



Cyclical Program Review Final Assessment Report

Programs Reviewed: **Mathematics (BA, BAH, BSc, BScH)**
 Statistics (BA, BAH, BSc, BSCH)
 Mathematics and Statistics (MSc, PhD)
 Mathematics and Engineering (BASc, MASc, PhD)

In accordance with Queen's University Quality Assurance Processes (QUQAP), this final assessment report provides a synthesis of the external evaluation, internal responses and assessment of the above programs. This report identifies the significant strengths of the program, and opportunities for program improvement. It sets out and prioritizes the recommendations that have been selected for implementation.

An implementation plan is attached that identifies:

- who will be responsible for acting on and monitoring progress on the recommendations,
- any resource or governance implications resulting from the recommendations, and
- timelines for implementation of the recommendations.

Summary of Review

- 1) The department's self-study was reviewed by the Dean, Faculty of Arts and Science, Vice-Provost and Dean, School of Graduate Studies and Vice-Provost (Teaching and Learning). It was approved on 19 December 2017.
- 2) The review team visit took place on 26th -27th February 2018. The review team members were:
 - i. Dr. Richard Lockhart, Department of Statistics & Actuarial Science, Simon Fraser University
 - ii. Dr. Monica Nevins, Department of Mathematics and Statistics, University of Ottawa
 - iii. Dr. Marc Dignam, Department of Physics, Engineering Physics and Astronomy, Queen's University
- 3) The visit included a tour of facilities and meetings with
 - i. Students (undergraduate and graduate)
 - ii. Faculty
 - iii. Staff
 - iv. Liaison librarian
 - v. Cognate department heads
 - vi. Postdoctoral fellows
 - vii. Dean, Faculty of Arts and Science

- viii. Vice-Provost and Dean, School of Graduate Studies
- ix. Vice-Provost (Teaching and Learning)
- 4) The review team reported on 12 March 2018. Responses to the review team report were provided by the Head, Department of Mathematics and Statistics, Dean, Faculty of Engineering and Applied Science, Dean, Faculty of Arts and Science and Vice-Provost and Dean, School of Graduate Studies.
- 5) The Senate Cyclical Program Review Committee considered all the documentation at its meeting on 07 May 2018, and reported to the Provost on the programs' strengths, opportunities for enhancement and recommendations for improvement.

The following strengths were noted:

- Commitment to excellence in teaching, student academic support and experiential learning
- Inclusive and diverse department with a strong sense of community
- Collaborative, innovative and interdisciplinary research
- Innovative interdisciplinary undergraduate program offerings
- Excellent student retention rates

The following opportunities for enhancement were noted:

- Begin to address other aspects of the globalism-diversity-inclusion pillar such as those relating to teaching and learning (variety of teaching strategies, clear assessment outcomes, scaffolded support to develop writing and speaking skills)
- Increase the number of TAs in the Help Centre to assist with upper year courses
Fully integrate all teaching materials to onQ
- In conjunction with Physical Plan Services (PPS) improve study and classroom space for graduate students and address the overall poor condition of Jeffery Hall, including accessibility
- Based on USAT scores, introduce professional development for instructors
- Curriculum development that includes non-Western historical perspectives and highlights achievements of underrepresented groups in the field
- Recruit more women into the Math and Engineering program, graduate programs and faculty complement
- Develop a communications plan to inform students about the campus services that are available

The academic programs in the Department of Mathematics and Statistics have been approved to continue.

Date of next review: 2025-2026

Prepared by Vice-Provost (Teaching and Learning)

30 June 2018



Implementation Plan

Recommendations	Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
1. Complete the comprehensive review of the BSc Mathematics program in order to identify potential weaknesses	Continue comprehensive curriculum review of the BSc (Math) in conjunction with the Centre for Teaching and Learning	Department Head	Human Resources to be provided by Department and the Centre for Teaching and Learning	Complete review in Fall 2018 for consideration of the Faculty of Arts and Science Curriculum Committee during winter 2019 term
2. Consider instituting a capstone experience for students in the BSc Mathematics program	As part of the comprehensive curriculum review, consider instituting a capstone experience	Department Head	Human Resources to be provided by Department and the Centre for Teaching and Learning	Fall 2018
3. Identify program learning outcomes for the BSc	Incorporate identification of program learning	Department Head	Human Resources to be	Fall 2018

Recommendations	Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
Statistics program and update the program requirements accordingly	outcomes and updates to the BSc Statistics program as part of the comprehensive curriculum review		provided by Department and the Centre for Teaching and Learning	
4. Inject new resources into the BASC Mathematics and Engineering program to accommodate a tripling of enrolment	Department Head to work with the Faculty of Arts and Science to increase faculty positions as part of the ongoing faculty renewal initiatives	Department Head	Human Resources to be provided by Department and FAS	Hiring in 2018-19 for Fall 2019 start
5. Actively recruit research statisticians to the faculty and hire a program coordinator for the BSc Statistics program	Department Head to re-assess needs once learning outcomes for the BSc Statistics program have been approved by Arts and Science Curriculum Committee	Department Head	Human Resources to be provided by Department and FAS	Winter 2019

Recommendations		Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
6.	Increase the number and range of graduate courses offered	Department Head to work with graduate committee to develop full complement of graduate courses	Department Head in conjunction with Associate Dean School of Graduate Studies	Human Resources to be provided by Department and SGS	Offer some new graduate courses in 2018-19 with an aim for fuller implementation by 2020
7.	Consider making spousal hiring a priority	Recommendation is the purview of the Provost and Vice-Principal (Academic)			
8.	Pay special attention to the collaborative Biostatistics program in order to be able to participate in the Big Data revolution	Consider role of collaborative Biostatics program as part of upcoming departmental strategic planning exercise	Department Head	Human Resources to be provided by Department	Complete strategic plan in 2018. Implement by 2019-20 academic year
9.	Implement training sessions for new postdoctoral fellows and assign mentors for them Create a faculty handbook for the postdoctoral fellows	Initiate meeting with representatives from the School of Graduate Studies and Human Resources Create training session for mentors to ensure they are properly trained	Department Head in conjunction with School of Graduate Studies and Human Resources	Human Resources to be provided by Department, SGS and HR	Implement by 2019-20 academic year

Recommendations		Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
		and aware of postdoc's collective agreement and other policies			
10.	Develop a well-articulated, long-term strategic hiring plan, in response to shortage of statistics and engineering faculty in the unit	Establish working group to develop the department's strategic plan that includes a hiring plan which will guide the department for the next 3-5 years	Department Head	Human Resources to be provided by Department	Complete strategic plan in 2018. Implement by 2019-20 academic year

The Deans, Faculty of Arts and Science and Faculty of Engineering and Applied Science shall be responsible for monitoring the implementation plan. The details of progress made will be presented in writing to the Provost and Vice-Provost (Teaching and Learning) and filed in the Office of the Provost and Vice-Principal (Academic). Monitoring reports will be posted on the university web site.

Final Assessment Report & Implementation Plan

Approval Date – 30 June 2018

Vice-Provost (Teaching and Learning)



Signature

Vice-Provost and Dean, School of Graduate Studies



Signature

Dean, Faculty of Arts and Science



Signature

Dean, Faculty of Engineering and Applied Science



Signature

Final status of Mathematics and Statistics Academic Programs

Approved to Continue

Date of next program review

2025-2026 Academic Year