



**Final Assessment Report
Academic Review**

Mathematics

A. Summary

1. The Department's Self Study was considered and approved by the Academic Review Committee of Senate on January 28, 2011.
2. The Review Committee consisted of two external reviewers: Robert Corless (University of Western Ontario) and Roman Viveros-Aguilera (McMaster University), and an internal reviewer, Sid Segalowitz (Psychology).
3. The site visit occurred on March 2 – 4, 2011.
4. The Reviewers' Report was received on March 11, 2011.
5. The Department's response was provided on April 27, 2011.
6. The decanal response, from Interim Dean Rick Cheel, was received on April 26, 2011.

The academic programs offered by the Department which were examined as part of the review included the BSc in Mathematics and the BSc in Mathematics and Computer Science.

This is one of the first reviews conducted entirely under the terms and conditions of the IQAP approved by Senate on May 16, 2010.

B. Strengths of the Program

The reviewers' report states:

The Mathematics Integrated with Computers and Applications (MICA) program is clearly the flagship of the Department. It gives unity to the Department and a sense of common purpose. It is the engine of enrolments, without which the program essentially falls back to its old role of a service Department for other majors... The program delivery is of the highest quality: passionate, skilled teachers delivering highly interactive lessons with a great deal of personal contact. The open-door policy is particularly valuable... To our knowledge, the MICA program is unique to Brock.

The report goes on to say "This undergraduate program compares favourably to those offered at other institutions. In particular, the computational intensity of MICA and the high degree of personal attention given by faculty to students are exceptionally valuable features. This program deserves more recognition than it has received" and that:

The faculty forms a fully dedicated and research oriented group, functioning harmoniously. Their teaching efforts and open door practice are highly appreciated by their students and are conducive of productive interactions. They are also highly successful researchers, with a sizable number of publications, rewarded with external grants that in turn foster their graduate and undergraduate research efforts.

Finally, they conclude that: "This program *should be nationally prominent!* It is virtually unique, has functioned very well, attracts students when they know about it, and many of the graduates are highly successful."

The Reviewers assigned the Department a "fragile" outcome category B, "Good Quality".

C. Opportunities for Improvement and Enhancement

The reviewers provided eight discrete recommendations. These are considered as follows:

1. Increase the faculty complement by 2 members. One of the new hires should be primarily devoted to the MICA core courses. The candidate should have expertise and teaching style to contribute effectively to sustain the program. The second hire should be in statistics to expand course offerings beyond the minimum currently taught, help with the supervision of graduate and undergraduate students and support the statistics accreditation requirements.

The Department comments that:

[W]e completely concur with the Report's statement that "*the MICA program will be unviable without a new faculty member with MICA teaching effectiveness for core courses.*" We also strongly concur with the Report's observations that the statistics faculty in the Department are "*completely stretched*" and that the concentration in statistics stream (offered within the MICA program) will be "*unsustainable*" without more resources.

Dean Cheel comments:

Over the past several years two new appointments have been made and have been funded on soft-dollars (i.e., not ongoing salary lines) and salary lines to support these appointments will not become available until such funds become free through future retirements... Unfortunately funds for these positions are not currently available without new funds from the Central Budget of the University. With another round of budget cuts for the 2012-13 budget we do not expect that these new positions can be considered before 2013-14. Furthermore, across the Faculty there are staffing needs that will need to be ranked by the new Dean.

Thus, ARC concludes that this recommendation should be considered by the Dean during the budget cycle for 2013-14. To assist the Dean, the department should prepare a plan for the hiring priorities for its faculty complement by January, 2013

Implementation Plan (Second Priority)

Responsibility for approving:	Dean and Department
Responsible for resources:	Dean
Responsible for implementation:	Department and Dean
Timeline:	Dean to report by Fall, 2013.

2. Maintain 2 administration positions, or as close to 2 as possible. Offload some of their duties to a central office in the Faculty if feasible.

