COUNCIL OF THE FACULTY OF SCIENCE

NOTICE OF MEETING

November 12, 2024

3pm – 4:30pm

via Zoom

AGENDA

1. Call to Order and Approval of Agenda
2. Chair's Remarks
3. Approval of October 8, 2024 Minutes
4. Business Arising
5. Inquiries and Communications
   > October 24, 2024
6. Dean's Remarks
7. Associate Dean and Head of Bethune College Remarks
8. Dean Search Update – M. Yousaf, Chair of Council
9. Reports from Science Representatives on Senate Committees
10. Science Student Caucus Items
11. Reports from Standing Committees of Council
    a) Executive Committee:
    > Ratification and Call for Nominations for Senate and Standing Committee of Council
    > Vacancies report on the Standing Committees of FSc Council
    > Honorary degree nominations – soliciting nominations

    b) Graduate Curriculum Committee
    > Consent agenda items

    c) Undergraduate Curriculum Committee:
    > Consent agenda items
12. Other Business
    a) School of Medicine:
    David Peters, Interim Provost, Dean of Record and Institutional Lead, School of Medicine
    Nancy Sangiuliano, Associate Professor, Teaching Stream, School of Nursing (Co-Chair, SOM Planning Group)
    Christopher Perry, Professor, Director, Muscle Health Research Centre (Co-Chair, SOM Planning Group)
    Karin Page-Cutrara, Vice Dean, Learning, Teaching & Academic Programs, Faculty of Health; Associate Professor, Teaching Stream, School of Nursing

(member of the SOM Planning Group)
Lynsey Kissane, Director, Institutional Strategic Projects, Office of the President

COUNCIL OF THE FACULTY OF SCIENCE

NOTICE OF MEETING

October 8, 2024

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via Zoom

AGENDA

1. **Call to Order and Approval of Agenda**
   Chair of Council, M. Yousaf, called the meeting to order and a motion was moved, seconded and carried to approve the Agenda.
2. **Chair's Remarks**
   M. Yousaf welcomed Faculty Council.
3. **Approval of September 10 2024 Minutes**
   A motion was moved, seconded and carried to approve the Minutes.
4. **Business Arising**
   There was none.
5. **Inquiries and Communications**
   > Senate Synopsis September 26 2024
6. **Dean's Remarks**
   Dean Wang welcomed the Faculty Council and provided the following updates:

   Ontario University Fair (October 5-6)
   The fair was a great success, thanks to the hard work and dedication of the Strategic Enrolment Management team, coordinated by Tiffany Guanand attended by faculty members and student volunteers. Dean Wang extended his gratitude to all involved for their contributions.

   Congratulations to Faculty Members on Recent Achievements:
   Professor Dawn Bazely: Recipient of the 2024-25 Fulbright Canada Distinguished Visiting Professor Award.

   Professor Elizabeth Clare: Elected to the Royal Society of Canada's (RSC) College of New Scholars, Artists, and Scientists.

   Professor Wendy Taylor: Elected as Vice President-elect of the Canadian Association of Physicists.

7. **Associate Dean and Head of Bethune College Remarks**
   a) Associate Dean, Faculty Affairs

G. Audette:

He reminded Faculty to submit sabbatical reports by November 1, 2024.

b) Associate Dean, Research & Partnerships

V. Saridakis:

She provided a presentation to remind faculty of the upcoming Fall 2024 submission deadlines:

NSERC Discovery Grants (DG) and Subatomic Physics (SAP): October 30, 2024
NSERC Research Tools and Instruments (RTI): October 23, 2024

Additionally, she highlighted that the deadline for nominations for the President's Research Excellence Award is November 13, 2024.

c) Associate Dean, Students

M. Scheid:

He expressed his gratitude to Meghan Christie, Tiffany Guan, Miranda Ramnaraine, Casey McKenna, the work-study students, and the various units for their valuable assistance at the Ontario University Fair.

Fall Campus day is scheduled for November 2, 2024**.**

d) Head of Bethune College

P. Wilson:

Science Student Caucus elections have concluded, and P. Wilson welcomed the newly elected students who were in attendance.

Winter Academic Orientation is scheduled for Friday, January 3 2025.

In partnership with Bethune, Calumet and Stong Colleges, SCHW is launching a pilot program to offer same-day individual counselling services to students in Bethune College for the Fall 2024 semester.

8. Dean Search

a) Institutional and Faculty-level decanal search procedures – Muhammad Yousaf

M. Yousaf highlighted the decanal search procedure and encouraged faculty to review the process.

b) Motion to begin the search for a new Dean as soon as practicable

P. Hall moved, J. van Wijngaarden seconded the motion and it was carried:
"Given the need for strong, long-term leadership during York's ongoing budgetary challenges, the preparations for a York University School of Medicine, and the Faculties of the Future initiative of the York U Forward Action Plan, the Faculty Council of the Faculty of Science recommends to the President that the search for a new Dean of Science begin as soon as possible."

There was discussion surrounding Faculty-level decanal search procedures.

9. **Reports from Science Representatives on Senate Committees**
   There was none.
10. **Science Student Caucus Items**
    There was none.
11. **Reports from Standing Committees of Council**
    a) Executive Committee:
    > Ratification and Call for Nominations for Senate and Standing Committee of Council
    A motion was moved, seconded and carried to ratify all nominations to the Standing Committees of Council.
    > Vacancies report on the Standing Committees of FSc Council
    M.Yousaf noted the vacancies that remain.
    b) Undergraduate Curriculum Committee:
    > Consent agenda items
12. **Other Business**
    a) Safeguarding research and the new requirements for submitting grant applications starting May 1 2024 - Rebecca Irwin, Associate Director Research Security.
    Rebecca shared a presentation on Safeguarding Research – Research & Innovation with
    council and faculty were encouraged to reach out with any questions or feedback.

Meeting Adjournment

A motion was moved, seconded and carried to adjourn the meeting.

FACULTY COUNCIL ATTENDANCE
OCTOBER 8 2024

Ada Chan
Alex Wiscicka
Anantharaman Kumarakrishnan
Arturo Orellana
Ashley Nahornick
Aysa Tajeri
Brad Sheeller (Non-voting Guest)
Bruce Howard
Carl Wolfe
Cora Young
Coral Hillel
dasantila golemi-kotra
Delwar Hossain
Delwar Hossain (Staff Rep) (Delwar Hossain)
Derek Jackson
Diana Amanullah
Eeram Shaikh
Elaina Hyde
Eva Hughes
Gaelle Luabeya
Gerald Audette
Gino Lavoie
Gloria Orchard
Gurleen Kaur
hovig Kouyoumdjian
Irina Ovis
Jade Atallah
James Elwick
Jennifer Chen
Jennifer van Wijngaarden
Jerusha Lederman
Jill Lazenby
Joanne Sequeira
Joe Tran
Khansa Cheema
Lesley Milley
Maggie Xu
margaret mroziewicz
Maria Mazzurco
Mario Verrilli
Mark Bayfield
Mark Vicari
Martin Romero
Matthew George
Michael Haslam
Mike Scheid
Momo Das
muhammad yousaf
Natalie Moussa
Neal Madras
Pat Hall
Patricia Lakin-Thomas
Patrick Ingram
Paul Szeptycki
Paula Wilson
Rebecca Irwin
Robert Tsushima
Robin Metcalfe
Rui Wang
Ryan Hili
Seyedeh Lilia Modarresi Saryazdi
Sihat Salam
Stephen Watson
Stuart Macgregor
Sylvie Morin
Tamara Kelly
Taylor Cosby
Thomas Baumgartner
Tianna McFarlane
Tina Barhagh
Tom Kirchner
Trevor VandenBoer
Vivian Saridakis
Wendy Booth
Yi Sheng
Zehrah Mirza

The Senate of York University

Meeting Synopsis

The 710th Meeting of Senate held on Thursday, 24 October 2024

Remarks

Chair

The Chair, Lauren Sergio, welcomed Senators to the 710th meeting of Senate. The Chair recognized this as the final meeting for Senator McAulay in her role as Vice-President Finance and Administration, expressing appreciation for her contributions, particularly during budget consultations with the Senate, and extended best wishes. The Chair also noted that a revised agenda was circulated, and the Academic Conduct item had been removed.

President

The President updated on the Auditor General's recommendations and the York U Forward Action Plan, highlighting post-pandemic challenges and policy impacts on higher education. International enrolment remains below pre-pandemic levels, affected by a federal cap, frozen tuition, and a decline in top-choice applications for 2024-2025. Student surveys have identified lower conversion rates from third-choice applications and beyond as a key issue. In response, the York U Forward Action Plan focuses on financial sustainability through new revenue, growth opportunities, and streamlined expenditures to meet board-approved targets over the next three years.

Due to an early adjournment of the meeting, the President's remarks were interrupted, the recommendation from Senate Executive and the information items were not formally received or discussed.

Approvals

On recommendation from the Tenure and Promotions Committee revision to the Tenure and Promotions Policy, Criteria and Procedures to include Indigeneity and Indigenous knowledges, methodologies, and practices in the Description of Criteria for Tenure and Promotion.

Status of Other Items

Due to the early adjournment of the meeting, the one recommendation on the agenda from Executive Committee was not brought to the floor for a vote and the information items were not formally received or discussed.

In order to be able to move expeditiously on the time-sensitive matter, an electronic vote was conducted on the recommendation which resulted in Senate approving the nominees

for the contract faculty seat on ASCP and that nominations be closed. An election by e-vote will be held for this ASCP position with the results reported in November. The remaining items will also be brought to the November meeting.

Additional Information about this Meeting

Please refer to the full Senate agenda of **24 October 2024** for details about the items reported.

Senate's next meeting will be held at **3:00 pm on Thursday, 28 November 2024.**

Memo to Muhammad N. Yousaf, Chair of Faculty of Science Council

From: President Rhonda Lenton

cc. David Peters, Interim Provost & Vice-President Academic
Eva Hughes, Secretary to Council

Date: October 29, 2024

Re: Faculty of Science Dean Search

Dear Dr. Yousaf,

Thank you for your memorandum of October 17, 2024 conveying the request of Council that I launch a full search for a new Dean of Science as soon as possible. I appreciate that the Faculty has taken time to deliberate on the questions raised by former Provost Philipps, and that Council has articulated a clear rationale for a search to start promptly via the Council motion of October 8. I am happy to confirm my agreement to do so, particularly as the Faculty is also simultaneously engaging actively in the major planning initiatives referenced in your memo.

The participation and input of Faculty of Science members is essential in developing the best possible School of Medicine proposal, as well as the Faculties of the Future and other projects within the York U Forward Action Plan. However, I am persuaded that these planning efforts can continue in parallel with the Dean search in order to inform the position profile as well as the search committee's advice to me as President.

I am sharing with this memo the University's Procedures for Decanal Searches, as well as the Faculty-level procedures that I approved in your last Dean search for the election of search committee members. I understand that Council has also confirmed the intention to use the same procedures as in 2018. Assuming that to be the case, Council should proceed immediately to conduct elections to populate the search committee.

Alternatively if Council is seeking any changes to the election procedures for which you would like to request my approval, I ask that do so as soon as possible. Council should also clarify whether it intends for this search to be fully confidential within the search committee, as it did in the last Dean search, or alternatively if there is an interest in pursuing an open phase as described in the Procedures for Decanal Searches, subject to the agreement of the final candidates.

As we await your responses on these critical preliminary matters the Provost's Office will take steps to identify a professional search consultant. In addition, I will appoint a senior academic leader to serve as search committee Chair and will share that appointment with Council.

I look forward to working collaboratively with Council and the search committee to recruit an outstanding new Dean to lead the Faculty in the exciting next phase of its development.

I would appreciate it if you would please forward this memo to members of Science Council.

Final January 30, 2018

York University
Procedures for Decanal Searches
Updated January 2018

Attracting capable Deans is critical to advancing the institutional priorities and mandate of York University. The York Act vests in the President the power to recommend to the Board the appointment of officers of the University (13 (2) d). Under the terms of the current Collective Agreement with YUFA, the importance of collegial participation in the selection of academic administrators and Librarian Administrators is acknowledged in 12.27 (b): *Unless otherwise agreed to between the President and the Faculty Council of the Faculty in question, candidates for appointment as Deans or Principals shall be recommended to the President by search committees established by and advisory to the President, a majority of which have been elected by Faculty Council, and a majority of the members of which are full-time faculty members.*

In light of feedback from the York community and following a review of current practices at other leading Canadian universities, the Procedures for Decanal Searches are being updated, effective immediately.

University Procedures for Decanal Searches

The Deans/Principal play a crucial role in the academic leadership and governance of the university, as well as in the direction and administration of their Faculties and the promotion of teaching and research in those Faculties. It is therefore essential that a decanal search canvas widely to attract candidates who are best qualified for the position in relation to leadership and administrative capacities and experience and scholarly reputation.

The following general procedures shall govern all searches for Faculty Deans, Principal, and, as applicable, the Dean of Libraries. At the outset of a given search, any further specific or supplemental procedures may be agreed upon between the President and the Faculty Council Executive and presented to Faculty Council for approval.

1. The President initiates a search by communication with Faculty Council normally 14 months before the end of the incumbent Dean's/Principal's term, or in the case of an unanticipated vacancy, as soon as possible.
2. Faculty Council normally elects 6 full-time faculty members, one staff and two student members (one undergraduate and one graduate student).
3. Ensuring the best possible outcome will be facilitated by a Search Committee that reflects the breadth and diversity of the Faculty. Each Council should therefore establish procedures reflecting the following principles:
    a. A Search Committee should have some representation from full-time faculty members with familiarity of the job of Dean – that is, with academic administrative experience – typically no fewer than two colleagues who have been or who are currently chairs or directors of departments, or in non-departmentalized

Faculties, members of the senior administrative team such as previous Associate Deans, UPDs, or GPDs.

b. Search Committees should broadly reflect the diversity of academic departments including at least one member from each department if possible, and if not, normally no department should have more than one member on the Search Committee; in non-departmentalized faculties, the Committee should broadly reflect the program areas or fields in the Faculty.
c. Search Committees should also reflect broadly the gender and demographic diversity of the Faculty.

4. Faculties with a significant proportion of contract faculty or who may desire to have an external member such as an alumnus may request adding an additional member to the Search Committee representing contract faculty, alumnus, etc. (to be agreed upon with the President).
5. The President appoints one member drawn from outside the Faculty concerned but who is familiar with the Faculty.
6. The President also names the Chair of the Search Committee, normally the Provost; names a non-voting secretary, normally an experienced senior staff member from outside the Faculty; may retain a Search Consultant to assist the Committee; and formally establishes the Search Committee as a committee advisory to the President, whose mandate is to conduct a search for a new Dean/Principal, in accordance with the agreed-upon procedures, and to recommend to the President, by a specified date, the best-qualified candidate(s) for Dean/Principal.
7. The Search Committee is responsible for preparing the position profile drawing on input from Faculty Council and in consultation with the President.
8. The Search Committee will advertise the position in university publications and, if external nominations are being sought, may advertise in national and international professional publications. The Search Committee may also solicit recommendations for the position.
9. The Search Committee assesses and screens applicants/nominees, and conducts interviews. The names of all the candidates considered at any stage, including the list of those interviewed, shall be kept confidential to the Search Committee and the Consultant. By agreeing to serve on the Committee, all members agree to be bound by these requirements of confidentiality.
10. The Search Committee prepares its recommendations for the President, identifying the candidate or candidates who present the knowledge, skills and capacities to undertake the responsibilities of Dean/Principal. The Committee may, if it wishes, rank order candidates.
11. The President consults with the Executive Committee of the Board of Governors which may act on behalf of the Board in appointing the candidate or may recommend the appointment to the Board, at its next regular meeting.
12. The President announces the name of the new Dean/Principal to the Faculty and the Board of Governors, and subsequently to the wider York community.

