

Implementation Plan

1 - Cover memo

Department of	<u>Mathematics and Statistics</u>	Year of program re- view	<u>2024</u>
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To: Deputy Provost and Vice-Provost, Student Life and Experience
From: Faculty Dean
Faculty of: Arts and Science
Date:

Please find enclosed the finalized Implementation Plan for the Department cited above as part of the academic program reviews process. This Plan was duly discussed with:

- ☒ The Department Chair
- ☒ The Dean of Graduate Studies (if applicable)

As mentioned in the Concordia University Academic Program Review Manual, 6th edition, September 2024, the Faculty and Department will follow-up on this Plan in two years, when prompted by your office.

Sincerely,

Faculty Dean's name Pascale Sicotte

Faculty Dean's signature *Pascale Sicotte*

PROGRAM REVIEW DOSSIER

DEPARTMENT OF MATHEMATICS AND STATISTICS

The review was initiated in 2024.

The dossier contains the following:

Document	Finalized on:
1. Department Program Review Committee (DPRC) Reports	April 2025
2. Report from External Evaluators	October 15, 2025
a. Dept. response to EE report	December 12, 2025
3. University Program Review Committee (UPRC) Report	April 27, 2026
a. Dept. response to UPRC report	May 19, 2026
4. Summary chart	June 4, 2026
5. Dean's Implementation Plan	September 15, 2026
6. Progress Report	To be initiated Fall 2028

Note:

- *The External Evaluators' visit was held from September 23 to 25, 2025.*

Implementation Plan

2 - Summary

The mission of the Department of Mathematics and Statistics is to foster a strong culture of critical thinking and problem solving while delivering foundational education in mathematics and statistics in an inclusive and accessible fashion that supports success for all learners. Faculty members have expertise in the areas of Actuarial and Financial Mathematics, Data Science and Applied Mathematics, Probability and Statistics, Analysis, Geometry and Dynamical Systems, and Number Theory. At the undergraduate level, the Department offers BA and BSc degrees in Mathematics and Statistics (majors), Actuarial Mathematics (Honours, specialization), Data Science (joint major), Mathematical and Computational Finance (specialization), and Pure and Applied Mathematics (Honours, Specialization). At the graduate level, the Department offers a MA, MSc, and PhD in Mathematics and Statistics. The Department of Mathematics and Statistics participates in the Kaié:ri Nikawerá:ke Indigenous Bridging Program which provides alternative entry to eligible Indigenous students with non-traditional academic backgrounds to transition to the Mathematics or Statistics program of their choice. The Department also offers students the opportunity to join the Institute for Co-operative Education. As of January 1, 2025, the Department has 30 tenured or tenure-track faculty and 4 Teaching Professors (Senior Lecturers). The Department staff consists of 6 administrative staff (Department Administrator, Department Assistant, Undergraduate Program Assistant, Assistant to the Chair, Undergraduate Student Advisor, Graduate Services Coordinator). Faculty members are associated with the Centre de recherches mathématiques (CRM), the Canadian Statistical Science Institute (CANSSI), the Institute des Sciences Mathématiques (ISM), the ALGANT consortium. In the period under evaluation, the Department offered 167 sections to approximately 746 undergraduate and 95 graduate students per year. Average class sizes are 75 at the 200-level (larger for service courses), 32 at the 300-level, 15 at the 400-level, 4 at the 600-level and 2 to 3 at the 700- and 800-level. Approximately 30% of Mathematics and Statistics sections are taught by part-time faculty members (average of 61 a year). The Actuarial programs and courses are accredited by the Society of Actuaries, the Canadian Institute of Actuaries (CIA), and the Casualty Actuarial Society (CAS).

Department strengths are noted in curriculum and pedagogy with high-quality teaching to a large percentage of Concordia students across the Faculties as well as leadership in advancing EDI goals. The Department thus contributes to Faculty of Arts and Science 5 Commitments by promoting a sense of belonging, empowering students, and helping them to tackle complex problems. Opportunities are presented by regular meetings of the Department's Teaching Committee and Curriculum Committee to continue to develop innovative teaching strategies and programs that achieve the Departments' learning objectives and increase student access and success.

The Faculty of Arts and Science has reviewed the Department Program Review Committee, External Evaluator, and University Program Review Committee reports and provides the following recommendations for implementation. Joint solutions to shared issues among Science units are encouraged wherever possible.

Implementation Plan

3 - Recommendations

The Faculty Dean is invited to include a numbered list of recommendations for improvement, as well as a rationale and implementation schedule (an Excel spreadsheet is also available by request to the Program Review Lead).

