



University of Toronto Quality Assurance Process (UTQAP) Cyclical Review: Final Assessment Report & Implementation Plan

Program(s):	Mathematics, B.Sc. (Hons.): Specialist, Major and Minor Applied Mathematics, B.Sc. (Hons.): Specialist Mathematics and Its Applications, B.Sc. (Hons.): Specialist Mathematics and Philosophy, B.Sc. (Hons.): Specialist Mathematics and Physics, B.Sc. (Hons.): Specialist Mathematical Applications in Economics and Finance, B.Sc. (Hons.): Specialist Mathematics, M.Sc., Ph.D. Mathematical Finance, M.M.F.
Division/Unit:	Department of Mathematics, Faculty of Arts & Science
Commissioning Officer:	Dean, Faculty of Arts & Science
Reviewers (Name, Affiliation):	1. Dr. Niky Kamran, James McGill Professor, Department of Mathematics and Statistics, McGill University 2. Dr. Sheldon Katz, Professor, Department of Mathematics, University of Illinois, Urbana-Champaign 3. Dr. W. Hugh Woodin, Professor, Department of Mathematics, University of California, Berkeley
Date of review visit:	March 25 – 26, 2013
Date reported to AP&P:	April 1, 2014

1 Outcome

- The Committee on Academic Policy and Programs concluded that the Decanal response adequately addressed the review recommendations.

2 Significant Program Strengths

- One of the best mathematics departments in North America
- High quality, successful programs
- Faculty's excellent publication record
- Department's broad research expertise within a range of sub-disciplines

3 Opportunities for Program Improvement and Enhancement

The reviewers recommended that the following be considered:

- Preparing graduate students for non-academic employment
- Increasing the number of graduate courses in key fields
- Addressing time to completion by relaxing first-year doctoral course requirements
- Ensuring adequate funding for international graduate students to aid in recruitment
- Identifying the appropriate balance between teaching and tenure stream faculty and exploring the use of innovative methods of instructional delivery
- Addressing low faculty morale
- Enhancing faculty and graduate student office space and undergraduate student study space

4 Implementation Plan

The Dean undertook in consultation with the Department to support the following changes:

- Immediate Term (6 months)
 - Preparing graduate students for non-academic employment
 - The Department will explore development of a Master's program in an area such as the mathematics of data
 - The Department will increase the number of fellowships, which will expose students to industrial mathematical problems
 - Increasing the number of graduate courses
 - The Department will hire three tenure-stream faculty in 2013-14 and is preparing a request for further positions, some of which will be jointly held with cognate units
 - Addressing doctoral students' time to completion
 - The Department's Graduate Committee will review the curriculum for first-year doctoral students
 - Ensuring adequate funding for international graduate students for their recruitment
 - The Department raised \$200,000 in support of international graduate students through the first round of the Provost's PhD Enhancement Fund, and it will participate in future rounds
 - Identifying the appropriate balance between teaching and tenure stream faculty
 - The Department is expanding its faculty complement and is piloting new methods of instructional delivery
 - The Faculty of Arts and Science has implemented a new funding initiative to support teaching and learning initiatives and is encouraging departments to apply
 - Addressing to low faculty morale

- The Department is expanding its faculty complement, compensating for faculty retirements and resignations over the past few years
- Enhancing faculty, graduate and undergraduate student space
 - The Department will work with the Faculty of Arts and Science's Director of Infrastructure Planning in better utilizing its space
- Medium Term (1-2 years)
 - Preparing graduate students for non-academic employment
 - The Department will collaborate with cognate units to develop further a proposal for a Center for Applied Mathematics and Statistics
 - The Department will partner with the School of Graduate Studies and Career Services in supporting students' exploration of non-academic career opportunities and it will share best practices among academic units

The Dean's Office will follow up annually with the unit to assess progress.

5 Executive Summary

The reviewers identified the program as being one of the best mathematics departments in North America. Its strengths include the program's high quality and success; and the faculty's excellent publication record and broad research expertise. The reviewers recommended that the following issues be addressed: preparing graduate students for non-academic employment; increasing the number of graduate courses in key fields; addressing time to completion; ensuring adequate funding for international graduate students; identifying the appropriate balance between teaching and tenure stream faculty; exploring the use of innovative methods of instructional delivery; addressing low faculty morale; and making space enhancements. In response, the Department will explore developing a Master's program in the mathematics of data and facilitate student exposure to industrial mathematical problems. The Department will collaborate with cognate units on a proposal for a Center for Applied Mathematics and Statistics, giving graduate students more exposure to non-academic opportunities. The Department will increase the faculty complement, expanding the selection of graduate topic courses offered. The Department will review the curriculum for first-year doctoral students in considering time to completion. The Department will increase funding in support of international graduate students. By piloting new methods of instructional delivery and expanding its faculty complement, the Department will strengthen faculty morale. In addition, the Department will work internally to better utilizing its space. The Committee on Academic Policy and Programs concluded that the Decanal response adequately addressed the review recommendations.