Pilot Provision (2017 – 2019) for Open Searches

For Faculties wishing to incorporate an open stage into their search, the following is being provided as a pilot for searches in 2017 - 2018 and 2018 – 2019 to be reviewed before incorporating as a standing option.

Where a Faculty Council indicates a preference for an open search, an open stage may be added to the process after the Search Committee has interviewed its shortlisted candidates confidentially and has identified its top ranked candidates – normally the top two ranked candidates. In order to ensure that York has access to the very best candidates, the Consultant (or if there is no Consultant, the Secretary to the Committee) will ask the top ranked candidates whether they are willing to meet with Faculty Council. That information will be kept in confidence by the Search Consultant (or Secretary).

If both/all the top ranked candidates agree to do so, they will be invited to present to a closed session of Faculty Council. The Search Committee will solicit input from Faculty Council about those candidates and consider this input in their final rankings to be presented to the President. In this event, all members of Faculty Council agree to be bound by the same requirements of confidentiality as the Search Committee. Council members will provide input to the Search Committee but members of Council will be expected to keep the names of the candidates confidential in perpetuity.

If any of the top ranked candidates indicate a requirement for a confidential search, the open stage will not occur for any candidate. The Consultant will report to the Search Committee that at least one candidate requires a confidential search, without disclosing which candidate or candidates have not agreed to meet with Faculty Council. The Search Committee will in any respect consult extensively with Faculty Council about the position profile for the Dean, and provide regular updates throughout the search.

Whether or not the search proceeds to an open stage, the top ranked candidates will also meet with the President, and the Search Committee may elect to hold follow-up interviews with them.

For Approval: Faculty of Science Decanal Search Procedures

On August 30, 2018, the Provost met with the Chair and Vice Chair of Faculty Council, and asked that the Faculty Executive Committee draft a procedure for establishing a search committee for the new Dean of the Faculty of Science. The procedure has been developed to comply with the University Procedures for Decanal Searches updated January 2018, and to follow the general spirit of past procedures for establishing such committees within the Faculty of Science.

1. Search Committee Composition
Voting Members
a) Chair (Presidential appointee, as per UPDS)
b) Outside faculty member (Presidential appointee, as per UPDS, "drawn from outside the Faculty concerned but who is familiar with the Faculty")
c) Six full-time faculty members, elected by the Faculty Council (as per UPDS)
d) One staff member (as per UPDS)
e) Two student members, one undergraduate and one graduate student (as per UPDS)

Non-Voting Members
f) Secretary (Presidential appointee, as per UPDS)

2. Principles of Membership
a) All members of the Search Committee must be available for meetings between September 2018 and the conclusion of its work.
b) Membership of the Search Committee should reflect the diversity of the Faculty and the Faculty's commitment to maintaining and increasing that diversity.

3. Candidacy Information and Procedures
b) Candidates standing for election to committee membership will be invited to self-identify in relation to affirmative action designated groups: women, racial/visible minorities, persons with disabilities, and aboriginal peoples.
c) The Executive Committee will work proactively to ensure that the slate of candidates for election are reflective of the demographic diversity of the Faculty, and able to meet the specifications outlined in the Selection Process with respect to levels of seniority, rank, administrative experience, department and gender.
d) Candidates will be invited to provide a brief candidate statement up to 150 words which responds to the following question:
"What expertise and strengths do you bring to the committee?"
e) Candidate statements shall be made available to the voters in advance of the balloting.

4. Selection Process

a) Undergraduate student member. The undergraduate student member will be chosen by the Faculty of Science Student Caucus (elected student leaders and members of Faculty Council).

b) Graduate student member. The graduate student member will be elected by graduate students within the Faculty of Science. All full-time Faculty of Science graduate students will be invited to nominate themselves for candidacy or nominate another full-time graduate student (with the nominee's permission). All Faculty of Science graduate students will be eligible to vote for one candidate. A confidential electronic ballot will be overseen by the Secretary to Council. The candidate who receives the most votes will be selected.

c) Staff member. All full-time staff in the Faculty of Science will be invited to nominate themselves for candidacy or to nominate another full-time staff member (with the nominee's permission). All full-time staff members will be eligible to vote for one candidate. A confidential electronic ballot will be overseen by the Secretary to Council. The candidate who receives the most votes will be selected.

d) Faculty members. Each department will vote to select two candidate nominees for the committee. These two candidates will be the two candidates who received the most votes in a confidential electronic departmental ballot, and may be ranked. All full-time faculty members in the Faculty of Science will be eligible for candidacy in his or her respective constituency and may become a candidate by self-nomination or by being nominated by another member of the community (with the permission of the nominee). All full-time faculty members will be eligible to vote within their constituency. Elections will be overseen by a trusted staff member within the department, or the department may ask the Secretary to Council to arrange and oversee a confidential electronic ballot. The two candidate nominees for the committee will be communicated to the Executive Committee.

The Executive Committee will select one of the two candidates from each department to serve on the committee. Decisions will be made subject to the following selection criteria:

- ranking by the department (if provided).
- there is one faculty member from each department (Biology; Chemistry; Mathematics and Statistics; Physics and Astronomy; Science and Technology Studies/Natural Science).
- there are at least 2 female faculty members.
- there are "at least two colleagues who have served in leadership positions within the Faculty", such as current or past chairs or directors of departments, or past Associate Deans [as per UPDS].

A sixth "member at large" will be selected from the remaining departmental candidates by the Executive Committee in order to meet the diversity requirements described in this document.

Note: A single candidate may fulfill more than one selection criterion.

5. Voting

a) If the number of candidates for a constituency is not greater than the number of available places on the search committee for that constituency, then the vote shall be considered to be a ratification vote.

b) In the case of a tie, the candidate will be selected from the affirmative action designated groups: women, racial/visible minorities, persons with disabilities, and aboriginal peoples. If affirmative action criteria do not assist in breaking a tie vote, the Department or the Faculty Council Executive may hold a run off vote between the two candidates receiving the most votes.

c) The results of the balloting will be made available to the Executive Committee of Faculty Council in de-identified format and shall be kept confidential. The data shall be retained until the formal appointment of the Search Committee, after which it shall be discarded. When results are announced, the only information revealed will be the names of those who form the committee; no break down of votes received will be circulated.

6. Incomplete Slate of Nominees

In the event that the procedure described above does not result in a fully-formed slate of nominees for the Search Committee, then the Executive Committee shall formulate a proposal for remediating action and bring it forward for approval by an electronic vote or at the next Faculty Council Meeting.

7. Upon Formulation of Slate of Committee Membership

a) Once the slate of nominees for committee membership has been identified by the Faculty Council as per the provisions above, the President shall "formally establish[es] the Search Committee as a committee advisory to the President" as per the UPDS.

b) The nominees become recognized as members of the Search Committee only once the Search Committee has been formally established by the President. "In the unlikely event that the election results fail broadly to reflect School's diversity (for example if there were no faculty with senior administrative experience elected, or no senior faculty, or if a majority of elected faculty were untenured), the President does reserve the right to take further steps to address this imbalance." as per the UPDS.

c) Once formed, the Search Committee will then conduct its duties in accordance with the provisions of the UPDS.

2024-2025 FSc Report on vacancies for Senate and FSc Standing Committees of Council

RATIFICATION OF NOMINATIONS

Executive Committee:
Taline Apelian-Sutor (term 2025-25)

Undergraduate Curriculum Committee:
Elia Xhindole (term 2024-25)
Tina Barhagh (term 2024-25)

Appeals Committee:
Dawood Baig (term 2024-25)
Kiana Baniasad (term 2024-25)

Committee on Examinations and Academic Standards:
Eeram Shaikh (term 2024-25)
Ayesha Tahir (term 2024-25)

Committee on Equity, Diversity, and Inclusion:
Sophia Luzskov (term 2024-25)

Committee on Academic Policy and Planning:
Seyedeh Lilia Modarresi Saryazdi (term 2024-25)

Committee on Research and Awards:
Momo Das (term 2024-25)

Committee on Teaching and Learning:
Madeline Blanco (term 2024-25)

Committee on Tenure and Promotions:
Natalie Moussa (term 2024-25)

Petitions Committee:
Joy Aina (term 2024-25)
Gurleen Kaur (2024-25)

2024-2025 FSc Report on vacancies for Senate and FSc Standing Committees

Committee	Rules of Faculty Council - membership	Meeting time / Membership	Term	
			From	To
Senate	According to the York University Secretariat based on the Senate Rules and Procedures governing the size and composition of Senate, the Faculty of Science shall have twelve members, including a minimum of two Chairs. According to The Rules of Council (Science), Faculty representation shall include the Director of Natural Science, three Department Chairs, and terms shall be for three years.	As per Senate website		
	Dean, Ex officio	R. Wang	Designated	
	Member at large	G. Audette	Designated	
	Member at large	E. Hamm	2024	2027
	Member at large	EJ Janse van Rensburg, Mathematics & Statistics	2022	2025
	Member at large	T. Kelly	2024	2027
	Member at large	J. Elwick, Science, Technology & Society	2022	2025
	Member at large	T. Kubiseski, Biology	2023	2026
	Member at large	V. Saridakis	2024	2027
	Department Chair	T. Kirchner, Department of Science, Physics & Astronomy	2024	2027
	Department Chair	J. van Wijngaarden, Department of Chemistry	2024	2027
	Department Chair	M. Haslam, Department of Mathematics & Statistics	2023	2026
	Director of NATS	R. Metcalfe, Dvision of Natural Science	Designated	
	Student representative	Yuna (Aria) Hwang	2023	2025
	Student representative	Shon Lazarev	2023	2025
Faculty Council	Chair of Council	M. Yousaf	2024	2025
Staff Representatives	Vice-Chair of Council	VACANT	2024	2025
		W. Booth	2024	2025
		D. Hossain	2024	2025
		M. Xu	2024	2025
FSc Reps on Senate Committees				
Senate Executive	1 member from FSc	T. Kelly	2024	2027
Academic Policy, Planning and Research Committee (APPRC)	1 member from FSc	G. Monette	2023	2026
ASCP (Academic Standards, Curriculum and Pedagogy Committee)	1 member from FSc	J. Elwick	2024	2027
Senate Tenure & Promotion	1 member from FSc	P. Wilson	2024	2027
Sub-Committee on Honorary Degrees & Ceremonials	1 member from FSc	VACANT	2024	2027
Executive Committee	The Executive Committee shall be chaired by the Chair of Council and include the Vice-Chair of Council, the Secretary of Council, and one member elected from each of Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy, and Science, Technology & Society/Natural Science, the Dean of the Faculty of Science (ex officio), one student member of Council, and one of the staff members elected to Council.	Executive Committee normally meets the first Tuesday of each month (September to May) from 3pm - 430pm		
	Chair of Council	M. Yousaf	2024	2025
	Vice-Chair of Council	VACANT	2024	2025
	Dean, Ex officio	R. Wang	Designated	
	Asst. Dean - SEM & SEP	E. Hughes	Designated	
	Staff representative	W. Booth	2024	2025
	Undergraduate Student Rep	Taline Apelian-Sutor	2024	2025
	Biology	M. Vicari	2023	2026
	Chemistry	C. Caputo	2024	2027
	Math & Stats	E. J Janse Van Rensburg	2022	2025
	Physics & Astronomy	E. Hyde	2024	2025
	Science, Technology & Society	VACANT	2024	2025
APPC	The Academic Policy and Planning Committee shall include the Dean or designate (*ex officio*), the Master of Norman Bethune College and one member elected from each of Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy, and Science, Technology & Society/Natural Science, one student member of Council, and one of the staff members elected to Council.	APPC will normally meet the last Thursday of each month (September to April) from 9:00 am - 10:30 am		
	Associate Dean, Faculty Affairs, Ex officio	G. Audette	Designated	
	Head of Bethune College	P. Wilson	Designated	
	Undergraduate Student Representative	Seyedeh Lilia Modarresi Saryazdi	2024	2025
	Elected staff representative	M. Xu	2024	2025
	Biology	R. Schott	2023	2026
	Chemistry	R. Fournier	2023	2026
	Math & Stats	P. Szeptycki	2023	2026
	Physics & Astronomy	W. van Wijngaarden	2024	2025
	Science, Technology & Society	S. Domenikos	2022	2025
Undergraduate Curriculum Committee	The Curriculum Committee shall include the Dean and an Associate Dean (ex officio), the Chair or nominee from each teaching Division or Department, three members elected by Council and two student members of Council.	The Curriculum Committee will normally meet every last Tuesday of each month (September to April) from 9:00 - 10:30 am		
	Member at Large	VACANT	2023	2026
	Member at Large	Paula Wilson	2023	2026
	Dean, Ex officio	R. Wang	Designated	
	Undergraduate Student Rep	Elia Xhindole	2024	2025
	Undergraduate Student Rep	Tina Barhagh	2024	2025
	Biology	J. Atallah	2022	2025
	Chemistry	D. Jackson	2022	2025
	Math & Stats	M.W. Wong	2023	2026
	Physics & Astronomy	O. Mermut	2024	2025
	Science, Technology & Society	R. Metcalfe	2022	2025
	Member at Large	L. Robertson	2023	2026

