete 1 of the following:
  - CO327 - Deterministic OR Models (Non-Specialist Level) (0.50)
  - CO370 - Deterministic OR Models (0.50)
- Complete 2 of the following:
  - CS200 - Concepts for Advanced Computer Usage (0.50)
  - CS338 - Computer Applications in Business: Databases (0.50)
  - CS430 - Applications Software Engineering (0.50)
  - STAT340 - Stochastic Simulation Methods (0.50)
- Complete 1 of the following:
  - STAT321 - Regression and Forecasting (Non-Specialist Level) (0.50)
  - STAT322 - Sampling and Experimental Design (Non-Specialist Level) (0.50)
  - **STAT331 - Applied Linear Models (0.50)**
  - **STAT332 - Sampling and Experimental Design (0.50)**
- Complete 7 additional math courses from the following subject codes: ACTSC, AMATH, CO, CS, MATBUS, MATH, PMATH, STAT
- Complete 10 math courses at the 300- or 400-level from the following subject codes (including any taken to satisfy the above requirements): ACTSC, AMATH, CO, CS, MATBUS, MATH, PMATH, STAT
- Complete the List 1 requirement below

## List 1

- Complete all of the following
  - Complete 3 additional courses from this list
  - Choose any of the following:
    - LS271 - Conflict Resolution (0.50)
    - LS319 - Negotiation: Theories and Strategies (0.50)
    - PACS202 - Conflict Resolution (0.50)
    - PACS323 - Negotiation: Theories and Strategies (0.50)



- o Choose courses from any of the following subject codes: AFM, BUS, COMM, ECON, HRM, MSE, STV

## Course Lists

# Required Courses

No Rules

**Are there cross-listed courses listed in requirements?**

Yes

**Cross-Listings Options **

All cross-listings to be displayed

Proposed

### Additional Constraints

1. Students may only complete one course from any cross-listed set.
2. Students previously enrolled in the following academic plans (Business Administration and Mathematics double degree, Mathematics/Business Administration, Mathematics/Financial Analysis and Risk Management, Information Technology Management, and Mathematical Optimization – Business Specialization) may substitute:
  1. STAT371 for STAT331.
  2. STAT372 for STAT332.
3. Students previously enrolled in the following academic plans (Computing and Financial Management and Mathematics/Chartered Professional Accountancy) may substitute:
  1. STAT373 for STAT321.
  2. STAT374/AFM323 for STAT321.

Existing

### Additional Constraints

1. Students may only complete one course from any cross-listed set.

## Notes

# Workflow Information

### Workflow Path

Committee approvals

### Faculty/AFIW Path(s) for Workflow

Faculty of Mathematics

### Senate Workflow

--

# Dependencies

## Dependent Courses and Programs/Plans

SPECIALIZATIONS LIST

▼ H-Mathematical Studies - Mathematical Studies (Bachelor of Mathematics - Honours)

[View Programs >](#)

# COMM 400

# Entrepreneurship, Technology and the Emerging Information Economy

Under Review | Fall 2025

## Proposal Information

---

### Status

Active

### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

### Changes

- Academic Unit
- participants
- Effective Term and Year
- Admin Notes

## Effective Date & Career

---

### Career ⓘ

Undergraduate

### Important! ⓘ

### Quest Course ID

6943

Proposed

### Effective Term and Year ⓘ

Fall 2025

### Offering Number

1

Existing

### Effective Term and Year ⓘ

Fall 2024

## Proposal Details

---



## Rationale for Change

**Background:** On May 1, 2023 the administration of the Math/Financial Analysis and Risk Management (FARM) and Math/Chartered Professional Accountancy (CPA) programs moved from the Dean of Math to the Department of Statistics and Actuarial Science (SAS). As a part of this move some courses with labels MATBUS and COMM that had formerly been housed under the Math/Business “unit” were moved to SAS. The courses were selected as those belonging to the FARM program and those closely related to expertise within the department. The current assignment of courses is given below:

Unit	Course	Title	Student Audience	
SAS	MATBUS 470	Derivatives	FARM	
	MATBUS 471	Fixed Income Securities	FARM	
	MATBUS 472	Risk Management	FARM	
	COMM 101	Introduction to Financial Markets	FARM	
	COMM 321	Intermediate Accounting for Finance	FARM	
	COMM 421	Financial Statement Analysis	FARM	
	COMM 433	Income Tax for Finance Students	FARM	
	MATBUS 371	Introduction to Corporate Finance	MATH/ITM, MATH/BA Single	
	Math/ Business	COMM 400	Entrepreneurship, Technology and the Emerging Information Economy	MATH/BA Single
		COMM 431	Project Management	MATH/ITM
	COMM 432	Electronic Business	MATH/ITM	

Having courses with the same prefix owned by different units causes reporting tracking/teaching credit issues with IAP since typically the Subject Code (e.g. COMM) is associated with a single unit. It may also cause confusion for scheduling having to record who has ownership of specific course numbers.

MATBUS courses are considered “math courses” while COMM courses are “non-math courses”. It is important to retain this distinction so creating a new subject code is not an ideal solution.

