Two-Year Progress Report
Applied Math (MMath, PhD)
February 2020

Background

Two arm's-length external reviewers (Volume Ill}, (Dr. Nicholas Kevlahan, Professor of Mathematics, McMaster University and Dr. Ralph Smith, Distinguished Professor of Mathematics, North Carolina State University) were chosen by the Associate Provost, Graduate Studies, in addition, one internal reviewer (Dr. John Garcia, Professor of Practice/ School of Public Health and Health Systems) was selected by the Associate Provost, Graduate Studies[1].

They reviewed the self-study documentation submitted by the Department of Applied Mathematics (AM) and then conducted a site visit to the University on May 9-10, 2016. The visit included interviews with the Vice-President Academic & Provost; Associate Provost, Graduate Studies; Dean of the Faculty; Faculty Associate Dean of Graduate Studies, Chair of the Department, Faculty members, staff and meetings with a group of current graduate students, and support staff.

The Final Assessment Report was approved by Senate Graduate and Research Council on September 10, 2018.

Progress on Implementation Plan

There were a total of seven recommendations from the external reviewers. Of these, one was beyond the control of the Department, and two were not selected for implementation with a rationale outlined in the Final Assessment Report. Details on the remaining four recommendations and their implementation are as follows.

Recommendations

1. The University should support the development of a co-op/internship opportunity for graduate students in Applied Mathematics. Ideally, these opportunities would not increase the overall time to completion.

[1] The position of Associate Provost, Graduate Studies is now referred to as the Associate Vice-President, Graduate Studies and Postdoctoral Affairs

Status: **Completed**
Details: The Chair & Associate Chair Graduate Studies met with the Co-operative and Experiential Education (CEE) unit. A feasibility study was carried out by CEE, and the MMath Co-op Program kicked off in Fall 2019.

2. Provide institutionalized in-department training for research and job skills and ensure students are made aware of and encouraged to take advantage of similar opportunities at the University level. Examples include preparation of CV' s and resumes, preparation of research and teaching statements, explanation of career opportunities, interview strategies, and skills development in poster design, as well as oral and written communication.

   Status: **In Progress**
   Details: A WatCV module was incorporated into the first two weeks of one of our current graduate courses. The Applied Math Graduate Committee will assess its efficacy over the coming year. The AM Grad Committee will also investigate other possible opportunities for student enrichment in this respect, in other units at UW (ie career opportunities, poster design etc). Together with the WatCV module, we will also highlight GRADventure and the opportunities for graduate students that can be found there. These initiatives will be completed by the end of 2020.

3. Invigorate the colloquium to enhance the scientific culture and cohesiveness of the department and the broader training of the graduate students. One way to do this might be to establish a Lecture Series with four lectures per year with the goal of inviting speakers at the level of plenaries at major national and international conferences. They should be planned well in advance and widely advertised to the campus community.

   Status: **Completed**
   Details: The Chair and Colloquium Committee (under the leadership of Anita Layton) have reinvigorated the AM Colloquium Series. This has now incorporated one to two Distinguished Lectures throughout the year by preeminent Applied Mathematicians: Ingrid Debauchies (Duke) and Terry Lyons (Oxford) in 2018, Lai-Sang Young (Courant & Institute for Advanced Studies) in 2019, and George Karniadakis (Brown) is slated to speak in 2020. The series has also included roughly one Colloquium talk/month from world renowned mathematicians: Leah Keshet (UBC), Ramin Golestanian (Max Planck Institute), Richard Bertram (FSU), David Hu (Georgia Tech), Ann Almgren (Lawrence Berkeley Labs) and Nilima Nigam (SFU) have all spoken or are slated to speak in 2020.

4. Continue to prioritize the recruitment of women and underrepresented minorities. This goal should be included explicitly as a weighting or factor in ranking student applications.

   Status: **Ongoing**

Details: The Chair and Associate Chair Graduate Studies have tasked the Departmental Graduate Committee to prioritize this through "women in mathematics" workshops/discussion groups (in which Anita Layton (AM) and Ghazal Geshnizjani (AM) are leading committee members). A detailed list of relevant events organized (2019-2020) can be found at https://uwaterloo.ca/women-in-mathematics/events.

In addition, we have attempted to prioritize this through the use of incentive scholarships to women and underrepresented minorities. The Department has introduced the "Cathleen Morawitz" scholarships for distinguished graduate applicants (although these are not restricted to women), see https://uwaterloo.ca/applied-mathematics/graduate-students/funding-and-awards.

It is also worthwhile pointing out that Anita Layton is also Chair of the Research Equity, Diversity and Inclusion Council, and so plays an active role at promoting these priorities not only at the department level, but also university-wide.

Explain any circumstances that have altered the original implementation plan:

The feasibility study for the Graduate Co-op program took longer than envisaged, resulting in a year's delay in its implementation.

Address any significant developments or initiatives that have arisen since the program review process, or that were not contemplated during the review:

None

Report on anything else you believe is appropriate to bring to Senate concerning this program:

N/A

Updated Implementation Plan

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
1.	Development of a co-op/internship opportunity for graduate students in Applied Mathematics	Completed	Chair & Associate Chair Graduate Studies	Co-op Graduate program commenced Sept 2019
2.	Provide institutionalized in department training for research and job skills (preparation of CV's, research and teaching statements, career opportunities, interview strategies and skills, poster design, oral and written communication)	In progress	Chair & Associate Chair Graduate Studies	End of 2020
3.	Invigorate the colloquium (establish a Lecture Series with the goal of inviting major speakers)	Completed	Chair & Colloquium Committee	New Colloquium & Distinguished Lectures commenced Sept 2018
4	Continue to prioritize the recruitment of women and underrepresented minorities	In progress	Chair & Associate Chair Graduate Studies	Ongoing

The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for monitoring the Implementation Plan.

Date of next program review: 2022-23
Date

Signatures of Approval:

13 May, 2021

Chair/Director Date

AFIW Administrative Dean/Head (For AFIW programs only) Date

Mark Giesbrecht
Dean, Faculty of Mathematics June 3, 2021

Faculty Dean Date

Note: AFIW programs fall under the Faculty of ARTS; however, the Dean does not have fiscal control nor authority over staffing and administration of the program.

Associate Vice-President, Academic Date
(For undergraduate and augmented programs)

September 9, 2020

Associate Vice-President, Graduate Studies and Postdoctoral Affairs Date
(For graduate and augmented programs)