2024-2025 FSc Report on vacancies for Senate and FSc Standing Committees

Committee	Rules of Faculty Council - membership	Meeting time / Membership	Term	
			From	To
CEAS	The Committee on Examinations and Academic Standards shall consist of an Associate Dean (*ex officio*), five members elected by Council from each of Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy and Science, Technology & Society/Natural Science, and one student member of Council.	CEAS will normally meet every alternate Wed / Thurs from 1:00 - 3:00 pm year round.		
	In addition to the above membership of the committee, Council shall elect an alternate member from each of the Departments specified above. The alternate member shall be the person polling the next highest number of votes to those elected to the committee from each Department. The alternate for the student member will be selected by the Science Student Caucus from one of its Members at Large. An alternate can only vote in the event that first elected members are not in attendance.			
	Associate Dean - Students, Ex officio	M. Scheid	Designated	
	Undergraduate Student Rep	Eeram Shaikh	2024	2025
	Undergraduate Student Rep	Ayesha Tahir	2024	2025
	Biology	A. Hilliker / ALT. VACANT	2023/2024	2026/2027
	Chemistry	P. Johnson & D. Jackson / ALT T. Mirkovic	2023/2023	2026/2026
	Math & Stats	VACANT, N.Purzitsky / ALT. Y. Gao	2021/2022	2025/2025
	Physics & Astronomy	C. Storry & E. Hyde / ALT. VACANT	2023/2023	2025/2025
	Science, Technology & Society	J. Webb / ALT. S. Domenikos	2023/2023	2026/2026
Petitions	The Petitions Committee for the purpose of hearing student petitions shall consist of an Associate Dean (*ex officio*), six members of Council, and two student members of Council. The Committee may divide the workload by splitting the Committee membership into two panels of four people each. A quorum shall consist of either (a) two faculty voting faculty members and one student member or (b) three voting faculty members.	Each panel meets once a month on Wednesday or Thursday from 2:30 pm - 4:00 pm		
	Associate Dean, Ex officio	M. Scheid	Designated	
	Undergraduate Student Rep	Joy Aina	2024	2025
	Undergraduate Student Rep	Gurleen Kaur	2024	2025
	Member at Large	S. Morin	2023	2026
	Biology	C. Jang	2022	2025
	Chemistry	R. Fournier	2022	2025
	Physics & Astronomy	S. Jerzak	2023	2025
	Math & Stats	D. Liang	2022	2025
	Science, Technology & Society	J. Rogerson	2022	2025
	Member at Large	A. Mills	2023	2026
SRC T & P Committee	The Committee on Tenure and Promotions shall consist of one currently tenured member from each of Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy and Science, Technology & Society/Natural Science elected by Council, and one student member of Council. No member of the Committee shall be a member of another Tenure and Promotions Committee at any time during their tenure on this committee.	SRC T & P Committee will normally meet the last Friday of each month (September to May) from 9:00 am - 11:00 am in LUM 305B		
	In addition to the above membership of the committee, Council shall elect an alternate member from each of the Units mandated above. The alternate member shall be the person polling the next highest number of votes to those elected to the committee from each Department. The alternate for the student member shall be selected by the Science Student Caucus from one of its Members-at-Large on an annual basis. An alternate can only vote in the event that existing members are not in attendance.			
	Associate Dean - Faculty, Ex officio	G. Audette	Designated	
	Undergraduate Student	Natalie Moussa	2023	2024
	Biology	M. Bayfield/ ALT. VACANT	2023/2023	2026/2026
	Chemistry	A. Orellana/ ALT. S. Krylov	2023/2024	2026/2027
	Physics & Astronomy	C. Bergevin / ALT. M. George	2024/2024	2025/2025
	Math & Stats	Y.Gao / ALT Jianhong Wu	2024/2022	2027/2025
	Science, Technology & Society	E. Hamm / ALT. D. Lungu	2023	2026
CoTL	Currently, the Committee on Teaching and Learning shall consist of a minimum of two Faculty members from each department, the Associate Dean – Students, one Librarian, one staff member, one undergraduate student, and two graduate students, in addition to other members invited as provided for by the Rules. Graduate students and staff nominees will indicate their interest in serving on the committee in writing to the committee, who will then approve by majority vote.	CoTL normally meets every third Thursday of each month (September to May) from 10:00 am - 11:30 am		
	Associate Dean - Students, Ex officio	M. Scheid	Designated	
	Graduate Student Representative	Taylor Cosby	2024	2025
	Graduate Student Representative	Sihat Salam	2024	2025
	Undergraduate Student Representative	Madeline Blanco	2024	2025
	Stacie Science Library, Designated	Minglu Wang	Designated	
	IT Representative	V. Gotcheva	Designated	
	Teaching Commons Rep	Y. Su	Designated	
	Staff representative, Elected	D. Hossain	2024	2025
	Biology	L. Adriana Puentes Jacome	2023	2026
	Biology	J. Atallah	2023	2026
	Chemistry	T. Mirkovic	2023	2026
	Chemistry	D. Wilson	2024	2025
	Physics & Astronomy	N. Blinov	2023	2025
	Physics & Astronomy	C. Boukaré	2023	2025
	Math & Stats	J. Cao	2022	2025
	Math & Stats	VACANT	2023	2026
	Science, Technology & Society	C. Rozins	2024	2027
Committee on Research & Awards	The Committee on Research and Awards shall consist of one member elected by Council from each of Biology, Chemistry, Mathematics and Statistics, Science, Technology & Society/Natural Science, and Physics and Astronomy, one student member of Council and an Associate Dean (*ex officio*).	The Research & Awards Committee will meet when grants and awards need to be adjudicated.		
	Associate Dean - Research & Partnerships, ex officio	V. Saridakis	Designated	
	Undergraduate Student Representative	Momo Das	2024	2025
	Graduate Student	Aysa Tajeri	2024	2025
	Biology	D. Golemi-Kotra	2023	2026
	Chemistry	S. Morin	2022	2025
	Physics & Astronomy	R. Kannan	2023	2025
	Math & Stats	H. Zhu	2023	2026
	Science, Technology & Society	H. Mialet	2023	2026
Appeals Committee	The Appeal Committee for the purpose of hearing student appeals shall consist of four elected faculty members from Science units, an Associate Dean (ex officio) and two student members of Council. A quorum shall consist of either (a) two faculty members and one student member or (b) three faculty members.	Meeting is held once a month and times are polled by the Committee Secretary.		
	Associate Dean - Faculty, ex officio	G. Audette	Designated	
	Undergraduate Student Representative	Dawood Baig	2024	2025
	Undergraduate Student Representative	Kiana Baniasad	2024	2025
	Member at Large	VACANT	2023	2026
	Biology	L. Donaldson	2023	2026
	Chemistry	L. Hébert	2023	2026
	Physics & Astronomy	S. Tulin	2023	2025
	Math & Stats	M.W. Wong	2023	2026
	Science, Technology & Society	D. Monaldi	2023	2026

2024-2025 FSc Report on vacancies for Senate and FSc Standing Committees

Committee	Rules of Faculty Council - membership	Meeting time / Membership	Term	
			From	To
Graduate Curriculum Committee	To provide broad review and commendation to Council via the Academic Policy and Planning Committee of all proposals received from Graduate Programs with respect to: New Course Proposals , Course Change Proposals, Minor Changes to Program/Graduate Diploma Academic Requirements, Major Modifications to Program/Graduate Diploma Academic Requirements, New Graduate Fields, New Graduate Diplomas, New Graduate Degree Programs The Graduate Education Committee shall consist of: - Associate Dean – Research & Graduate Education (ex officio) - Graduate Program Director (or designate who must be a member of the graduate program) of each Graduate Program in the Faculty of Science -one graduate student member from any Graduate Program within the Faculty of Science -one full-time faculty member from the Faculty of Health or Lassonde School of Engineering who is appointed to teach in any FSc graduate program - A member at large with knowledge of graduate programming, and experience with curriculum approvals at the Faculty-level. The Chair of the Committee is selected by the voting members of the Committee for a one-year term.	Meeting is held based on availability.		
	Associate Dean – Associate Dean Students (ex officio)	M. Scheid	Designated	
	Biology	J. Paluzzi	2023	2026
	Chemistry	R. Hili	2023	2026
	Physics & Astronomy	A. Muzzin	2023	2026
	Math & Stats	P. Ingram	2023	2026
	Science, Technology & Society	VACANT	2023	2026
	Member from Faculty of Health OR Lassonde	VACANT	2023	2026
	Member at Large	D. Golemi-Kotra	2023	2026
	Graduate student	Joe Tran	2024	2025
Committee on Equity, Diversity & Inclusion	The purpose of the Committee on Equity, Diversity & Inclusivity is to provide broad review and leadership to Council on matters of Equity, Diversity and Inclusivity issues with respect to: • Tenure and Promotions • Hiring and Retention of members form EDI groups • Approaches to addressing gender bias in the workplace • Research engaging equity recognized groups • Workload and service contributions of EDI members • EDI experiences in Teaching and Learning The Equity, Diversity and Inclusivity committee shall consist of: • Associate Dean, Faculty Affairs (ex officio) • Associate Dean,Research and Partnerships (ex officio) • One primary and one alternate member from each of Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy and Science, Technology & Society. • Two graduate students or postdoctoral fellow/visitors (one primary and one alternate) from any graduate program within the Faculty of Science • One undergraduate student	Meeting is held the last Wednesday of every month.		
	Associate Dean - Faculty, ex officio	G. Audette	Designated	
	Associate Dean, Research & Partnerships (ex officio)	V. Saridakis	Designated	
	Undergraduate Student Representative	Sophia Luzskov	2024	2025
	Graduate Student	Coral Hillel	2024	2025
	Graduate Student	Gaelle Nsamba Luabeya	2024	2025
	Biology	B. Schwarz	2024	2027
	Chemistry	C. Young	2023	2026
	Physics & Astronomy	P. Scholz	2023	2026
	Math & Stats	A. Woldegerima ALT A. Lumley	2022	2025
	Science, Technology & Society	VACANT	2024	2027

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www.yorku.ca/secretariat/

Memo

To: Chairs of Faculty Councils

From: Terry Sachlos, Chair, Senate Honorary Degrees & Ceremonials Sub-Committee

Date: October 9, 2024

Subject: Honorary degree nominations – soliciting nominations

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As you may know, one of the responsibilities of the Senate Honorary Degrees & Ceremonials Sub-Committee is to recommend candidates eligible to be selected as recipients of honorary degrees. The awarding of honorary degrees is an important feature of Convocation at York University.

As the current pool of candidates has been low for some time now, the Sub-Committee is embarking on an initiative to significantly increase the size and quality of the pool of nominations from which recipients of honorary degrees are chosen, through increased the awareness of the selection process and the ease with which nominations can be made.

As such, I am requesting your help, **by distributing this call for nominations, with the accompanying information slides for reference, to the members of your Faculty Councils.**

For quick reference, all information about the nomination process – along with answers to frequently asked questions – can be found on the Sub-Committee's website.

Interested nominators are encouraged to contact the Sub-Committee's Secretary, James Pratt (jpratt@yorku.ca) if they have any questions.

Your assistance in this endeavour is greatly appreciated.

Honorary Degree Nominations

How to submit a nomination

UNIVERSITY SECRETARIAT | OCTOBER 2024

YORK U


Who Can Nominate?

Who Can Nominate?

- **Nominations are accepted from:**
  - the Chancellor and President
  - any member of the University community, including awards committees
  - members of the public, with statement of support from someone inside the University community


Who Can Be
Nominated?

Who Can Be Nominated?

- **People who are meritorious or worthy of emulation, as demonstrated through:**
  - significant contributions or benefaction to the University
  - outstanding achievements in scholarly, professional or artistic fields
  - enhancement of society and contributions to the public good

Who *Should't* Be Nominated?

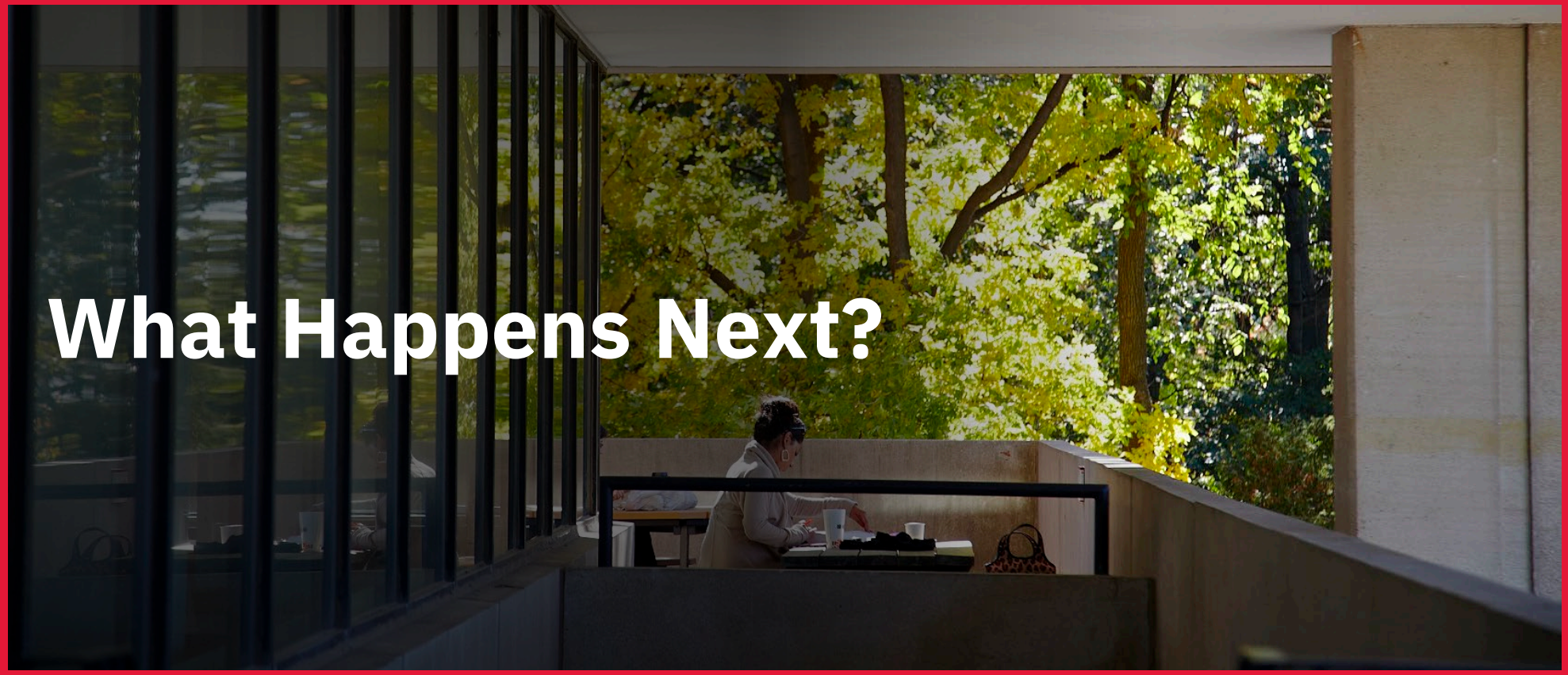
- An employee of York University
- Sitting Canadian politicians (any level)
- Deceased persons


How Do I Submit a Nomination?

How Do I Submit a Nomination?

- **A nomination file consists of:**
  - A completed nomination form
  - Two statements of support from within York University
  - *Recommended:* One additional statement of support from outside York, where the candidate is not well-known within the York community

It’s really that simple!


What Happens Next?

What Happens Next?