### Proposal:

- COMM 400, 431, 432 are moved to SAS for the purposes of IAP and Scheduling
- Math/Business maintains responsibility for curricular changes and management of the courses
- Math/Business maintains responsibility to enter course combinations for the MATH/BA and MATH/ITM students (including those pertaining to COMM 400, 431 and 432)
- SAS is responsible for providing an instructor for COMM 400 (in recent years this course has been taught by Olga Kanj who is now faculty in SAS)
- Math/Business is responsible for providing an instructor for COMM 431 and 432 (in recent years these courses have been taught by Michael Liu who is now faculty in CS)

**Proposal approved by Ilham Akhundov, Steve Drekcic, David Landriault, Cecilia Cotton, and Christiane Lemieux – (May 17, 2024).**

## Consultations

## Course Information

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**Faculty** ⓘ

Faculty of Mathematics

## Proposed

**Academic Unit** ⓘ

Department of Statistics and Actuarial Science

## Existing

**Academic Unit** ⓘ

Dean of Mathematics Office

**Subject Code** ⓘ

COMM

**Number** ⓘ

400

**Course Level**

400

**Title** ⓘ

Entrepreneurship, Technology and the Emerging Information Economy

**Abbreviated Title** ⓘ

Entr, Tech &amp; Emerge Info Econ

**Description** ⓘ

A study of the spirit of entrepreneurship in the technology industry, opportunities emerging in the new information economy, and the implementation issues associated with starting an entrepreneurial venture in today's rapidly changing environment. Many of the concepts covered will also be applicable to careers in the technology industry or in information-based companies, where "intrapreneurship" is an emerging theme. Approximately one-half of the class time will involve guest lectures by entrepreneurs actively involved in the business community.

**Units** ⓘ

0.50

**Undergraduate Communication Requirement Identifier**

No

**Components** ⓘ

Lecture

**Primary Component**

Lecture

## Grading Information

---

**Standard Course Grading** ⓘ

Yes

## 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 ⓘ

- Students must be in level 3A or higher

Corequisites ⓘ

No Rules

Antirequisites ⓘ

- Not completed nor concurrently enrolled in: BUS440W, MTHEL400

## Course Notes

---

Fee Statement ⓘ

Notes ⓘ

## Workflow Information

---

Workflow Path ⓘ

Committee approvals

Faculty/AFIW Path(s) for Workflow ⓘ

Faculty of Mathematics

## Dependencies

---

## Dependent Courses and Programs/Plans

### COURSE LISTS

- ▼ CS-Business Specialization - Business Specialization [View Programs >](#)
- ▼ SE-Business Specialization - Business Specialization [View Programs >](#)
- ▼ Degree Reqs: BAsc - Bachelor of Applied Science Degree Requirements [View Programs >](#)

### COURSE REQUIREMENTS (NO UNITS)

- ▼ H-Mathematics/Business Administration - Mathematics/Business Administration (Bachelor of Mathematics - H... [View Programs >](#)

# COMM 431 Project Management

Under Review | Fall 2025

## Proposal Information

---

### Status

Active

### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

### Changes

- Academic Unit
- participants
- Effective Term and Year
- Admin Notes

## Effective Date & Career

---

### Career ⓘ

Undergraduate

### Important! ⓘ

### Quest Course ID

12954

Proposed

### Effective Term and Year ⓘ

Fall 2025

### Offering Number

1

Existing

### Effective Term and Year ⓘ

Fall 2024

## Proposal Details

---

### Proposal Type ⓘ

Change

### Academic Unit Approval



## Rationale for Change

**Background:** On May 1, 2023 the administration of the Math/Financial Analysis and Risk Management (FARM) and Math/Chartered Professional Accountancy (CPA) programs moved from the Dean of Math to the Department of Statistics and Actuarial Science (SAS). As a part of this move some courses with labels MATBUS and COMM that had formerly been housed under the Math/Business “unit” were moved to SAS. The courses were selected as those belonging to the FARM program and those closely related to expertise within the department. The current assignment of courses is given below:

Unit	Course	Title	Student Audience
SAS	MATBUS 470	Derivatives	FARM
	MATBUS 471	Fixed Income Securities	FARM
	MATBUS 472	Risk Management	FARM
	COMM 101	Introduction to Financial Markets	FARM
	COMM 321	Intermediate Accounting for Finance	FARM
	COMM 421	Financial Statement Analysis	FARM
	COMM 433	Income Tax for Finance Students	FARM
	MATBUS 371	Introduction to Corporate Finance	MATH/ITM, MATH/BA Single
	COMM 400	Entrepreneurship, Technology and the Emerging Information Economy	MATH/BA Single
	Math/ Business	COMM 431	Project Management
COMM 432		Electronic Business	MATH/ITM

Having courses with the same prefix owned by multiple units causes reporting tracking/teaching credit issues with IAP since typically the Subject Code (e.g. COMM) is associated with a single unit. It may also cause confusion for scheduling having to record who has ownership of specific course numbers.

MATBUS courses are considered “math courses” while COMM courses are “non-math courses”. It is important to retain this distinction so creating a new subject code is not an ideal solution.