Recommendations	Prioritized time-line for completion	Responsibility	Dean's comments and resource implications
1. Evaluate potential program consolidation in connection with clearer communication of alternative pathways given different student populations' needs and the development of advanced undergraduate and graduate pathways.	Short to mid-term (1-3 years)	Department, FAS, UCS, SAS, SGS	
Rationale: Supported by both the EEs (Recommendations 11, 13) and UPRC (Recommendations 1, 2, 6). The Department response to UPRC-1 suggest this may be a communication rather than structural issue with clearer articulation of entry points, progression options, and career outcomes addressing concerns. As proposed by the DPRC (10.2, 7.16, 7.18, Department response to EE), the introduction of Integrated Pathways may enable the offering of advanced undergraduate and graduate courses in a constrained budget environment and encourage top undergraduates to continue into the graduate program (DPRC 10.2, 7.7, 7.11, 7.16, 7.20). Additionally, FAS supports the DPRC and UPRC recommendations to not add new Masters programs but consider additional accreditations (DPRC 8.7, 9.7, EE-8, UPRC-1). Use of networks with other Montreal			

universities (ISM and CRM) can increase access to specialized course offerings but FAS appreciates the Department's need to maintain internal strengths and expertise (EE-11, UPRC-6). Consultation with alumni in industry and academics would be useful to assist with potential curriculum consolidation and development (UPRC-8).			
2. Develop departmental identity and program branding, particularly around data science strength, and use this to increase outreach and promotion to new and current students and target hiring requests and CRC applications.	Short to mid-term (1-3 years)	Department, FAS, UCS, Admissions, Advancement	Note that university-wide CRC competitions are constrained by the availability of CRCs across Faculties. The Department of Mathematics and Statistics currently has no CRCs or CURCs. A new Minor in Data Science is in the curriculum process.
Rationale: EE-3, 7; UPRC-4. Increased use of current students to develop ideas and engage in outreach activities proposed by EEs and DPRC (9.4). Note strong agreement with the Department response to UPRC which encourages increased collaboration in future program development with intentional coordination rooted in disciplinary expertise to avoid fragmentation in curriculum and student training because of administrative divisions.			
3. Expand experiential learning opportunities, drawing on alumni connections and broaden Co-op possibilities particularly for data science, statistics, finance, and actuarial science.	Short to mid-term (1-3 years)	Department, Co-op Institute, FAS, Advancement	
Rationale: EE-5, 9; UPRC-7, 8, DPRC-10.12 support suggestion of increased engagement of and involvement by alumni in expanding internship and experiential learning opportunities within and beyond Co-op.			

4. Investigate potential IITS adoption of software for easing burdens of shared grading in large courses such as Crowdmark (collaborative marking platform license) in collaboration with other units that would benefit from a similar solution.	Short term (1-2 years)	Department, FAS, IITS, GCS, JMSB	Careful analysis of the use of resources will be reviewed by the Dean to see if redistribution is possible for contributing to this resource. Continued collaboration with JMSB and IITS encouraged.
Rationale: EE-2, UPRC-5, DPRC-11.14 and Department response to the UPRC all support this recommendation.			
5. Creative thinking to increase advising capacity (or mechanisms to reduce transactional advising demand) for Math/Stats students beyond introductory courses in collaboration with faculty members and administration.	Short to mid-term (1-3 years)	Department, Science Sector, FAS, UCS	Careful analysis of the use of resources will be reviewed by the Dean to see if redistribution is possible for increased advising support in the Sciences.
Rationale: EE-1, UPRC-3, DPRC-7.4, 8.2, 10.5, 10.6, 10.7, 10.10. In order to continue to recruit and retain program students and move beyond its service role to the University, the Department needs to be able to provide consistent quality advising on academic and career pathways and help undergraduate and graduate students navigate university systems and processes and program requirements throughout their time at Concordia. This includes guidance documents (e.g. proposed graduate student expectations documents) and website improvements as suggested by the DPRC.			
6. Initiate discussions with JMSB and IITS for increased access to datasets and labs for data needed for advanced undergraduate and graduate independent research.	Short-term (1-2 years)	Department, FAS, JMSB, IITS, Library	
Rationale: DPRC-7.12, 11.3, 11.12. This would strengthen the Honours program (Department response to EE-10), improve student experience (UPRC-3, EE-13), and move graduate students through their milestones faster (DPRC).			

7. Examine requirements and propose process for development of unified entry-level statistics courses.	Mid to long-term (3-4 years)	Department, FAS, CTLS	
Rationale: This would help encourage efficient use of scarce resources, encourage greater interdisciplinary collaboration in training and research (DPRC-9.1), support broader access to new programs in data science by ensuring students have the necessary pre-requisite training (EE-7), and support the Statistics specialization (EE-8).			