- Nomination files are reviewed by the Senate Honorary Degrees & Ceremonials Sub-Committee
- The Sub-Committee forwards its recommendations to Senate Executive
- If Senate Executive approves, nominees are added to a “pool” from which the President selects honourees
- Candidates stay in the pool for five years and may be renewed for another five years

NOTE:

- *A candidate in the pool will not necessarily be chosen to receive an honorary degree, nor chosen for a specific Convocation ceremony. Choice is subject to the nominee’s availability to attend Convocation ceremonies*
- *Membership in the pool is confidential. Nominators are not informed of status of their nominee*


Resources

Resources

- **Senate Honorary Degrees & Ceremonials Sub-Committee**
https://www.yorku.ca/secretariat/senate/sub-committee-on-honorary-degrees-and-ceremonials/

- **Honorary Degrees Guidelines**
https://www.yorku.ca/secretariat/senate/sub-committee-on-honorary-degrees-and-ceremonials/honorary-degrees-guidelines-and-constraints/

- **Nomination Form**
https://www.yorku.ca/secretariat/wp-content/uploads/sites/107/2014/09/HonDegree-Nomination-Form-2021-2022.pdf

- **Past Recipients**
https://www.yorku.ca/secretariat/senate/sub-committee-on-honorary-degrees-and-ceremonials/honorary-degree-recipients/

- **Contact:**

James Pratt, Assistant University Secretary
jpratt@yorku.ca, (437) 236-6527

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Graduate Curriculum Committee
Faculty of Science

NOTICE OF MEETING

October 2024

10:00 – 1100 am

via Zoom & e-Vote

Summary of Agenda Items approved by the committee

1. Changes to Graduate Program / Graduate Diploma – MA in Mathematics & Statistics
2. Changes to Graduate Program / Graduate Diploma – MSc in Industrial & Applied Mathematics
3. Changes to Graduate Program / Graduate Diploma – PhD in Mathematics & Statistics
4. Changes to existing course proposal – GS/MATH 6115
5. Changes to existing course proposal – GS/MATH 6110
6. New course proposal – GS/MATH 6914 3.0 Data-Driven Finance using Python
7. New course proposal – GS/MATH 6125 3.0 Public-Key Cryptography

Change to Graduate Program/Graduate Diploma Academic Requirements Proposal Form

FACULTY OF SCIENCE

1. Graduate Program/Graduate Diploma: MA in Mathematics and Statistics

2. Effective Term/Calendar Year of Proposed Change(s): Fall 2025

3. Proposed Change(s) and Rationale:

a. A description of the proposed modification(s) and rationale, including alignment with academic plans.

We are proposing adding Math 6902 and 6912, to the courses which may be taken to meet the requirements of the applied mathematics stream, and Math 6110 and 6115 to those of the pure mathematics stream. This is largely a codification of existing practice. These courses are already being used to meet the requirements, and are included in our program documentation, but FGS highlighted that they were not included in the official FGS calendar. For example, we offer 6902 and 6904 in alternate years, and they are interchangeable with respect to the requirements of our other streams, but not with respect to applied math (although we have been treating them as such). The other courses are similar.

Independently, we proposal to clarify the allowable thesis formats in the MA program, and in particular to specify that Monograph theses are the one allowable format.

b. An outline of the changes to requirements and the associated learning outcomes/objectives, including how the proposed requirements will support the achievement of graduate program/graduate diploma learning objectives.

There is no change in program learning outcomes. The courses are already part of the relevant programs, and have been used to fulfill requirements via discretionary substitution. This change merely codifies this practice.

The thesis format change is a formalization of existing practices within the program. Previously, no thesis types were specified, and we are now codifying existing practices. There are no changes to requirements, learning outcomes, etc.

c. An overview of the consultation undertaken with relevant academic units and an assessment of the impact of the modifications on other programs/graduate diplomas.

There should be no impact on other units. Consultation was conducted within the unit, and with the MA admissions committee for the program with respect to the thesis format.

d. A summary of any resource implications and how they are being addressed.
There are no resource implications. This is not a change in offerings.

There are no resources implications for the thesis format change. This is a codification of existing practice.

e. A summary of how students currently enrolled in the graduate program/graduate diploma will be accommodated.
Students will continue to have access to the existing required courses.

For the thesis format change, students who are already enrolled will be allowed to select this format on their thesis proposal, or will be assumed to have done so if the proposal is already approved. This is existing practice, although students were not required to explicitly select in the past.

4. Calendar Copy:

Existing Graduate Program/Graduate Diploma Information (Change From):	**Proposed Graduate Program/Graduate Diploma Information (Change To):**
Master of Arts Degree—Regular Program Students in the regular program must choose one of three options. MA by Coursework Four 6000 level full courses (or equivalent), plus a seminar*: (Mathematics & Statistics 6004 0.0). MA by Survey Paper Three 6000-level full courses (or equivalent), a supervised survey paper (Mathematics & Statistics 6001 0.0; students give one talk in a student Colloquium outlining the results of their papers), plus a seminar† (Mathematics & Statistics 6004 0.0).	**Master of Arts Degree—Regular Program** Students in the regular program must choose one of three options. MA by Coursework Four 6000 level full courses (or equivalent), plus a seminar*: (Mathematics & Statistics 6004 0.0). MA by Survey Paper Three 6000-level full courses (or equivalent), a supervised survey paper (Mathematics & Statistics 6001 0.0; students give one talk in a student Colloquium outlining the results of their papers), plus a seminar† (Mathematics & Statistics 6004 0.0).

MA by Thesis Two 6000-level full courses (or equivalent), a thesis (students give two talks in a student Colloquium outlining the results of their theses), plus a seminar† (Mathematics & Statistics 6004 0.0). The thesis must be defended before an examining committee in accordance with the regulations of the Faculty of Graduate Studies. Whatever option is chosen, no more than one-third of courses can be integrated, and all students must include among their courses one of the following sets: i) *Pure Mathematics:* Mathematics & Statistics 6121 3.0: Applied Algebra, Mathematics & Statistics 6122 3.0: Algebra II, Mathematics & Statistics 6461 3.0: Functional Analysis I , and either Mathematics & Statistics 6280 3.0: Measure Theory, Mathematics & Statistics 6300 3.0: Complex Analysis, Mathematics & Statistics 6420 3.0: Introduction to Harmonic Analysis, Mathematics & Statistics 6462 3.0: Functional Analysis II, Mathematics & Statistics 6540 3.0: Topology I, Mathematics & Statistics 6550 3.0: Algebraic Topology I or Mathematics & Statistics 6605 3.0: Probability Theory; or *ii) Applied Mathematics:* Four courses chosen from Mathematics & Statistics 6121 3.0: Applied Algebra, Mathematics & Statistics 6340 3.0:	MA by Thesis Two 6000-level full courses (or equivalent), a thesis (students give two talks in a student Colloquium outlining the results of their theses), plus a seminar† (Mathematics & Statistics 6004 0.0). The thesis must be **in monograph format, and must be** defended before an examining committee in accordance with the regulations of the Faculty of Graduate Studies. Whatever option is chosen, no more than one-third of courses can be integrated, and all students must include among their courses one of the following sets: i) *Pure Mathematics:* Mathematics & Statistics 6121 3.0: Applied Algebra, Mathematics & Statistics 6122 3.0: Algebra II, Mathematics & Statistics 6461 3.0: Functional Analysis I , and either **Mathematics & Statistics 6110 3.0: Analytic Number Theory,** **Mathematics & Statistics 6115 3.0: Algebraic Number Theory,** Mathematics & Statistics 6280 3.0: Measure Theory, Mathematics & Statistics 6300 3.0: Complex Analysis, Mathematics & Statistics 6420 3.0: Introduction to Harmonic Analysis, Mathematics & Statistics 6462 3.0: Functional Analysis II, Mathematics & Statistics 6540 3.0: Topology I, Mathematics & Statistics 6550 3.0: Algebraic Topology I or Mathematics & Statistics 6605 3.0: Probability Theory; or

Ordinary Differential Equations, Mathematics & Statistics 6350 3.0: Partial Differential Equations, Mathematics & Statistics 6602 3.0: Stochastic Processes, Mathematics & Statistics 6604 3.0: Probability Models, Mathematics & Statistics 6651 3.0: Advanced Numerical Methods, Mathematics & Statistics 6652 3.0: Numerical Solutions to Differential Equations, Mathematics & Statistics 6904 3.0: Modern Optimization, Mathematics & Statistics 6910 3.0: Stochastic Calculus in Finance, Mathematics & Statistics 6911 3.0: Numerical Methods in Finance, Mathematics & Statistics 6920 3.0: Harmonic Analysis and Image Processing, Mathematics & Statistics 6931 3.0: Mathematical Modeling, Mathematics & Statistics 6936 3.0: Mathematical Epidemiology; or *iii) Probability:* Mathematics & Statistics 6910 3.0: Stochastic Calculus in Finance; either Mathematics & Statistics 6605 3.0: Probability Theory or Mathematics & Statistics 6280 3.0: Measure Theory; either Mathematics & Statistics 6602 3.0: Stochastic Processes or Mathematics & Statistics 6604 3.0: Probability Models; and one of Mathematics & Statistics 6620 3.0: Mathematical Statistics, Mathematics & Statistics 6630 3.0: Applied Statistics I or Mathematics & Statistics 6911 3.0: Numerical Methods in	*ii) Applied Mathematics:* Four courses chosen from Mathematics & Statistics 6121 3.0: Applied Algebra, Mathematics & Statistics 6340 3.0: Ordinary Differential Equations, Mathematics & Statistics 6350 3.0: Partial Differential Equations, Mathematics & Statistics 6602 3.0: Stochastic Processes, Mathematics & Statistics 6604 3.0: Probability Models, Mathematics & Statistics 6651 3.0: Advanced Numerical Methods, Mathematics & Statistics 6652 3.0: Numerical Solutions to Differential Equations, **Mathematics & Statistics 6902 3.0: Stochastic Programming,** Mathematics & Statistics 6904 3.0: Modern Optimization, Mathematics & Statistics 6910 3.0: Stochastic Calculus in Finance, Mathematics & Statistics 6911 3.0: Numerical Methods in Finance, **Mathematics & Statistics 6912 3.0: Machine Learning in Finance,** Mathematics & Statistics 6920 3.0: Harmonic Analysis and Image Processing, Mathematics & Statistics 6931 3.0: Mathematical Modeling**, or** Mathematics & Statistics 6936 3.0: Mathematical Epidemiology; or *iii) Probability:* Mathematics & Statistics 6910 3.0: Stochastic Calculus in Finance; either Mathematics & Statistics 6605 3.0: Probability Theory or Mathematics & Statistics 6280 3.0: Measure Theory; either Mathematics & Statistics 6602 3.0:

Finance; or *iv) Theoretical Statistics:* Mathematics & Statistics 6620 3.0: Mathematical Statistics, Mathematics & Statistics 66213.0: Advanced Mathematical Statistics or Mathematics & Statistics 6605 3.0: Probability Theory, Mathematics & Statistics 6622 3.0: Generalized Linear Models, Mathematics & Statistics 6630 3.0: Applied Statistics I; or *v) Applied Statistics:* Mathematics & Statistics 6620 3.0: Mathematical Statistics, Mathematics & Statistics 6622 3.0: Generalized Linear Models, Mathematics & Statistics 6630 3.0: Applied Statistics I, either, Mathematics & Statistics 6631 3.0: Applied Statistics II or Mathematics & Statistics 6635 3.0: Introduction to Bayesian Statistics or Mathematics & Statistics 6641 3.0: Survival Analysis or Mathematics & Statistics 6642 3.0: Applied Longitudinal Data Analysis, and Mathematics & Statistics 6627 3.0: Practicum in Statistical Consulting; or *vi) Data Science* Mathematics & Statistics 6620 3.0: Mathematical Statistics, Mathematics & Statistics 6622 3.0: Generalized Linear Models, Mathematics & Statistics 6630 3.0: Applied Statistics I, Mathematics & Statistics 6650 3.0: Data Science, and either Mathematics & Statistics 6636 3.0: Data Mining or Mathematics & Statistics 6644 3.0:	Stochastic Processes or Mathematics & Statistics 6604 3.0: Probability Models; and one of Mathematics & Statistics 6620 3.0: Mathematical Statistics, Mathematics & Statistics 6630 3.0: Applied Statistics I or Mathematics & Statistics 6911 3.0: Numerical Methods in Finance; or *iv) Theoretical Statistics:* Mathematics & Statistics 6620 3.0: Mathematical Statistics, Mathematics & Statistics 66213.0: Advanced Mathematical Statistics or Mathematics & Statistics 6605 3.0: Probability Theory, Mathematics & Statistics 6622 3.0: Generalized Linear Models, Mathematics & Statistics 6630 3.0: Applied Statistics I; or *v) Applied Statistics:* Mathematics & Statistics 6620 3.0: Mathematical Statistics, Mathematics & Statistics 6622 3.0: Generalized Linear Models, Mathematics & Statistics 6630 3.0: Applied Statistics I, either, Mathematics & Statistics 6631 3.0: Applied Statistics II or Mathematics & Statistics 6635 3.0: Introduction to Bayesian Statistics or Mathematics & Statistics 6641 3.0: Survival Analysis or Mathematics & Statistics 6642 3.0: Applied Longitudinal Data Analysis, and Mathematics & Statistics 6627 3.0: Practicum in Statistical Consulting; or *vi) Data Science* Mathematics & Statistics 6620 3.0:

Statistical Learning. Students may, with permission, use courses from other graduate programs such as Electrical Engineering & Computer Science, Economics or Physics & Astronomy to meet the requirements.	Mathematical Statistics, Mathematics & Statistics 6622 3.0: Generalized Linear Models, Mathematics & Statistics 6630 3.0: Applied Statistics I, Mathematics & Statistics 6650 3.0: Data Science, and either Mathematics & Statistics 6636 3.0: Data Mining or Mathematics & Statistics 6644 3.0: Statistical Learning. Students may, with permission, use courses from other graduate programs such as Electrical Engineering & Computer Science, Economics or Physics & Astronomy to meet the requirements.

Please submit completed forms and required supporting documentation by email to Joanne Sequeira, sequeira@yorku.ca

Change to Graduate Program/Graduate Diploma Academic Requirements Proposal Form
FACULTY OF SCIENCE

The following information is required for all proposals involving a minor modification to graduate program/graduate diploma academic requirements. Provide evidence of consultation, where appropriate. To facilitate the review/approval process, please use the headings below (and omit the italicized explanations below each heading).

1. Graduate Program/Graduate Diploma: MSc in Industrial and Applied Mathematics

2. Effective Term/Calendar Year of Proposed Change(s): Fall 2025

3. Proposed Change(s) and Rationale:
The description of and rationale for the proposed modification(s) should provide information with respect to each of the following points:

a. A description of the proposed modification(s) and rationale, including alignment with academic plans.

The proposal is to clarify the allowable thesis formats in the MSc program, and in particular to specify that Monograph theses are the one allowable format.

b. An outline of the changes to requirements and the associated learning outcomes/objectives, including how the proposed requirements will support the achievement of graduate program/graduate diploma learning objectives.
Additionally, please append the graduate program's existing learning outcomes as a separate document.

This is a formalization of existing practices within the program. Previously, no thesis types were specified, and we are now codifying existing practices. There are no changes to requirements, learning outcomes, etc.

c. An overview of the consultation undertaken with relevant academic units and an assessment of the impact of the modifications on other programs/graduate diplomas.
Where and as appropriate, the proposal must include statements from the relevant graduate program/graduate diplomas confirming consultation/support.

There should be no impact on other units. Consultation was conducted within the unit, and with the program coordinator.

d. A summary of any resource implications and how they are being addressed.
Attention should be paid to whether the proposed changes will be supported by a reallocation of existing resources or if new/additional resources are required. If new/additional resources are required, the proposal must include a statement from the relevant Dean(s)/Principal.

There are no resources implications for this change. This is a codification of existing practice.

e. A summary of how students currently enrolled in the graduate program/graduate diploma will be accommodated.