### Proposal:

- COMM 400, 431, 432 are moved to SAS for the purposes of IAP and Scheduling
- Math/Business maintains responsibility for curricular changes and management of the courses
- Math/Business maintains responsibility to enter course combinations for the MATH/BA and MATH/ITM students (including those pertaining to COMM 400, 431 and 432)
- SAS is responsible for providing an instructor for COMM 400 (in recent years this course has been taught by Olga Kanj who is now faculty in SAS)
- Math/Business is responsible for providing an instructor for COMM 431 and 432 (in recent years these courses have been taught by Michael Liu who is now faculty in CS)

**Proposal approved by Ilham Akhundov, Steve Drekcic, David Landriault, Cecilia Cotton, and Christiane Lemieux – (May 17, 2024).**

## Consultations

## Course Information

---

**Faculty** ⓘ

Faculty of Mathematics

Proposed

**Academic Unit** ⓘ

Department of Statistics and Actuarial Science

Existing

**Academic Unit** ⓘ

Dean of Mathematics Office

**Subject Code** ⓘ

COMM

**Number** ⓘ

431

**Course Level**

400

**Title** ⓘ

Project Management

**Abbreviated Title** ⓘ

Project Management

**Description** ⓘ

This course will introduce students to approaches, techniques, and terminology used in project management. In particular, students will learn project planning principles, product and process metrics, people and organizational issues, task allocation and scheduling, monitoring and control, change management, and methods for cost estimation and risk assessment. Students will also be introduced to current project management tools, and will manage their own term project.

**Units** ⓘ

0.50

**Undergraduate Communication Requirement Identifier**

No

**Components** ⓘ

LectureTutorial

**Primary Component**

Lecture

## Grading Information

---

**Standard Course Grading** ⓘ

Yes

## 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** ⓘ

- Complete all of the following
  - Must have completed the following:
    - AFM102 - Introduction to Managerial Accounting (0.50)
  - Complete 1 of the following
    - Must have completed at least 1 of the following:
      - MSE211 - Organizational Behaviour (0.50)
      - PSYCH238 - Organizational Psychology (0.50)
    - Must have completed the following: MSCI211
  - Students must be in level 3A or higher

**Corequisites** ⓘ

No Rules

**Antirequisites** ⓘ

No Rules

## Course Notes

---

**Fee Statement** ⓘ**Notes** ⓘ

## Workflow Information

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## Dependencies

---

### Dependent Courses and Programs/Plans

#### COURSE REQUIREMENTS (NO UNITS)

- ▼ H-Information Technology Management - Information Technology Management (Bachelor of Mathematics - Hon... View Programs ▶

# COMM 432 Electronic Business

Under Review | Fall 2025

## Proposal Information

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### Status

Active

### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

### Changes

- Effective Term and Year
- Academic Unit
- participants

## Effective Date & Career

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### Career ⓘ

Undergraduate

### Important! ⓘ

### Quest Course ID

12955

Proposed

### Effective Term and Year ⓘ

Fall 2025

### Offering Number

1

Existing

### Effective Term and Year ⓘ

Fall 2023

## Proposal Details

---

### Proposal Type ⓘ

Change

### Academic Unit Approval

## Rationale for Change

**Background:** On May 1, 2023 the administration of the Math/Financial Analysis and Risk Management (FARM) and Math/Chartered Professional Accountancy (CPA) programs moved from the Dean of Math to the Department of Statistics and Actuarial Science (SAS). As a part of this move some courses with labels MATBUS and COMM that had formerly been housed under the Math/Business “unit” were moved to SAS. The courses were selected as those belonging to the FARM program and those closely related to expertise within the department. The current assignment of courses is given below:

Unit	Course	Title	Student Audience
SAS	MATBUS 470	Derivatives	FARM
	MATBUS 471	Fixed Income Securities	FARM
	MATBUS 472	Risk Management	FARM
	COMM 101	Introduction to Financial Markets	FARM
	COMM 321	Intermediate Accounting for Finance	FARM
	COMM 421	Financial Statement Analysis	FARM
	COMM 433	Income Tax for Finance Students	FARM
	MATBUS 371	Introduction to Corporate Finance	MATH/ITM, MATH/BA Single
	COMM 400	Entrepreneurship, Technology and the Emerging Information Economy	MATH/BA Single
	COMM 431	Project Management	MATH/ITM
Math/ Business	COMM 432	Electronic Business	MATH/ITM

Having courses with the same prefix owned by multiple units causes reporting tracking/teaching credit issues with IAP since typically the Subject Code (e.g. COMM) is associated with a single unit. It may also cause confusion for scheduling having to record who has ownership of specific course numbers.

MATBUS courses are considered “math courses” while COMM courses are “non-math courses”. It is important to retain this distinction so creating a new subject code is not an ideal solution.