Students who are already enrolled will be allowed to select this format on their thesis proposal, or will be assumed to have done so if the proposal is already approved. This is existing practice, although students were not required to explicitly select in the past.

4. Calendar Copy:
Using the following two-column format, provide a copy of the relevant graduate program/graduate diploma requirements as they will appear in the FGS Academic Calendar.

*Please note: Senate requires that **FULL** Calendar copy be provided. Please include the entire graduate program/graduate diploma section, not just text that is being revised. Please clearly and visibly indicate how graduate program/graduate diploma information has been changed using strikethrough (left column), bold, underlining, colours, etc. (right column).*

Existing Graduate Program/Graduate Diploma Information (Change From):	**Proposed Graduate Program/Graduate Diploma Information (Change To):**
Students must complete **Mathematics & Statistics 6651 3.0: Advanced Numerical Methods, Mathematics & Statistics 6931 3.0: Mathematical Modeling, Mathematics & Statistics 6937 3.0: Practicum in Industrial & Applied Mathematics,** another three credit non-integrated course appropriate to the student's program of study approved by the student's supervisory committee~~, and a thesis which~~ must be defended before an	Students must complete Mathematics & Statistics 6651 3.0: Advanced Numerical Methods, Mathematics & Statistics 6931 3.0: Mathematical Modeling, Mathematics & Statistics 6937 3.0: Practicum in Industrial & Applied Mathematics, another three credit non-integrated course appropriate to the student's program of study approved by the student's supervisory committee**. A monograph-form thesis** must be defended before an

examining committee in accordance with the regulations of the Faculty of Graduate Studies.	examining committee in accordance with the regulations of the Faculty of Graduate Studies.

Please submit completed forms and required supporting documentation by email to Joanne Sequeira, sequeira@yorku.ca

Change to Graduate Program/Graduate Diploma Academic Requirements Proposal Form
FACULTY OF SCIENCE

The following information is required for all proposals involving a minor modification to graduate program/graduate diploma academic requirements. Provide evidence of consultation, where appropriate. To facilitate the review/approval process, please use the headings below (and omit the italicized explanations below each heading).

1. Graduate Program/Graduate Diploma: PhD in Mathematics and Statistics

2. Effective Term/Calendar Year of Proposed Change(s): Fall 2025

3. Proposed Change(s) and Rationale:
The description of and rationale for the proposed modification(s) should provide information with respect to each of the following points:

a. A description of the proposed modification(s) and rationale, including alignment with academic plans.

The proposal is to clarify the allowable thesis formats in the PhD program, and in particular to specify that Monograph and Manuscript theses are allowable.

We are also proposing to add Math 6115 as an alternate comprehensive exam to Math 6110. This has been in practice since Math 6115 was introduced in 2017, but a change to the calendar text was not made.

b. An outline of the changes to requirements and the associated learning outcomes/objectives, including how the proposed requirements will support the achievement of graduate program/graduate diploma learning objectives.
Additionally, please append the graduate program's existing learning outcomes as a separate document.

This is a formalization of existing practices within the program. Previously, no thesis types were specified, and we are now codifying existing practices. There are no changes to requirements, learning outcomes, etc. The additional comprehensive exam option has also been existing practice.

c. An overview of the consultation undertaken with relevant academic units and an assessment of the impact of the modifications on other programs/graduate diplomas.

Where and as appropriate, the proposal must include statements from the relevant graduate program/graduate diplomas confirming consultation/support.

There should be no impact on other units. Consultation was conducted within the unit, and with the PhD milestone committee for the program.

d. A summary of any resource implications and how they are being addressed.
Attention should be paid to whether the proposed changes will be supported by a reallocation of existing resources or if new/additional resources are required. If new/additional resources are required, the proposal must include a statement from the relevant Dean(s)/Principal.

There are no resources implications for this change. This is a codification of existing practice.

e. A summary of how students currently enrolled in the graduate program/graduate diploma will be accommodated.

Students who are already enrolled will be allowed to select from these two formats. This is existing practice, although students were not required to explicitly select in the past. Similarly for the comprehensive exam, students will continue to have the option of either exam, which are typically offered in alternate years.

4. Calendar Copy:
Using the following two-column format, provide a copy of the relevant graduate program/graduate diploma requirements as they will appear in the FGS Academic Calendar.

*Please note: Senate requires that **FULL** Calendar copy be provided. Please include the entire graduate program/graduate diploma section, not just text that is being revised. Please clearly and visibly indicate how graduate program/graduate diploma information has been changed using strikethrough (left column), bold, underlining, colours, etc. (right column).*

Existing Graduate Program/Graduate Diploma Information (~~Change From~~):	**Proposed Graduate Program/Graduate Diploma Information (Change To):**
Doctor of Philosophy Program Candidates for the PhD degree must fulfil the following requirements: Five major components make up the degree requirements for the PhD in Mathematics and Statistics. These are 1)	**Doctor of Philosophy Program** Candidates for the PhD degree must fulfil the following requirements: Five major components make up the degree requirements for the PhD in Mathematics and Statistics. These are 1)

coursework 2) comprehensive exams 3) dissertation subject oral 4) dissertation proposal 5) dissertation oral examination (preceded by the dissertation colloquium). Students can complete these degree requirements in four years and the following is the projected timeline and checklist for completion: **Course Requirements** Students must successfully complete 12 credits at the graduate level. The courses must be chosen with the approval of the program director. Up to 12 additional credits may be required, at the discretion of the Graduate Program Director, the PhD committee and the supervisor. **Comprehensive Examinations** Students must declare a specialization in pure mathematics or applied mathematics or statistics, and must write comprehensive examinations in subjects which are appropriate to the chosen specialization. In addition, statistics students must complete a statistical consulting requirement. **Specialization Requirement** Students in the PhD program must demonstrate depth of knowledge in their field of specialization. The candidate must pass an oral examination, which is given within one year after the comprehensive examinations have been passed. **Projected Timeline/Checklist for Completion** **Progress requirements - Comlpeted by**	coursework 2) comprehensive exams 3) dissertation subject oral 4) dissertation proposal 5) dissertation oral examination (preceded by the dissertation colloquium). Students can complete these degree requirements in four years and the following is the projected timeline and checklist for completion: **Course Requirements** Students must successfully complete 12 credits at the graduate level. The courses must be chosen with the approval of the program director. Up to 12 additional credits may be required, at the discretion of the Graduate Program Director, the PhD committee and the supervisor. **Comprehensive Examinations** Students must declare a specialization in pure mathematics or applied mathematics or statistics, and must write comprehensive examinations in subjects which are appropriate to the chosen specialization. In addition, statistics students must complete a statistical consulting requirement. **Specialization Requirement** Students in the PhD program must demonstrate depth of knowledge in their field of specialization. The candidate must pass an oral examination, which is given within one year after the comprehensive examinations have been passed. **Dissertation format** A monograph dissertation, presenting a single, cohesive body of new research, is

Advising appointment - Annual Progress report - Annual Comprehensive exams - End of 3rd term Supervisor confirmed - End of 5th term Course requirements - End of 6th term Supervisory committee approved - End of 6th term Dissertation subject oral - End of 6th term Statistics practicum/comprehensive exam - (Statistics stream only) End of 6th term Dissertation proposal - No less than 6 months before oral Dissertation colloquium - Normally 12th term Oral examination - Normally 12th term The details of these requirements are listed below: A doctoral candidate must satisfy their comprehensive examination requirement by completing the examinations in the first year of study. Students need not enrol in the course nor attend lectures in order to write the examination for comprehensive credit. The comprehensive exams are as follows: 1. Mathematics & Statistics 6300 3.0: Complex Analysis 2. Mathematics & Statistics 6280 3.0: Measure Theory 3. Mathematics & Statistics 6461 3.0: Functional Analysis 4. Mathematics & Statistics 6121 3.0: Applied Algebra 5. Mathematics & Statistics 6122 3.0: Algebra II 6. Mathematics & Statistics 6130 3.0: Commutative Algebra 7. Mathematics & Statistics 6540 3.0: Topology 8. Mathematics & Statistics 6550 3.0: Algebraic Topology	the typical format of the PhD thesis. A manuscript dissertation, consisting of several independent works with appropriate connecting passages is also permitted. **Projected Timeline/Checklist for Completion** **Progress requirements - Comlpeted by** Advising appointment - Annual Progress report - Annual Comprehensive exams - End of 3rd term Supervisor confirmed - End of 5th term Course requirements - End of 6th term Supervisory committee approved - End of 6th term Dissertation subject oral - End of 6th term Statistics practicum/comprehensive exam - (Statistics stream only) End of 6th term Dissertation proposal - No less than 6 months before oral Dissertation colloquium - Normally 12th term Oral examination - Normally 12th term The details of these requirements are listed below: A doctoral candidate must satisfy their comprehensive examination requirement by completing the examinations in the first year of study. Students need not enrol in the course nor attend lectures in order to write the examination for comprehensive credit. The comprehensive exams are as follows: 1. Mathematics & Statistics 6300 3.0: Complex Analysis 2. Mathematics & Statistics 6280 3.0: Measure Theory

9. Mathematics & Statistics 6340 3.0: Ordinary Differential Equations 10. Mathematics & Statistics 6350 3.0: Partial Differential Equations 11. Mathematics & Statistics 6110 3.0: Number Theory 12. Mathematics & Statistics 6605 3.0: Probability Theory 13. Mathematics & Statistics 6180 3.0: Category Theory 14. Mathematics & Statistics 6530 3.0: Differential Geometry 15. Mathematics & Statistics 6040 3.0: Set Theory 16. Mathematics & Statistics 6651 3.0: Advanced Numerical Methods 17. Mathematics & Statistics 6652 3.0: Numerical Solutions to Differential Equations 18. Mathematics & Statistics 6931 3.0: Mathematical Modeling 19. Mathematics & Statistics 6620 3.0: Mathematical Statistics 20. Mathematics & Statistics 6621 3.0: Advanced Mathematical Statistics 21. Mathematics & Statistics 6622 3.0: Generalized Linear Models 22. Mathematics & Statistics 6630 3.0: Applied Statistics I • *Note: While not all courses are offered annually, course offerings are responsive to student need. Examinations may be taken in a year in which the course is not offered.* Candidates must declare themselves to be in one of these three streams: applied mathematics, pure mathematics, or statistics streams. Candidates decide which comprehensive exams to complete with the approval of their supervisor and the Graduate Program Director. Pure mathematics students must complete at least one examination from 1-3, one	3. Mathematics & Statistics 6461 3.0: Functional Analysis 4. Mathematics & Statistics 6121 3.0: Applied Algebra 5. Mathematics & Statistics 6122 3.0: Algebra II 6. Mathematics & Statistics 6130 3.0: Commutative Algebra 7. Mathematics & Statistics 6540 3.0: Topology 8. Mathematics & Statistics 6550 3.0: Algebraic Topology 9. Mathematics & Statistics 6340 3.0: Ordinary Differential Equations 10. Mathematics & Statistics 6350 3.0: Partial Differential Equations 11. Mathematics & Statistics 6110 3.0: Analytic Number Theory or Mathematics & Statistics 6115 3.0: Algebraic Number Theory 12. Mathematics & Statistics 6605 3.0: Probability Theory 13. Mathematics & Statistics 6180 3.0: Category Theory 14. Mathematics & Statistics 6530 3.0: Differential Geometry 15. Mathematics & Statistics 6040 3.0: Set Theory 16. Mathematics & Statistics 6651 3.0: Advanced Numerical Methods 17. Mathematics & Statistics 6652 3.0: Numerical Solutions to Differential Equations 18. Mathematics & Statistics 6931 3.0: Mathematical Modeling 19. Mathematics & Statistics 6620 3.0: Mathematical Statistics 20. Mathematics & Statistics 6621 3.0: Advanced Mathematical Statistics 21. Mathematics & Statistics 6622 3.0: Generalized Linear Models 22. Mathematics & Statistics 6630 3.0: Applied Statistics I

examination from 4-6, one examination from 7-11, plus one additional examination.

Applied mathematics students must complete examination 18, at least one examination from 9 or 10, at least one examination from 16 or 17, plus one additional examination.

Statistics students must complete exams 19, 20, 21 and 22. In addition, statistics students must fulfill a practicum requirement. This requirement is usually completed in the second year of study.

Practicum requirement for statistics stream

The purpose of the practicum is to prepare students for the transition from statistics theory to the application of statistics through consulting and collaboration. The requirement for statistics students consists of two parts. The first part is the completion of Mathematics & Statistics 6627 3.0 or an equivalent consulting course from another university, approved by the Graduate Program Director. Further details regarding the requirements for the course can be found in the course description for Mathematics & Statistics 6627 3.0. The second part is the comprehensive examination in consulting.

Students in the doctoral program must demonstrate depth of knowledge in their field of specialization. The candidate must pass an oral examination (the dissertation subject oral), which occurs within the second year of study.

Progress Report

- *Note: While not all courses are offered annually, course offerings are responsive to student need. Examinations may be taken in a year in which the course is not offered.*

Candidates must declare themselves to be in one of these three streams: applied mathematics, pure mathematics, or statistics streams. Candidates decide which comprehensive exams to complete with the approval of their supervisor and the Graduate Program Director.

Pure mathematics students must complete at least one examination from 1-3, one examination from 4-6, one examination from 7-11, plus one additional examination.

Applied mathematics students must complete examination 18, at least one examination from 9 or 10, at least one examination from 16 or 17, plus one additional examination.

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All students enrolled in a PhD program are required to complete an annual research progress report detailing the achievements of the previous year and the objectives for the next year. Permission to continue to register in the program depends on a satisfactory report. Progress report forms are distributed by email at the end of the Winter term.

Deadlines for Meeting Requirements

Students are expected to finish the comprehensive examination requirement in the first year of their PhD studies. The dissertation subject oral should be taken within the second year of study. Students who are in the statistics stream should also finish the practicum requirement in the second year of study. The dissertation itself should be completed within two years of the dissertation subject oral, although one additional year may be allowed by permission.

Program Entry

The PhD program can be completed on a full-time basis. Entry is fall term.

Program Length

Normal degree completion time for full-time doctoral students is 12 terms (4 years). Doctor of Philosophy students must register and pay fees for a minimum of the equivalent of six terms of full-time registration. All requirements for a doctoral degree must be fulfilled within 18 terms (6 years) of registration as a full-time or part-time doctoral student in accordance with Faculty of Graduate Studies' registration policies.

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Please submit completed forms and required supporting documentation by email to Joanne Sequeira, sequeira@yorku.ca

Graduate Course Change Proposal Form
FACULTY OF SCIENCE

1. Graduate Program: Mathematics and Statistics

2. Responsible Unit:
Mathematics and Statisics, FSc

3. Subject Code (Rubric) and Course Number:
MATH 6115

4. Credit Value:
3.0

5. Long Course Title:
Algebraic Number Theory

6. Type of Course Change(s) (indicate all that apply):

	in course number
	in credit value
	in course title **(short course titles may be a maximum of 40 characters, including punctuation and spaces)**
	in course description **(short course descriptions may be a maximum of 60 words, written in present tense)**
	in learning objectives/outcomes **(please append the graduate program's existing learning outcomes as a separate document)**
	in integration **(please provide statement of approval from relevant undergraduate coordinator or Chair)**
	in cross-listing **(please provide statement of approval from other program)**
	in pre/co-requisite
	retire course
X	other **(please specify): MODE DELIVERY: add Blended, Online**

7. Effective Term/Calendar Year of Proposed Change(s):
S25

8. Rationale:
This course is currently active, and offered in alternate years. This change in delivery format is aimed at giving more flexibility to how and when the course is offered, in part to address changing student expectations as to course formats since the pandemic, as well as our capacity to mount in-person offerings of certain courses.

9. Proposed Course Information:
Please insert approved course information on the left, and proposed course information on the right. Please clearly and visibly indicate how course information has been changed using strikethrough (left column), bold, underlining, colours, etc. (right column).

Existing Course Information (Change From):	**Proposed Course Information (Change To):**
Mode of Delivery ~~Validation Error: Mode of Delivery is mandatory~~	**Mode of Delivery** LECT, BLEN, ONLN

10. Enrolment Notes:
None

11. Consultation:
No integrations or cross-listing; no other programs are affected.

Graduate Course Change Proposal Form
FACULTY OF SCIENCE

1. Graduate Program: Mathematics and Statistics

2. Responsible Unit:
Mathematics and Statisics, FSc

3. Subject Code (Rubric) and Course Number:
MATH 6110

4. Credit Value:
3.0

5. Long Course Title:
Analytic Number Theory

6. Type of Course Change(s) (indicate all that apply):

	in course number
	in credit value
	in course title **(short course titles may be a maximum of 40 characters, including punctuation and spaces)**
	in course description **(short course descriptions may be a maximum of 60 words, written in present tense)**
	in learning objectives/outcomes **(please append the graduate program's existing learning outcomes as a separate document)**
	in integration **(please provide statement of approval from relevant undergraduate coordinator or Chair)**
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8. Rationale:
This course is currently active, and offered in alternate years. This change in delivery format is aimed at giving more flexibility to how and when the course is offered, in part to address changing student expectations as to course formats since the pandemic, as well as our capacity to mount in-person offerings of certain courses.

9. Proposed Course Information:
Please insert approved course information on the left, and proposed course information on the right. Please clearly and visibly indicate how course information has been changed using strikethrough (left column), bold, underlining, colours, etc. (right column).

Existing Course Information (Change From):	**Proposed Course Information (Change To):**
Mode of Delivery ~~Validation Error: Mode of Delivery is mandatory~~	**Mode of Delivery** LECT, BLEN, ONLN

10. Enrolment Notes:
None

11. Consultation:
No integrations or cross-listing; no other programs are affected.

New Graduate Course Proposal Form
FACULTY OF SCIENCE

The following information is required for all new course proposals. Provide evidence of consultation, where appropriate. To facilitate the review/approval process, please use the headings below [and omit the italicized explanations below each heading].

All new course proposals must include a library statement.

1. Graduate Program: Mathematics & Statistics

2. Responsible Unit: Faculty of Science & Schulich School of Business

3. Subject Code (Rubric) and Course Number: MATH 6914 (Var. 6916)

4. Credit Value: 3.0

5. Long Course Title: Data-Driven Finance using Python

6. Short Course Title: Data-Driven Finance

7. Effective Term/Calendar Year: Fall 2025

8. Language of Instruction: English

9. Mode of Delivery: The course could be delivered as traditional lectures or as online sessions, adapting to the university policies. In both cases, there will be 12 weeks and 3 lecture hours per week.

10. Calendar (Short) Course Description:
This graduate course prepares students for today's data-driven finance industry, where the volume and velocity of financial data are the foundation of trading, pricing, forecasting, and risk management. Python is the choice of programming language in this course as it has just emerged as one of the major strategic technology platforms. The course will start with an immerse introduction of Python at a fast speed suitable for graduate students and will spend majority of time on financial data: how to programmatically access, process, analyze, and utilize financial data offline and online.

11. Expanded Course Description:

The graduate course will cover following topics:

1. What makes Python suitable for addressing the technological challenges in the financial industry as well as in financial data analytics.
2. Python infrastructure and environment.
3. Python data types and structures, including NumPy.
4. Python library pandas and its DataFrame class.
5. Object-oriented programming (OOP) with Python.
6. Financial data visualization with Python, static and interactive.
7. Financial time series data with Python pandas.
8. Financial data Extract, Transformation, and Loading (ETL) in Python.
9. Financial data and report with integration of EXCEL and Python.
10. Financial data analysis using Python libraries on approximation, regression and interpolation, optimization and model calibration, integration, and derivative valuation.
11. Handling stochasticity in financial data using Python: generation, simulation, valuation, and risk measures.
12. Statistics of financial data using Python: normality test and its use in portfolio theory, capital asset pricing model, and efficient markets hypothesis, option pricing theory.
13. Algorithmic trading with Python: use REST APIs to programmatically retrieve historical data or streaming data, or to place buy and sell orders.
14. Algorithmic trading with Python: trading strategies using statistical and machine learning methods and vectorized back-testing.
15. Algorithmic trading with Python: deployment of automated algorithmic trading strategies addressing capital management, and real-time performance and risk management.
16. Pricing of options and derivatives by Monte Carlo simulation (MC) in Python: valuation framework.
17. Pricing of options and derivatives by MC in Python: simulation of stochastic processes.
18. Pricing of options and derivatives by MC in Python: valuation of single derivatives with European or American exercise.
19. Pricing of options and derivatives by MC in Python: complex derivatives portfolios with multiple derivatives based on correlated underlyings.
20. Value and risk-manage a portfolio of American put options on the DAX 30 stock index.

12. Course Learning Outcomes:

(Necessary for Quality Assurance approval and cyclical program reviews)
What will students be able to do upon completion of this course specifically?

1. Master the basic data types and data structures in Python

2. Master numerical computing and data analysis using libraries such as NumPy and Pandas
3. Learning the Object-Oriented Programming, the suitable programming for financial modeling and implementing financial algorithms.
4. Master the use of financial time series visualization tools in Python such as MatplotLib and Seaborn
5. Master how to Input/Output data from Excel in Python
6. Know how to handling stochasticity in financial data using Python: generation, simulation, valuation, and risk measures
7. Know how to conduct statistical analysis on financial data using Python
8. Master the FXCM trading platform, its REST API, and the fxcmpy wrapper package, know how to use the methods from statistics and machine learning to derive algorithmic trading strategies and vectorized backtesting.
9. Know how to deploy automated algorithmic trading strategies, address capital management, backtesting for real-time performance and risk measurement.
10. Know how to price options and derivatives in Python, how to simulate the stochastic processes using Monte Carlo simulations, how to evaluate European and American options on a single derivative and exotic options.
11. Learn how to build the DX derivatives analytics package, value a portfolio of a single derivative position and potentially many derivatives positions,

13. Rationale:

The course will be a required in the Financial Engineering (FE) diploma program, which is a jointly offered by the Schulich and Math department. Our FE diploma is highly appreciated by the financial industry and the associated job market.

The financial industry is undergoing two major evolutions: (1) increasing importance of AI in finance; (2) programmatic access to real time financial data, which leads to data-driven finance.

Accordingly, Schulich and Math department, are working swiftly to adapt our curriculum to the changes. We have launched a course two years ago, MATH 6912 Machine Learning in Finance, to prepare our students for the change

(1). This new course proposal is to prepares our graduates for the new challenge;

(2) it focuses on finance data using Python;

(3) its new material on algorithmic trading in Python;

(4) its advanced derivative and option pricing using Python.

14. Evaluation:

Student performance will be evaluated by the following items:

1. Classroom participation in-person or online: 15%
2. 5 homework: 3% x 5 = 15%
3. Midterm exam: 30%
4. Final exam: 40%

Both exams are take-home projects. This is largely due to the nature of this course: Python programming and EXCEL computation of financial data. A significant portion of the learning is from the debugging process, which is more suitable as take-home projects. Furthermore, we expect students to search online for Python APIs and rich online resources during their problem-solving process.

Integrity of learning evaluation will be maintained by: (1) open questions for which same answers are unlikely or impossible; (2) Python programming is an extremely creative process, where individuals are unlikely to name dozens of variables identical; unlikely to solve a problem in the same amount of steps and in the same order; unlikely to choose same data structures and their combinations; (3) reports in English will be required, where students explain their solution strategies verbally, which provide multi-dimensional perspectives on the authenticity of the work.

15. Integrated Courses:

N/A (not integrated)

16. Cross-listed Courses:

See attached

17. Enrolment Notes:

This course aligns with the diploma in financial engineering, but is also open to all students in applied mathematics.

18. Faculty Resources:

Currently three faculty members have explicitly agreed to teach the course: Hongmei Zhu, Michael Chen, and Hyejin Ku. Hongmei Zhu will teach the course this coming year.

19. Physical Resources:

The course does not need extra physical resources, other than the usual classroom with projectors, or Zoom in case of online education is required by the university. Especially, the course

does not need access to a computer lab since all Python and EXCEL examples and questions are scaled down to be easily executable on a personal computer or laptop.

20. Bibliography and Library Statement:

See attached

Please submit completed forms and required supporting documentation by email to Joanne Sequeira, sequeira@yorku.ca

Schulich
School of Business
York University

October 1, 2024

To: Faculty of Science

RE: Professor Michael Chen's Proposed Changes to the Financial Engineering Program

Schulich School of Business
York University
4700 Keele Street
Toronto, Ontario
Canada M3J 1P3

Web: www.schulich.yorku.ca

Dear Faculty of Science Committee members:

I am writing to offer my full support to Professor Michael Chen's proposal regarding the Financial Engineering Program. The precise proposal is to remove "MATH 6910 Stochastic Calculus for Finance" and replace it with "MATH 6914 Data Driven Finance with Python".

The Financial Engineering (FinEng) program is a joint program between the Schulich School of Business and the Department of Mathematics and Statistics. Professor Chen is the program director for the math side while I am the director for the Schulich side. The program was created more than three decades ago and is the only financial engineering program in Canada. The counterparts in the U.S. include the well-known Financial Engineering programs offered by UC Berkeley and Columbia University. This highly technical program teaches students financial theory, methods of engineering, tools of mathematics and practice of programming. After completing the FinEng Program, students are equipped with the theoretical knowledge and specialized skills in developing and valuing new financial instruments and implementing risk management schemes. Possible career includes derivatives trading and valuation, and risk management in banks, investment firms, brokerage houses, other financial institutions, and consulting firms.

The program has produced very successful alumni for the financial industry. To name a few, Mr. Lawrence Llaguno, a 2008 FinEng graduate, now is the VP of multi-asset management at Mackenzie Investments. Ms. Echo Han, a 2014 graduate, now is the VP of Bank of Montreal Capital Markets.

However, since the inception of the program, very few changes have been made to the program while the financial industry is going through major changes. In particular, the financial industry has adopted new technologies to enhance its performance in banking and investments, examples include FinTech, AI application, big data management and machines learning. To provide students with skills in these newly emerged field, the FinEng program proposes a new course MATH 6914 Data Driven Finance with Python to replace the existing compulsory course MATH 6910 Stochastic Calculus for Finance. The new course is a continued effort, following another course MATH 6912 Machine Learning in Finance introduced to the FinEng program two years ago, which could be viewed as a special topic of data driven finance. The new course will cover a much wider range on data driven finance. Altogether, these two courses shall teach our students the most wanted skills in the modern finance industry, thus boost the value of our FinEng program.

We have consulted with the financial industry experts and faculty members on the proposed change and have received full support. If you have any question, please feel free to contact me by phone at 416-736-2100 ext. 33801 or through e-mail at mcao@schulich.yorku.ca.

Sincerely,

Melanie Cao, Professor
Director, Financial Engineering Program
Schulich School of Business, York University

MEMORANDUM

York University Libraries

To: Hongmei Zhu

From: William Denton, York University Libaries.

Date: 08 October 2024

Subject: Library Statement of Support – MATH 6914 Data-Driven Finance Using Python

Summary

There is no bibliography in the course proposal, but I believe York University Libraries (YUL) is well positioned to support any course using Python and mathematics on financial data, based on my knowledge of related courses and programs and the support for them our collections offer. Even a simple search in Omni for python finance turns up many useful and current titles; if there are any we do not have but should, suggestions are welcome. Books on Python (and R) and applications in science and mathematics are always being added to our collections.

Collections

The Libraries' collections echo the curricular and research priorities of students and faculty. Care is given to select materials that reflect new courses taught at York, as well as research and publishing trends. Library personnel review reading lists supplied for proposed courses to address any potential gaps.

Historically, textbook publishers have not made their electronic content available for purchase by libraries. This remains an ongoing challenge. Library personnel can assist with locating Open Access alternatives. Furthermore, the Libraries' Open Scholarship department offers support to researchers on digital publishing, open repositories, and Creative Commons licensing.

The Omni single-search interface provides students with access to a wide range of materials, including books, book chapters, articles, dissertations, streaming media, etc. Library users may also request items from partner libraries through Omni. A selection of electronic collections of particular interest are highlighted below. The A-Z list on the Libraries' website provides a complete register of electronic offerings.

eBook Platforms:

- De Gruyter eBooks

- Oxford Scholarship Online
- Cambridge Core
- Taylor & Francis eBooks
- ProQuest eBook Central
- Scholars Portal Books

Services

Library Instruction

Librarians and archivists help students build research skills and digital fluencies through workshops, online research guides, and individual research assistance. Instructors can arrange a research skills workshop (or seminar) geared to a specific assignment, course, or competency.

Research Guides of Interest:

- Computer Science
- Data and Statistics
- Finance
- Mathematics

Research Help

Online research assistance is available in both English and French via chat and email. In addition, students and faculty can book one-hour research consultations with a specialist librarian.

Accessibility Services

Library Accessibility Services (LAS) provides alternative content formats, as well as adaptive technologies and spaces. With a referral, York University faculty and students can request transcription services or reserve an accessibility lab workstation. Contact lashelp@yorku.ca with questions.

New Graduate Course Proposal Form
FACULTY OF SCIENCE

1. Graduate Program: Mathematics and Statistics

2. Responsible Unit: Mathematics and Statistics

3. Subject Code (Rubric) and Course Number: GS/MATH 6125

4. Credit Value: 3.0

5. Long Course Title: Public-Key Cryptography

6. Short Course Title: Public-Key Cryptography

7. Effective Term/Calendar Year: W26

8. Language of Instruction: English

9. Mode of Delivery: Lecture, Blended, Online learning

10. Calendar (Short) Course Description:
This course is an introduction to the mathematics of public-key cryptography. Topics include finite fields, DLP-based cryptography, elliptic curve cryptography, signature schemes, classical and quantum attacks on these cryptosystems, and the mathematics of post-quantum cryptography (code and lattice-based cryptosystems). A familiarity with undergraduate algebra is required.

11. Expanded Course Description:
Public-key cryptography addresses the problem of establishing secure communication over an insecure channel, which went from a niche concern to an everyday consideration with the advent of the internet. Since the foundational contributions of Diffie and Hellman, the framework for public-key cryptography has largely come from abstract algebra, and this course surveys those foundations.