### Proposal:

- COMM 400, 431, 432 are moved to SAS for the purposes of IAP and Scheduling
- Math/Business maintains responsibility for curricular changes and management of the courses
- Math/Business maintains responsibility to enter course combinations for the MATH/BA and MATH/ITM students (including those pertaining to COMM 400, 431 and 432)
- SAS is responsible for providing an instructor for COMM 400 (in recent years this course has been taught by Olga Kanj who is now faculty in SAS)
- Math/Business is responsible for providing an instructor for COMM 431 and 432 (in recent years these courses have been taught by Michael Liu who is now faculty in CS)

**Proposal approved by Ilham Akhundov, Steve Drekcic, David Landriault, Cecilia Cotton, and Christiane Lemieux – (May 17, 2024).**

## Consultations

## Course Information

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**Faculty** ⓘ

Faculty of Mathematics

Proposed

**Academic Unit** ⓘ

Department of Statistics and Actuarial Science

Existing

**Academic Unit** ⓘ

Dean of Mathematics Office

**Subject Code** ⓘ

COMM

**Number** ⓘ

432

**Course Level**

400

**Title** ⓘ

Electronic Business

**Abbreviated Title** ⓘ

Electronic Business

**Description** ⓘ

This course will introduce students to approaches, techniques, and terminology used in electronic business. Students will also study issues in disciplines related to electronic business. They will review a number of sites and identify efficient e-commerce analysis, design and development techniques. Students will be introduced to current electronic business tools and standards, and will construct their own simple electronic business site.

**Units** ⓘ

0.50

**Undergraduate Communication Requirement Identifier**

No

**Components** ⓘ

LectureTutorial

**Primary Component**

Lecture

## Grading Information

---

**Standard Course Grading** ⓘ

Yes

## 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** ⓘ

- Complete all of the following
  - Complete 1 of the following
    - Must have completed at least 1 of the following:
      - ARBUS302 - Principles of Marketing (0.50)
      - MGMT244 - Principles of Marketing (0.50)
    - Must have completed the following: BUS352W
  - Must have completed at least 1 of the following:
    - CS330 - Management Information Systems (0.50)
    - CS490 - Information Systems Management (0.50)
  - Students must be in level 3A or higher

**Corequisites** ⓘ

No Rules

**Antirequisites** ⓘ

- Not completed nor concurrently enrolled in:
  - AFM443 - E-business: Introduction to Electronic Commerce (0.50)

## Course Notes

---

**Fee Statement** ⓘ**Notes** ⓘ



# Workflow Information

---

## Workflow Path

Committee approvals

## Faculty/AFIW Path(s) for Workflow

Faculty of Mathematics

# Dependencies

---

## Dependent Courses and Programs/Plans

### COURSE LISTS

✓ CS-Business Specialization - Business Specialization

[View Programs >](#)

✓ SE-Business Specialization - Business Specialization

[View Programs >](#)

### COURSE REQUIREMENTS (NO UNITS)

✓ H-Information Technology Management - Information Technology Management (Bachelor of Mathematics - Hon... [View Programs >](#)

✓ Computing Minor - Computing Minor

[View Programs >](#)



**Senate Undergraduate Council  
Curriculum Subcommittee**

**For Approval**

**Open Session**

**To:** **Senate Undergraduate Council**

**Sponsor:** David DeVidi, Associate Vice-President, Academic  
**Contact Information:** [david.devidi@uwaterloo.ca](mailto:david.devidi@uwaterloo.ca)

**Presenter:** David DeVidi, Associate Vice-President, Academic  
**Contact Information:** [david.devidi@uwaterloo.ca](mailto:david.devidi@uwaterloo.ca)

**Date of Meeting:** **September 17, 2024**

**Agenda Item Identification:** **Approval of Major Modifications and Regulation Revision**

**Recommendation/Motion:**

To recommend Senate approve the major program modifications and regulation revisions from the Faculty of Mathematics, as presented.

**Summary:**

The SUC Curriculum Subcommittee has reviewed and agreed, via an e-vote which closed on June 10, 2024, to recommend to SUC, as part of the regular agenda for recommendation to Senate for approval, the items included in the appendix of this report. These items include major plan modifications and regulation revisions from the Faculty of Mathematics.

In addition to the appendix, the material is also available to view within Quali Curriculum Management (CM) via the following link:

- [Faculty of Mathematics – Regular Agenda Submissions](#)

Please note that items linking to the Quali CM platform can only be accessed by Committee members and other campus members who have received training. If you do not have access to the system, please refrain from clicking the above Quali CM link. If you believe you should have access to view the agenda package content in the platform, reach out to the Council secretary via: [senate@uwaterloo.ca](mailto:senate@uwaterloo.ca).

**Documents Included:**

- Appendix A: Faculty of Mathematics Report

# SUC - 2024-09 - Regular Agenda - Faculty of Mathematics

**Agenda Page Title**

SUC - 2024-09 - Regular Agenda - Faculty of Mathematics

Date	Time	Location
09/17/2024	1:00pm - 3:00pm	Needles Hall 3318

**Description**

The following motions were approved at UAC (March 25, 2024) and approved at Math Faculty Council (May 28, 2024).

**1. Major Program/Plan Modifications**

- **Quantum Information Option** - Creation of a new option. To be governed by the faculty with owner units AM, CO, CS, and PM.

**2. Regulation Revisions**


- **Averages and Academic Standings** - Addition of First-Term Withdrawal Policy.

**Attachment(s)**


**Course Proposals**

No proposals have been added.