The main topics in the course are:

- Introduction/review of finite fields, their construction and uniqueness, and implementation of efficient calculations and linear algebra.
- The classical discrete logarithm problem (DLP) as a trapdoor function.
- DLP key exchange, cryptography, and signature schemes.
- Pohlig-Hellman and Index Calculus attacks on DLP cryptosystems.
- Elliptic curves, basic definitions and group law.
- The elliptic curve discrete log problem (ECDLP) as a trapdoor function.

- ECDLP versions of DLP schemes.
- Cryptanalysis of and using elliptic curves, pairing-based attacks on ECDLP.
- Schor's algorithm and quantum attacks on DLP- and ECDLP-based cryptosystems.
- Post-quantum cryptography.
- NTRU and lattice-based cryptography.
- McEliece and code-based cryptography.

12. Course Learning Outcomes:

Upon successful completion of the course, students should be able to:

- Explain the basic framework of cryptography, and the distinctions between private-key and public-key cryptography.
- Explain and implement computations in finite fields, and linear algebra over finite fields
- Explain the concept of a trapdoor function, and why DLP is a viable trapdoor.
- Describe and implement Diffie-Hellman key exchange, ElGamal PKC and signatures.
- Implement Pohlig-Hellman and Index Calculus approaches to solving DLP, and explain the significance for DLP-based cryptosystems.
- Explain and implement operations on elliptic curves over finite fields, including efficient multiplication.
- Explain why the ECDLP and generalizations are viable candidates for trapdoor functions.
- Discuss generalizations of DLP to other algebraic groups (e.g., hyperelliptic curve cryptography)
- Describe and implement elliptic curve key exchange, PKC, and signatures.
- Implement pairing-based approaches to ECDLP, and explain the significance for elliptic curve cryptography.
- Explain the theoretical problems posed by quantum computing for secure DLP- and ECDLP-based cryptography.
- Describe the fundamental underlying mathematical problems in lattice-based cryptography, and implement variants of NTRU.
- Explain the mathematical basis for code-based cryptography, and implement the McEliece cryptosystem.

13. Rationale:

This course sits between our pure and applied mathematics streams, giving students an introduction to a broadly relevant topic in abstract algebra. Students in pure mathematics will benefit from exposure to an application of concepts learned in MATH 6121 and MATH 6122, and employability of graduates of our program will be improved if they have a rudimentary understanding of the theory of cryptography. This course will be accessible both to students in the pure mathematics stream, as well as students in applied mathematics and statistics who have some undergraduate background in abstract algebra.

Some overlap exists with MATH/EECS 4161, in which some of the earlier material from this course is presented as an advanced topic. Some basic material on finite fields also occurs in MATH 6121 and MATH 6122, although students will need only the undergraduate level of this material for MATH 6125. Some material overlaps with EECS 6111 and 6222, but the focus of those courses are the broader topics of algorithms and information theory in theoretical computer science, while MATH 6125 focuses on abstract algebra and its use as a foundation for public-key cryptography. Some rudimentary discussion of efficiency of algorithms and definitions from coding theory will take place in MATH 6125, to make the course self-contained, but these topics are not a focus (as can be seen from the CLOs).

14. Evaluation:
Course evaluation will be based on participation (10%), regular homework assignments (problem sets totalling 20%), a midterm exam (20%), and a final exam (50%).

15. Integrated Courses:
This course will not be integrated.

16. Cross-listed Courses:
This course will not be cross-listed.

17. Enrolment Notes:
This course is aimed at students in the pure and applied mathematics streams of the Mathematics and Statistics graduate program, but students from other streams or other programs will be considered, subject to their background knowledge. In particular, students in EECS with a strong mathematical background and an focus on information security might want to take this course to complement their cryptography with more mathematical background.

18. Faculty Resources:
We expect this course to be offered once every year or two, depending on demand. This course would likely alternate with MATH 6115 Algebraic Number Theory, and so the impact on teaching resources is minimal. Patrick Ingram and Michael Zabrocki are qualified to teach this course, as are any of our faculty in algebra and combinatorics.

19. Physical Resources:
This course requires no special physical resources. If offered in Lecture or Hybrid form, a classroom with a chalkboard and/or projector will be needed.

20. Bibliography and Library Statement:

References:

1. J. Hoffstein, J. Pipher, and J.H. Silverman. *An Introduction to Mathematical Cryptography (2nd ed).* Springer, 2014
2. C. Paar, J. Pelzl, and T. Güneysu. *Understanding Cryptography (2nd ed).* Springer, 2024.

3. N. Koblitz. *A Course in Number Theory and Cryptography.* Springer, 1994.
4. W. Trappe and L.C. Washington, *Introduction to Cryptography with Coding Theory (3rd ed).* Prentice Hall, 2020.

MEMORANDUM

York University Libraries

To: Patrick Ingram

From: William Denton

Date: 19 September 2024

Subject: Library Statement of Support – MATH 6125 (Public-Key Cryptography)

Summary

York University Libraries (YUL) is well positioned to support this interesting and important proposed course. Our existing collections in mathematics (pure and applied), statistics, engineering, and computer science cover the subject, and will continue to do so as cryptography advances, software changes, and our collections grow.

Collections

The Libraries' collections echo the curricular and research priorities of students and faculty. Care is given to select materials that reflect new courses taught at York, as well as research and publishing trends. Our e-preferred collection development policy, and arrangements with scientific publishers, mean that every year we acquire thousands of ebooks in mathematics and the sciences, and we pick up many about cryptography as a matter of course. Any specific titles that we do not have are easily acquired (except for textbooks, which are often a problem for libraries now).

Of the four books in the bibliography, we have two, and another we have in the first edition but the second is not available yet. The last book, Trappe and Washington's *Introduction to Cryptography with Coding Theory* (3rd ed.), is unfortunately one of those textbooks that doesn't work with libraries, but the bookstore should be able to get it as needed.

(Historically, textbook publishers have not made their electronic content available for purchase by libraries. This remains an ongoing challenge. Library personnel can assist with locating Open Access alternatives. Furthermore, the Libraries' Open Scholarship department offers support to researchers on digital publishing, open repositories, and Creative Commons licensing.)

The Omni single-search interface provides students with access to a wide range of materials, including books, book chapters, articles, dissertations, streaming media, etc. Library users may also request items from partner libraries through Omni. A selection of electronic collections of particular interest are highlighted below. The A-Z list on the Libraries' website provides a complete register of electronic offerings.

Services

Library Instruction

Librarians and archivists help students build research skills and digital fluencies through workshops, online research guides, and individual research assistance. Instructors can arrange a research skills workshop (or seminar) geared to a specific assignment, course, or competency.

Research Guides of Interest:

- Computer Science
- Engineering
- Mathematics

Research Help

Online research assistance is available in both English and French via chat and email. In addition, students and faculty can book one-hour research consultations with a specialist librarian.

Accessibility Services

Library Accessibility Services (LAS) provides alternative content formats, as well as adaptive technologies and spaces. With a referral, York University faculty and students can request transcription services or reserve an accessibility lab workstation. Contact lashelp@yorku.ca with questions.

CURRICULUM COMMITTEE REPORT

OCTOBER 2024

The Faculty of Science Curriculum Committee has reviewed proposals for changes to course information and degree requirements and recommends to the Executive Committee that the following changes be submitted to Council for approval.

Details regarding these proposals (and other minor changes to Calendar/Repository course descriptions and prerequisites which were approved by the Committee but are not reported here) are included in the working papers of October 22, 2024 meeting of the Curriculum Committee, which are on file for your inspection in the Office of the Dean, with all members of the Curriculum Committee or by contacting the Secretary of the Committee at scicurri@yorku.ca

1. MATHEMATICS AND STATISTICS:

1.1 **New Course Proposal:** SC/MATH 3283 3.0, Economics of Insurance and Decision Making under Risk. (submitted by Prof. Furman).

1.2 New Course Proposal: SC/MATH 3284 3.0, Risk Management of Climate Change: (Re)Insurance and Other Strategies to Prepare for Emerging Climate Challenges. (submitted by Prof. Furman).

COMMITTEE ON ACADEMIC STANDARDS, CURRICULUM AND PEDAGOGY TEMPLATE

NEW COURSE PROPOSAL FORM

Faculty: Indicate all relevant Faculty(ies)	Science

Department: Indicate department and course prefix (e.g. Languages, GER)	MATH	**Date of Submission:**	Sept 29, 2024

Course Number: Special Topics courses Include variance (e.g. HUMA 3000C 6.0, Variance is "C")	3283	**Var:**	**Academic Credit Weight:** Indicate both the fee, and MTCU weight if different from academic weight (e.g. AC=6, FEE=8, MET=6	3.00

Course Title: The official name of the course as it will appear in the Undergraduate Calendar and on the Repository	Economics of Insurance and Decision Making under Risk
Short Title: Appears on any documents where space is limited - e.g. transcripts and lecture schedules - **maximum 40 characters**	Economics of Insurance

With every new course proposal it is the Department's responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments is necessary to determine degree credit exclusions and/or cross-listed courses.

Brief Course Description:

Maximum 2000 characters
(approximately 300 words including spaces and punctuation).

The course description should be carefully written to convey what the course is about. It should be followed by a statement of prerequisites and co-requisites, if applicable. This description appears in the calendar.

For editorial consistency, and in consideration of the various uses of the Calendars, verbs should be in the present tense (i.e., "This course analyzes the nature and extent of...," rather than "This course will analyze...")

This course offers a solid foundation in modern economic theory with behavioural insights for decision-making in risk and insurance, incorporating hands-on applications such as case studies and (business) simulations. Topics include risk, risk aversion, expected utility, conventional and behavioural theories of insurance demand, informational asymmetries, regulation of insurance markets, and insurance and economic development.

Prerequisites: ECON 2500 3.00 or MATH 1131 3.00, ECON 1000 3.00, ECON 1010 3.00

Recommended Prerequisite: MATH 1280 3.00

Generic Course Description:

This is the description of the "Parent / Generic course" for Special Topics courses under which variances of the "Generic" course can be offered in different years (Max. 40 words). Generic course descriptions are published in the calendar.

List all degree credit exclusions, prerequisites, integrated courses, and notes below the course description.

Expanded Course Description:

Please provide a detailed course description, including topics / theories and learning objectives, as it will appear in supplemental calendars.

This course equips students with a comprehensive understanding of modern economic theory, integrating behavioural insights into decision-making related to risk and insurance. Emphasizing both theory and applications, the course incorporates case studies, experiments, and (business) simulation resources to provide an immersive learning experience. Key topics include risk and risk aversion, conventional and behavioural theories of insurance demand, informational asymmetries, insurance market regulation, and the role of insurance in economic development.

Risk and decision-making under uncertainty are inherently multidisciplinary subjects, often involving complex technical material. This course is designed to present an introductory-level exploration of these topics while accommodating students from various academic backgrounds. The prerequisites—ECON 2500 or MATH 1131, ECON 1000, and ECON 1010—ensure that students have the foundational knowledge to engage effectively with the material.

Students will explore traditional theories, such as expected utility theory, alongside emerging concepts in behavioural economics, such as cognitive biases and psychological factors affecting insurance markets. The course emphasizes the practical application of these theories, enhancing students' analytical skills and deepening their understanding of how economic/mathematics/statistics principles are applied in real-world insurance contexts. Accordingly, the learning outcomes detailed below are broadly consistent with the first four levels of Bloom's cognitive taxonomy: remember, understand, apply, and analyze.

Remember:

- Identify and define key terms and concepts such as risk, risk aversion, insurance demand, informational asymmetries, and cognitive biases.
- Recall the main types of insurance and regulatory frameworks governing insurance markets.
- List the principles of expected utility theory and its relevance in insurance decision-making.

Understand:

- Explain the relationship between risk aversion and insurance purchase behavior.
- Describe how behavioral biases influence decision-making under risk and uncertainty.
- Summarize the role of insurance in economic development and its impact on societal welfare.

Apply:

- Apply the concepts of expected utility theory to evaluate the risk preferences of individuals in case studies or simulated scenarios.
- Use behavioral economics theories to predict consumer behavior in response to changes in insurance products and pricing.

- Develop a simple insurance model to demonstrate how premiums are calculated based on risk probabilities.

Analyze:

- Differentiate between traditional and behavioral theories of insurance demand and assess their implications for market outcomes.
- Analyze the impact of informational asymmetries on market efficiency and identify potential solutions.
- Evaluate case studies to determine the role of regulatory interventions in addressing market failures.

Evaluate:

- Critically assess the effectiveness of various risk management strategies in minimizing economic losses.
- Compare different types of insurance policies and regulations and argue for the most appropriate policies under specific economic conditions.
- Judge the ethical implications of risk classification and pricing strategies used by insurers.

Create:

- Design a policy recommendation for improving consumer welfare in insurance markets by incorporating both traditional and behavioral economic principles.
- Develop a simulation exercise that models the effects of insurance market regulations on different stakeholder groups.
- Propose a new insurance product that addresses gaps identified in current insurance offerings, considering both economic theories and behavioral insights.

Course Design:

Indicate how the course design supports students in achieving the learning objectives. For example, in the absence of scheduled contact hours what role does student-to-student and/or student-to-instructor communication play, and how is it encouraged?

Detail any aspects of the content, delivery, or learning goals that involve "face-to-face" communication, non-campus attendance or experiential education components.

Alternatively, explain how the course design encourages student engagement and supports student learning in the absence of substantial on-campus attendance.

The course includes a traditional three-hour-per-week lecture component, enhanced by guest presentations from experienced risk professionals in Financial Services. These experts will share their knowledge, enthusiasm, and perspectives on risk management and insurance. The course also incorporates case studies and interactive (business) simulation contents, to further engage students and enrich their learning. The course is offered in the traditional classroom setting where students attend classes physically on campus.

This course design has been shown to be successful in MATH 1280 3.00: Principles of Risk Management and Insurance.

Instruction:

1. Planned frequency of offering and number of sections anticipated (every year, alternate years, etc.).
2. Number of department members currently competent to teach the course.
3. Instructor(s) likely to teach the course in the coming year.
4. An indication of the number of contact hours (defined in terms of hours, weeks, etc.) involved, in order to indicate whether an effective length of term is being maintained **OR** in the absence of scheduled contact hours a detailed breakdown of the estimated time students are likely to spend engaged in learning activities required by the course.

1) biennial (alternating with MATH 3284 3.00 Risk Management of Climate Change), 3 lectures per week
2) at least four in Math and Stats
3) Jingyi Cao, Ed Furman, Alexey Kuznetsov, Dongchen Li.

Evaluation:

A detailed percentage breakdown of the basis of evaluation in the proposed course must be provided.

If the course is to be integrated, the additional requirements for graduate students are to be listed.

If the course is amenable to technologically mediated forms of delivery please identify how the integrity of learning evaluation will be maintained. (e.g. will "on-site" examinations be required, etc.)

All course components, including assessments, are designed to complement each other, enhancing the overall learning experience and supporting content retention. The assessment breakdown is as follows:

- Homework Assignments: 15%
- Experiential Education Activities (e.g., simulations, case studies, group projects): 15%
- Short Reflection Papers on Experiential Education: 10%
- Midterm Exam: 25%
- Final Exam: 35%

Bibliography:

A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES

The Library has requested that the reading list contain complete bibliographical information, such as full name of author, title, year of publication, etc., and that you distinguish between required and suggested readings. A statement is required from the bibliographer responsible for the discipline to indicate whether resources are adequate to support the course.