**Program/Plan Proposals**

Code	Title	Type	Workflow Step	
Quantum Information Option	Quantum Information Option	Program	SUC Subcommittee, SUC Curricular Subcommittee   Under Review	

**Regulations Proposals**

Code	Title	Type	Workflow Step	
UG-MATH-Averages and Academic Standings	Mathematics: Averages and Academic Standings	Policy	SUC Subcommittee, SUC Curricular Subcommittee   Under Review	

# CM Program Code Quantum Information Option

Under Review | Fall 2025

## Proposal Information

---

### Workflow Status

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

## Effective Date and Career

---

### Career

Undergraduate

### Important! ⓘ

### Effective Term and Year ⓘ

Fall 2025

## Proposal Details

---

### Proposal Type ⓘ

New

### Academic Unit Approval

03/14/2024

### Quality Assurance Designation ⓘ

Major Modification

### Major Modification Categories

Add/re-name a graduate research field, graduate specialization, honours, option, specialization

### Recruitment Materials

Yes

### Co-operative System of Study and Requirements ⓘ

No

### Creating or Changing Invalid Combinations ⓘ

No

### Rationale and Background for New Program/Plan ⓘ

The field of Quantum Information studies how the laws of quantum mechanics affect computing, communication, cryptography, and other information processing tasks. Such studies can lead to unexpected applications: algorithms for problems considered intractable for today's computers, and cryptographic schemes with information-theoretic security, among others. These capabilities have generated tremendous interest in the field of Quantum Information in both the academic community and the information technology industry. The interest is reflected in the growing number of students enrolling in the introductory course on quantum information processing. The proposed program builds on the existing expertise and courses on, or related to, this area to provide a solid foundation in its mathematical and theoretical aspects. It thus prepares undergraduate students for future studies and careers in this exciting and important field.

Passed at UAC on 20240325

Passed at MFC on 20240528

### Consultations (Departmental) ⓘ

The following units formally approved the creation of the option and will serve as stakeholder units for its governance.

- Combinatorics and Optimization (2024-03-14)
- School of Computer Science (2024-03-13)
- Pure Mathematics (2024-02-28)
- Applied Mathematics (2024-02-27)

Consultations within IQC included colleagues from ECE, Physics, and Chemistry.

### Supporting Documentation

## General Program/Plan Information

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#### Faculty ⓘ

Faculty of Mathematics

#### Academic Unit ⓘ

Dean of Mathematics Office

#### Field of Study ⓘ

Options: Faculty of Mathematics

#### Faculty ⓘ

Faculty of Mathematics

#### Undergraduate Credential Type ⓘ

Option

#### Program/Plan Name ⓘ

Quantum Information Option

# Admissions

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## Option is available for students in the following degrees

Bachelor of Computer Science Bachelor of Computing and Financial Management Bachelor of Mathematics  
Bachelor of Software Engineering

## Admissions Entry Point

Declare Plan

## Declaration Requirements

# Requirements Information

---

## Invalid Combinations

No

## Average Requirement

Yes

## Minimum Average(s) Required

A minimum cumulative overall average of 60.0%

## Graduation Requirements

- Complete a total of 4.0 units.

## Course Requirements (units)

### Required Courses

0

Units to Complete

No Rules

## Course Requirements (no units)

### Required Courses

- Complete all of the following
  - Complete all the following:
    - PMATH343 - Introduction to the Mathematics of Quantum Information (0.50)
  - Complete 1 of the following:
    - CO481 - Introduction to Quantum Information Processing (0.50)
    - CS467 - Introduction to Quantum Information Processing (0.50)
    - PHYS467 - Introduction to Quantum Information Processing (0.50)
  - Complete 2 of the following
    - Complete 1 of the following:
      - AMATH473 - Quantum Theory 2 (0.50)
      - PHYS454 - Quantum Theory 2 (0.50)
    - Complete 1 of the following:

- CS231 - Algorithmic Problem Solving (0.50)
    - CS341 - Algorithms (0.50)
  - Choose any of the following:
    - CO432 - Information Theory and Applications (0.50)
- Complete all of the following
  - Complete 3 courses from the following choices:
    - Choose any of the following:
      - AMATH242 - Introduction to Computational Mathematics (0.50)
      - AMATH477 - Stochastic Processes for Applied Mathematics (0.50)
      - CO331 - Coding Theory (0.50)
      - CO471 - Semidefinite Optimization (0.50)
      - CO485 - The Mathematics of Public-Key Cryptography (0.50)
      - CO486 - Topics in Quantum Information (0.50)
      - CO487 - Applied Cryptography (0.50)
      - CS371 - Introduction to Computational Mathematics (0.50)
      - CS466 - Algorithm Design and Analysis (0.50)
      - CS485 - Statistical and Computational Foundations of Machine Learning (0.50)
      - PMATH453 - Functional Analysis (0.50)
      - STAT330 - Mathematical Statistics (0.50)
    - Complete no more than 1 from the following:
      - AMATH373 - Quantum Theory 1 (0.50)
      - PHYS334 - Quantum Physics 2 (0.50)
    - Complete no more than 1 from the following:
      - AMATH474 - Quantum Theory 3: Quantum Information and Foundations (0.50)
      - PHYS484 - Quantum Theory 3: Quantum Information and Foundations (0.50)
    - Complete no more than 1 from the following:
      - CHEM356 - Introductory Quantum Mechanics (0.50)
      - ECE305 - Introduction to Quantum Mechanics (0.50)
      - PHYS233 - Introduction to Quantum Mechanics (0.50)
      - PHYS234 - Quantum Physics 1 (0.50)
    - Complete no more than 1 from the following:
      - CS360 - Introduction to the Theory of Computing (0.50)
      - CS365 - Models of Computation (0.50)
      - PMATH432 - Mathematical Logic (0.50)
    - Complete no more than 1 from the following:
      - PMATH336 - Introduction to Group Theory with Applications (0.50)
      - PMATH347 - Groups and Rings (0.50)
    - Complete no more than 1 from the following:
      - ECE405A - Quantum Information Processing Devices (0.50)
      - PHYS468 - Introduction to the Implementation of Quantum Information Processing (0.50)
- Complete one additional course (0.5 unit) from the above lists

## Course Lists ⓘ

# Required Courses

No Rules

**Are there cross-listed courses listed in requirements?**

Yes

**Cross-Listings Options ⓘ**

All cross-listings to be displayed

**Additional Constraints ⓘ**

1. Students may only complete one course from any cross-listed set.

**Notes ⓘ**

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## Undergraduate Plan Guidelines

**Adherence to Academic Plan Guidelines ⓘ**

Yes

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## Workflow Information

**Workflow Path ⓘ**

Committee approvals

**Faculty/AFIW Path(s) for Workflow ⓘ**

Faculty of Mathematics

**Senate Workflow**

Senate Regular

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## Dependencies

**Dependent Courses and Programs/Plans**

There are no dependencies



# UG-MATH-Averages and Academic Standings

## Mathematics: Averages and Academic Standings

Under Review | Fall 2025

### Proposal Information

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**Status**

Active

**Workflow Status**

In Progress

**SUC Subcommittee, SUC Curricular Subcommittee**

expand ▲

Waiting for Approval | Approval Delegate(s)

Tim Weber-Kraljevski

Mike Grivicic

Diana Goncalves

Kuali - Arts

Kuali - Env

Melanie Figueiredo

Kuali - Math

Kuali - Eng

Kuali - Hlth

**Changes**

- Admin Notes
- Regulation Details
- Effective Term and Year
- participants

### Effective Date & Career

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**Career**

Undergraduate

**IMPORTANT!**

Proposed

**Effective Term and Year**

Fall 2025

Existing

**Effective Term and Year**

Fall 2023

### Proposal Details

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**Proposal Type**

Change

## Rationale and Background

### Rationale:

- The previous iteration of the first-year withdrawal provision/policy was removed from the calendar as of 2019/2020 for two reasons:
  - As of fall 2017 a WD grade no longer counted as an unusable course attempt and so there was no academic penalty for withdrawing up until the WD deadline. Students who withdrew from all courses by the WD deadline would also be free to resume their studies in the following term rather than having to sit out until the following fall.
  - After reviewing the data for students who had opted to induce the first-year withdrawal provision it was determined that a negligible amount ever returned to successfully complete a degree in Math illustrating that the provision was not aiding students as it had been intended to.
- After the provision was removed from the calendar it was noted that there was no safety net for first-term students who made the decision to withdraw from all courses within the WF drop period. To address this, the Standings & Promotions (S&P) Committee added to their guidelines that students who needed to withdraw from all of their first-term courses during the WF period could petition to have those withdrawals backdated to the WD drop deadline and the petition would be granted. Students would then be eligible to continue their studies in the following term.
- Due to this being housed only in the S&P guidelines advisors have been largely unaware of this S&P policy for first-term students needing to drop all courses within the WF period. As such, it is not something that has been presented to students as an option when they find themselves in a catastrophic 1A term and need to fully withdraw after the WD deadline.
- Also a factor in this discussion, since fall 2020 the repeat rule has been enforced and as a result, WD grades now carry an academic penalty because they count as one of three maximum attempts students are allowed at any course.
- The new proposed provision would do the following:
  - Provide a safety net for first-term 1A students who have a catastrophic term and need to withdraw and restart.
  - Prevents the first attempts from counting in the repeat rule by backdating the withdrawals to the WD period if necessary and then applying zero-credit weighting.
  - Allow students to continue studies in the following term but at a reduced load to account for the fact that something went terribly wrong in their first-term and a lighter work load will allow them more time and space to make the necessary adjustments and seek appropriate supports/resources.

### Process:

- Students wishing to take advantage of the new first-term withdrawal provision would contact the Mathematics Undergraduate Office (MUO) to begin the process.
- The MUO would notify an advisor who would connect with the student to discuss what went wrong in their first term and to guide them to appropriate resources moving forward as well as discuss course choices for their next term. As appropriate, an advisor will also help determine if the student's current co-op stream should be changed.
- The MUO would also have the Registrar's Office (RO) process the withdrawal and apply zero-credit weighting. If the WD deadline had already passed then the RO would be asked to backdate the withdrawals to the WD period before applying zero-credit weighting.
- If first-term students submitted a notice of withdrawal form rather than reach out to the MUO, the RO would need to notify the MUO so that the student could be offered the first-year withdrawal policy and connect with an advisor.
- Students who dropped all of their courses on their own in Quest would also need to be identified by the RO and then highlighted for the MUO.