Also please list any online resources.

If the course is to be integrated (graduate/ undergraduate), a list of the additional readings to be required of graduate students must be included. If no additional readings are to be required, a rationale should be supplied.

LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.

There will be **no required textbook** for this course. Instead, open educational resources such as detailed lecture notes, PowerPoints, case studies, interactive exercises, and simulations developed by York faculty members will be utilized. These resources are available for use free of charge under a Creative Commons license via the eCampusOntario Library.

Some Suggested Reading

1. Arrow, K. J., Essays in the Theory of Risk-Bearing, North-Holland, 1970.
2. Diamond, P. A. and M. Rothschild (eds), Uncertainty in Economics: Readings and Exercises, Academic Press, 2nd edition, 1989.
3. Gilboa, I., Rational Choice, MIT Press, 2010.
4. Gilboa, I., Theory of Decision Under Uncertainty, 2009
5. Gollier, C., The Economics of Risk and Time, The MIT Press, 2001.
6. Kreps, D., Notes on the Theory of Choice, Routledge, 1988.
7. Kunreuther, H. C., M. V. Pauly, and S. McMorrow, Insurance and Behavioral Economics, Cambridge University Press, 2013.
8. Seog, S. H., The Economics of Risk and Insurance, Wiley-Blackwell, 2010.
9. Von Neumann, J. and O. Morgenstern, Theory of Games and Economic Behavior, Princeton University Press, 1953.
10. Zweifel P., and R. Eisen, Insurance Economics, Springer, 2012.

Other Resources:

A statement regarding the adequacy of physical resources (equipment, space, etc.) must be appended. If other resources will be required to mount this course, please explain

COURSES WILL NOT BE APPROVED UNLESS IT IS CLEAR THAT ADEQUATE RESOURCES ARE AVAILABLE TO SUPPORT IT.

The only additional resource needed, aside from a standard classroom with presentation equipment, is for students to have access to a standard laptop, either owned or borrowed, in order to participate in the proposed Experiential Learning components.

Course Rationale:

The following points should be addressed in the rationale:

How the course contributes to the learning objectives of the program / degree.

The relationship of the proposed course to other existing offerings, particularly in terms of overlap in objectives and/or content. If inter-Faculty overlap exists, some indication of consultation with the Faculty affected should be given.

The expected enrolment in the course.

This course serves multiple purposes.

(1) **Strengthening the Program's Competitiveness and Accreditation.** It enhances the business component of the existing Actuarial Science program, thus supporting its qualification for the Centre of Actuarial Excellence designation by the Society of Actuaries (criterion B.2). This prestigious recognition helps elevate the program's standing and credibility in the academic and professional communities and bring additional revenue from the SOA.

(2) **Differentiating York's Actuarial Science Program from Competitors.** It provides a competitive edge over other established Actuarial Science programs at the UofT, Waterloo, Western, and McMaster by emphasizing interdisciplinary business and economic principles in the actuarial curriculum. This positions York's program as a leader in actuarial education and innovation.

(3) **Increasing Employability of Graduates.** It equips York's Actuarial Science students with in-demand business acumen in addition to technical skills, making them more attractive to employers seeking well-rounded professionals.

(4) Together with the successful MATH 1280 3.00 course, this course lays the foundation for the development of a future **Professional Bachelor's Degree in Risk Management and Insurance**.

No overlaps exist based on discussions with colleagues in LA&PS & Schulich.

Based on our experience with a similar in spirit MATH 1280 3.00, we expect the enrolments to start at around 100 per year and grow within one-two years to around 500 per year.

Faculty and Department Approval for Cross-listings:

If the course is to be cross-listed with another department, this section needs to be signed by all parties. In some cases there may be more than two signatures required (i.e. Mathematics, Women's Studies). In the majority of the cases either the Undergraduate Director or Chair of a unit approves the agreement to cross-list. All relevant signatures must be obtained prior to submission to the Faculty curriculum committee.

Dept:	_____	_____	_____
	Signature (Authorizing cross-listing)	Department	Date
Dept:	_____	_____	_____
	Signature (Authorizing cross-listing)	Department	Date
Dept:	_____	_____	_____
	Signature (Authorizing cross-listing)	Department	Date

Accessible format can be provided upon request.

COMMITTEE ON CURRICULUM AND ACADEMIC STANDARDS TEMPLATE

NEW COURSE PROPOSAL FORM

Faculty: ***Indicate all relevant Faculty(ies) i.e. AS/AK/SC/MATH***	Science

Department: *Indicate department and course prefix (e.g. Languages, GER)*	MATH	**Date of Submission:**	Sept 29, 2024

Course Number: Special Topics courses *Include variance (e.g. HUMA 3000C 6.0, Variance is "C")*	3284	**Var:**	**Academic Credit Weight:** *Indicate both the fee, and MET weight if different from academic weight (e.g. AC=6, FEE=8, MET=6*	3.00

Course Title: *The official name of the course as it will appear in the Undergraduate Calendar and on the Repository*	Risk Management of Climate Change: (Re)Insurance and Other Strategies to Prepare for Emerging Climate Challenges
Short Title: *Appears on any documents where space is limited - e.g. transcripts and lecture schedules - maximum 40 characters*	Risk Management of Climate Change

With every new course proposal it is the Departmental/Divisional responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments/ divisions is necessary to determine degree credit exclusions and/or cross-listed courses.

Brief Course Description:

Maximum 60 words. *The course description should be carefully written to convey what the course is about. It should be followed by a statement of prerequisites and corequisites, if applicable. This description appears in the calendar.*
For editorial consistency, and in consideration of the various uses of the Calendars, verbs should be in the present tense (i.e., "This course analyzes the nature and extent of...," rather than "This course will analyze...")

This course introduces students to the business and financial implications of climate change, focusing on how societies, businesses, and particularly (re)insurers respond to emerging climate-related risks. Key topics include tail risk management, energy transition, climate risk mitigation strategies, ESG principles, and innovative risk financing solutions. Emphasis is placed on understanding how climate change influences (re)insurance pricing, underwriting practices, and strategic risk management, as well as its broader impact on financial markets, investment decisions, and the global economy. The course incorporates hands-on applications such as case studies and business simulations to provide practical insights and develop students' problem-solving and decision-making skills in a real-world context.

Prerequisites: MATH 1131 3.00 (or ECON 2500 3.00), ECON 1000 3.00, ECON 1010 3.00

Recommended Prerequisite: MATH 1280 3.00.

Generic Course Description:
This is the description of the "Parent/Generic course" for Special Topics courses under which variances of the "Generic" course can be offered in different years (Max. 60 words). Generic course descriptions are published in the calendar.
Please list all degree credit exclusions, prerequisites, integrated courses, and notes below the course description (these will be in addition to the 60 word brief course description).

Expanded Course Description:
Please provide a detailed course description, including topics/theories and learning objectives, as it will appear in supplemental calendars

This course introduces students to the multifaceted risk management strategies businesses and (re)insurers employ to address the far-reaching impacts of climate change. It begins by exploring the fundamentals of climate change, focusing on key topics such as tail risk, energy consumption and transition, environmental health and security, and company risk management. The course also addresses emerging risks, including food and water scarcity, climate refugees, and extreme weather adaptation.

The curriculum includes in-depth discussions on the implications of climate change for (re)insurance pricing, underwriting practices, and financial markets, highlighting the role of (re)insurers in driving climate resilience and sustainability through ESG initiatives and alternative risk financing strategies. The course integrates experiential learning through hands-on applications such as case studies, business simulations, and workshops to develop students' problem-solving and decision-making skills in realistic settings.

Course topics include EDI-related climate risk issues, regulatory responses, and the role of (re)insurance in mitigating economic losses. Additionally, the course examines innovative approaches like parametric insurance, catastrophe bonds, and geoengineering to address the systemic risks posed by climate change. Students will also gain insights into how companies can manage climate-related risks through investment strategies, regulatory compliance, and technological advancements.

Designed for a broad audience without significant prior experience in risk management or climate change, this introductory course aligns with the first four levels of Bloom's cognitive taxonomy: remembering, understanding, applying, and analyzing.

Learning Outcomes

Upon successfully completing the course, students will be able to

Remember:

- Describe the historical trends in global temperature and CO_2 emissions.
- Define key concepts such as tail risk, energy transition, ESG scores, and climate refugees.
- Identify different types of company risks caused by climate change and potential risk management strategies.
- List methods of geoengineering and the main features of Industry 4.0 as they relate to climate change.

Understand:

- Explain the meaning of climate risk, the impact of energy consumption, and the hydrogen economy.
- Discuss the significance of environmental health and security, and how companies can adapt to extreme weather conditions.
- Illustrate how carbon pricing and carbon taxes work and their role in climate risk management.

Apply:

- Use the understanding of climate change and tail risk to assess implications for (re)insurance pricing and risk reserving.
- Apply knowledge of energy transition and environmental health to evaluate risk mitigation strategies.
- Leverage insights from climate refugees and geoengineering to predict the long-term impacts of climate change.

Analyze:

- Examine the interplay between ESG principles and business strategies.
- Assess the economic and health impacts of climate change, such as vector-borne diseases and potential conflicts arising from resource scarcity.
- Analyze the effectiveness of alternative risk transfer methods in addressing climate-related risks.

Course Design:
Indicate how the course design supports students in achieving the learning objectives. For example, in the absence of scheduled contact hours what role does student-to-student and/or student-to-instructor communication play, and how is it encouraged. Please detail any aspects of the content, delivery, or learning goals that involve "face-to-face" communication or on-campus attendance. Alternatively, please explain how the course design encourages student engagement and supports student learning in the absence of substantial on-campus attendance

The course includes a traditional three-hour-per-week lecture component, enhanced by guest presentations from experienced risk professionals in Financial Services. These experts will share their knowledge, enthusiasm, and perspectives on risk management and insurance. The course also incorporates case studies and interactive (business) simulation contents, to further engage students and enrich their learning. The course is offered in the traditional classroom setting where students attend classes physically on campus.

This course design has been shown to be successful in MATH 1280 3.00: Principles of Risk Management and Insurance.

Instruction:
1. Planned frequency of offering and number of sections anticipated (every year, alternate years, etc.).
2. Number of department/division members currently competent to teach the course.
3. Instructor(s) likely to teach the course in the coming year.
*4. An indication of the number of contact hours (defined in terms of hours, weeks, etc.) involved, in order to indicate whether an effective length of term is being maintained **OR** in the absence of scheduled contact hours a detailed breakdown of the estimated time students are likely to spend engaged in learning activities required by the course.*

1) biennial (alternating with MATH 3283 3.00 Economics of Insurance), 3 lectures per week
2) at least four in Math and Stats
3) Jingyi Cao, Ed Furman, Alexey Kuznetsov, Dongchen Li.

Evaluation:

A detailed percentage breakdown of the basis of evaluation in the proposed course must be provided.
If the course is to be integrated, the additional requirements for graduate students are to be listed.
If the course is amenable to technologically mediated forms of delivery please identify how the integrity of learning evaluation will be maintained. (e.g. will "on-site" examinations be required, etc.)

All course components, including assessments, are designed to complement each other, enhancing the overall learning experience and supporting content retention. The assessment breakdown is as follows:

- Homework Assignments: 15%
- Experiential Education Activities (e.g., simulations, case studies, group projects): 15%
- Short Reflection Papers on Experiential Education: 10%
- Midterm Exam: 25%
- Final Exam: 35%

Bibliography:
A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES
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Also please list any online resources.
If the course is to be integrated (graduate/ undergraduate), a list of the additional readings to be required of graduate students must be included. If no additional readings are to be required, a rationale should be supplied.
LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.

There will be **no required textbook** for this course. Instead, open educational resources such as detailed lecture notes, PowerPoints, case studies, interactive exercises, and simulations developed by York faculty members will be utilized.

Some Suggested Reading

1. Sonia Labatt and Rodney R White 2007. Carbon Finance: The Financial Implications of Climate Change. Wiley Finance.

2. Gernot Wagner and Martin L. Weitzman 2015. Climate Shock: The Economic Consequences of a Hotter Planet. Princeton University Press.

3. William D. Nordhaus 2015. The Climate Casino: Risk, Uncertainty, and Economics for a Warming World. Yale University Press.

Other Resources:
A statement regarding the adequacy of physical resources (equipment, space, etc.) must be appended. If other resources will be required to mount this course, please explain ***COURSESWILL NOT BE APPROVED UNLESS IT IS CLEAR THAT ADEQUATE RESOURCES ARE AVAILABLE TO SUPPORT IT.***

The only additional resource needed, aside from a standard classroom with presentation equipment, is for students to have access to a standard laptop, either owned or borrowed, in order to participate in the proposed Experiential Learning components.

Course Rationale:
The following points should be addressed in the rationale:
How the course contributes to the educational objectives of the unit and of the Faculty.
The relationship of the proposed course to other existing offerings, particularly in terms of overlap in objectives and/or content. If inter-Faculty overlap exists, some indication of consultation with the Faculty affected should be given.
The expected enrolment in the course.

This course serves multiple purposes.

(1) **Strengthening the Program's Competitiveness and Accreditation.** It enhances the business component of the existing Actuarial Science program, thus supporting its qualification for the Centre of Actuarial Excellence designation by the Society of Actuaries (criterion B.2). This prestigious recognition helps elevate the program's standing and credibility in the academic and professional communities and bring additional revenue from the SOA.

(2) **Differentiating York's Actuarial Science Program from Competitors.** It provides a competitive edge over other established Actuarial Science programs at the UofT, Waterloo, Western, and McMaster by emphasizing interdisciplinary business and economic principles in the actuarial curriculum. This positions York's program as a leader in actuarial education and innovation.

(3) **Increasing Employability of Graduates.** It equips York's Actuarial Science students with in-demand business acumen in addition to technical skills, making them more attractive to employers seeking well-rounded professionals.

(4) Together with the successful MATH 1280 3.00 course, this course lays the foundation for the development of a future **Professional Bachelor's Degree in Risk Management and Insurance**.

There are no overlaps based on discussions with colleagues in LA&PS and Schulich.

Based on our experience with a similar in spirit MATH 1280 3.00, we expect the enrolments to start at around 100 per year and grow within one-two years to around 500 per year.

Faculty and Department/ Division Approval for Cross-listings:
If the course is to be cross-listed with another department/division this section needs to be signed by all parties. In some cases there may be more than two signatures required (i.e. Mathematics, Women's Studies). In the majority of the cases either the Undergraduate Director or Chair of a unit approves the agreement to cross-list. All relevant signatures must be obtained prior to submission to the Faculty curriculum committee.

Dept.: _____ _____ _____

Signature (Authorizing cross-list) Dept./Division Date

Dept.: _____ _____ _____

Signature (Authorizing cross-list) Dept./Division Date

Dept.: _____ _____ _____

Signature (Authorizing cross-list) Dept./Division Date

CCAS 02/04/19