Passed at UAC on 20240429

Passed at MFC on 20240528

## Supporting Documentation

## General Regulation Information

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**Type of Regulation**

Faculty-specific

**Faculty**

Faculty of Mathematics

**Regulation Grouping**

Regulations for Faculty of Mathematics Students

**Regulation Page Name**

Mathematics: Averages and Academic Standings

**Description**

average definitions, academic standings

## Regulation Details

Proposed

**Regulation Details** ⓘ

### Averages

The Faculty of Mathematics computes several averages that are used to determine a student's academic standing within the Faculty. The average types are:

- **Cumulative Average (CAV):** The average grade of all courses taken by a student that meet the following criteria:
  - were taken while the student was enrolled at the University of Waterloo,
  - are not a specifically excluded course,
  - are eligible for credit toward the student's degree (e.g., ECON211 would not be included in the CAV because all Math students are barred from taking it) and toward their particular academic plan (e.g., CS330 would not be included in a computer science student's major average because it is only for non-majors).
- **Term Average (TAV):** The TAV is just like the CAV except that the courses included are limited to those taken in a specific term. A TAV is computed for each term in which a student is enrolled in the Faculty of Mathematics.
- **Major Average (MAV):** Courses included in the MAV and average requirements are defined in the major academic plan pages.
- **Special Major Average (SMAV):** Some academic plans have a special major average. A SMAV is a kind of MAV. The specific courses in a SMAV are defined in the major academic plan pages.

### Notes

1. Courses taken in fall 2013 or later cannot be excluded.
2. Failing grades less than 32 and grades of DNW (did not write exam), FTC (failure to complete), NMR (no mark reported), and WF (withdraw/failure) are counted as 32 for average-calculation purposes.
3. Major Averages and Special Major Averages are calculated after a minimum of three courses are completed. Exception: Computer Science (MAV) and Data Science (MAV) averages are calculated after two courses are completed.

### First Term Late Withdrawal Provision

A first-term student who has never previously been registered at a degree-granting post-secondary institution will normally be permitted to withdraw from all of their courses without academic penalty until the last official day to withdraw with a WF for their first term. These courses will continue to appear on the student's academic record with a grade of WD and zero-credit weighting

applied. Such students may resume their studies in the subsequent term at a reduced course load. The maximum allowable course load in the subsequent term will be restricted to 2.0 units. Students wishing to pursue this provision should contact the Mathematics Undergraduate Office.

## Academic Standing Within the Faculty

The rules that determine a student's academic standing are specified below. A student's standing determines whether a student is able to proceed in the Faculty or in their chosen academic plan, how many courses they are able to take in the next term, etc.

### Academic Standing Table

Conditions	Academic Standing
<p>Any of the following:</p> <ul style="list-style-type: none"> <li>The student has more than 4.0 units of failed or excluded courses, or</li> <li>The student's total unit value of unusable course attempts exceeds 5.0 units, or</li> <li>In the opinion of Standings &amp; Promotion (S&amp;P) Committee, the student is unlikely to profit from further study in the Faculty or is not making satisfactory progress toward fulfilling degree requirements.</li> </ul>	Required to Withdraw – May Not Continue in Faculty
<p>No academic standing above applies, and all of the following:</p> <ul style="list-style-type: none"> <li>The student's cumulative average (CAV) is lower than 60%, and</li> <li>The student has more than 2.0 units and less than or equal to 4.0 units of failed or excluded courses.</li> </ul>	Must Change to Mathematical Studies; CAV Low
<p>No academic standing above applies, and all of the following:</p> <ul style="list-style-type: none"> <li>The student's major average (MAV) is lower than 60%, and</li> <li>The student has more than 2.0 units and less than or equal to 4.0 units of failed or excluded courses.</li> </ul>	Must Change to Mathematical Studies; MAV Low
<p>No academic standing above applies, and all of the following:</p> <ul style="list-style-type: none"> <li>The student's CAV is lower than 60%, and</li> <li>The MAV is between the required minimum and 5% lower than that, and</li> <li>The student has more than 2.0 units and less than or equal to 4.0 units of failed or excluded courses.</li> </ul>	Must Change to Mathematical Studies; CAV and MAV Low
<p>No academic standing above applies and the student has more than 2.0 units and less than or equal to 4.0 units of failed or excluded courses.</p>	Must Change to Mathematical Studies
<p>No academic standing above applies, and any of the following:</p> <ul style="list-style-type: none"> <li>Academic standing from the previous full-time term or equivalent is Conditional or Probation/Conditional and any MAV is below the required minimum, or</li> <li>Any MAV is below the required minimum and the academic plan's administrators do not give permission for the student to continue, or</li> <li>Any MAV is more than 5% lower than the required minimum, or</li> <li>The student is in an Actuarial Science academic plan and special major average (SMAV) is below the required minimum.</li> </ul>	Must Change Academic Plan - Plan Average(s) Too Low
<p>No academic standing above applies, and all of the following:</p> <ul style="list-style-type: none"> <li>The student's CAV is lower than 60%, and</li> <li>At least one MAV is between the required minimum and 5% lower than that, and</li> <li>The academic plan's administrators have given permission for the student to continue.</li> </ul>	Probation/Conditional - Must Raise Averages
<p>No academic standing above applies, and the student's CAV is lower than 60%.</p>	Probation - Must Raise Overall Program Average

No academic standing above applies, at least one MAV is between the required minimum and 5% lower than that, and the academic plan's administrators have given permission for the student to continue.	Conditional - Must Raise Plan Average(s)
No academic standing above applies, and the student's CAV is lower than 80%.	Good
No standing above applies, and the student's CAV is at least 80%.	Excellent

## Academic Standing Implications Table

The following table describes the implications of the academic standings listed in the Academic Standing Table.

Academic Standing	Implications
Required to Withdraw – May Not Continue in Faculty	The student is no longer eligible to study as a Faculty of Mathematics student. This standing normally means that a student is no longer eligible for any subsequent degree studies in the Faculty of Mathematics. Students who are unable to satisfy the major average admission or continuation standard for any honours academic plan will be required to withdraw from the Math Faculty. However, a student may submit a petition to enrol in one final term of non degree studies. Such petitions are likely to be granted only if the student is requesting a non-degree term of courses selected to enhance the chances for admission to a program of study outside the Faculty, either at the University of Waterloo or at some other post-secondary institution. A student who is required to withdraw may graduate with a Three-Year General degree under the Honours Fallback Provision if they meet the requirements when they are required to withdraw.
Must Change to Mathematical Studies; CAV Low	The student is no longer eligible to continue in their current honours academic plan and their major has been changed to Mathematical Studies. Also, the student is not currently meeting the Faculty's CAV standards. If enrolled in a co-op academic plan, the student will normally be suspended from the co-operative education employment process during their next academic term.
Must Change to Mathematical Studies; MAV Low	The student is no longer eligible to continue in their current honours academic plan and their major has been changed to Mathematical Studies. Also, the student is not currently meeting the Faculty's MAV standards. If enrolled in a co-op academic plan, the student will normally be suspended from the co-operative education employment process during their next academic term.
Must Change to Mathematical Studies; CAV/MAV Low	The student is no longer eligible to continue in their current honours academic plan and their major has been changed to Mathematical Studies. Also, the student is not currently meeting the Faculty's CAV and MAV standards. If enrolled in a co-op academic plan, the student will normally be suspended from the co-operative education employment process during their next academic term.
Must Change to Mathematical Studies	The student is no longer eligible to continue in their current honours academic plan and their major has been changed to Mathematical Studies.
Must Change Academic Plan - Plan Average(s) Too Low	The student must change to a different major.
Probation/Conditional - Must Raise Averages	The implications of both probationary standing and conditional standing apply (see below).
Probation - Must Raise Overall Program Average	The student is not currently meeting the Faculty's standards. If enrolled in a co-op academic plan, the student will normally be suspended from the co-operative education employment process during their next academic term.
Conditional - Must Raise Plan Average(s)	The student is not currently meeting their academic plan's standards. If the student's standing does not improve (e.g., by raising their MAV(s) to meet the minimum requirements), they will be required to change their major.
Good	The student may continue with their studies.

Excellent

The student may continue with their studies, and their maximum course load is increased to 3.25 units.

## Co-op Standing Rules

### Conditions

### Co-op Standing

Any of the following:

- The student is required to withdraw from the Faculty, or
- The student is on academic probation after a full-time academic term for the second time, or
- Two unemployed or failed work-term opportunities, or
- Three missing or failed PD courses, or
- The Standings & Promotions (S&P) Committee deems that the student is unlikely to profit from further participation in co-op or is not making satisfactory progress toward fulfilling co-op degree requirements. Presentation of such requests to S&P result in a notification to the student and an opportunity to reply prior to S&P's decision.

Withdraw from Co-op

No co-op standing above applies, and any of the following:

- The student is on academic probation after a full-time term for the first time.
- Two missing or failed PD courses.

Co-op Probation

No co-op standing above applies, and in the most recent work term, the employer evaluation was Excellent or Outstanding.

Excellent co-op standing

No co-op standing above applies.

Good co-op standing

## Co-op Standing Rules Implications

The following table describes the implications of the co-op standings listed above.

Co-op Standing	Implications
Withdraw from Co-op	The student must withdraw from co-op and will be transferred to the most closely matching regular academic plan for which the student is admissible.
Co-op Probation	The student must meet with a co-op advisor to determine conditions necessary to remediate their co-op standing. A student who is on probation in co-op solely because of their academic standing will be placed in Good co-op standing if they return to Good or Excellent academic standing after one full-time academic term without missing or failing any PD courses. The student's access to the co-op employment process will be blocked pending completion of remedial requirements.
Good co-op standing	Eligible to continue in co-op.
Excellent co-op standing	Eligible to continue in co-op.

Existing

Regulation Details 

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4.0 units of failed or excluded courses.	Mathematical Studies
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term without missing or failing any PD courses. The student's access to the co-op employment process will be blocked pending completion of remedial requirements.

Good co-op standing      Eligible to continue in co-op.

Excellent co-op standing      Eligible to continue in co-op.

## Workflow Information

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### Change to Undergraduate Communication Requirement

No

#### Workflow Path

Committee approvals

#### Faculty/AFIW Path(s) for Workflow

Faculty of Mathematics

#### Senate Workflow

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