The Department argues that: “Our Department has a heavier administrative load due to the large enrollment in service courses on top of the usual load for running both an undergraduate program and a graduate program. [Staff Member A] is already at 100% workload with assisting the Chair (her primary responsibility) and with other essential administrative duties; she cannot take on any of [Staff Member B]’s duties.

However, Dean Cheel advises that:

We do not expect to have a salary line to support two administrative assistants once one of the current assistants retires or resigns from their position. No department in the Faculty, except Mathematics, has two administrative assistants at the current time. When one of the current administrative assistants leaves their position some of the duties may be reassigned within the Faculty. Graduate programs and students in Mathematics can be served by the Faculty’s Graduate Studies Administrative Assistant who currently serves several of our programs and it is our hope that over time that Assistant will take on all Graduate administration for the Faculty. Some administrative duties (such as preparing UPC submissions and graduate calendar submissions) could be assigned to faculty or staff members as is the case in most other departments of the Faculty.

Thus, ARC concludes that this recommendation cannot be implemented at this time, but may be considered in the future.

Implementation Plan

Recommendation NOT accepted at this time.

3. Upgrade the computer labs as they are an essential teaching component for the MICA program. If possible, set endowed funds to maintain the computer labs.

The Department has indicated that “in order for the MICA program to maintain its cutting edge status, a dedicated computer resources budget is critical” and Dean Cheel notes that:

The Office of the Dean has provided funds from its budget for such replacements in Computer Science and will provide similar funds to Mathematics. It is important that both departments work with the Office of the Dean to forecast their computer needs so that responsible fiscal planning is possible.

ARC considers that this recommendation has been accepted and is in the process of being implemented.

Implementation Plan (First Priority)

Responsibility for approving:	Dean
Responsible for resources:	Dean
Responsible for implementation:	Dean
Timeline:	Dean to report by December, 2012.

4. Provide space for sessional instructors to carry out effectively their teaching duties.

The Department has proposed “that other departments in the Faculty of Mathematics and Science could share their sessional office space with our Department.” Dean Cheel advises that: “The Faculty has struck a ‘Space Committee’ with the mandate to evaluate the space use and needs of the Faculty in order to be able to make informed and coordinated requests for space in the future.”

ARC considers that the Department and Dean have limited capacity to address this recommendation. As it has noted elsewhere, the Committee is not confident that the space needs of the University in general are being addressed appropriately. There is a need for an ongoing, regular, formal consultative process and/or mechanism to allocate teaching, research and office space in an open and equitable manner. Because this issue is beyond the jurisdiction of individual Faculties or units, ARC recommends that Senate call upon the Provost/VP Academic to initiate a review of the University’s space allocation protocols.

Implementation Plan (First Priority)

Responsibility for approving:	Provost/VP, Academic
Responsible for resources:	Provost/VP, Academic
Responsible for implementation:	Provost/VP, Academic
Timeline:	Provost to report by December, 2012.

5. Improve office space for graduate students. The present space allocation of 8 desks for 25 students is inadequate.

The Department reports that:

The Department has one room available for all of our graduate students (25 in total), where each desk is shared by 3 students. This overcrowding is demoralizing and will hurt future recruitment of new graduate students to our program. Another room (possibly shared with the Department of Computer Science) is needed.

Dean Cheel reiterates that: “The Faculty ‘Space Committee’ will investigate possibilities of sharing of such space within the Faculty.”

As with Recommendation 4, the Committee is not confident that the space needs of the University in general are being addressed appropriately. There is a need for an ongoing, regular, formal consultative process and/or mechanism to allocate teaching, research and office space in an open and equitable manner. Because this issue is beyond the jurisdiction of individual Faculties or units, ARC recommends that Senate call upon the Provost/VP Academic to initiate a review of the University’s space allocation protocols.

Implementation Plan (First Priority)

Responsibility for approving:	Provost/VP, Academic
Responsible for resources:	Provost/VP, Academic
Responsible for implementation:	Provost/VP, Academic
Timeline:	Provost to report by December, 2012.

6. Reduce the number of undergraduate course listings, perhaps by implementing variable topic courses. At present, 68 courses are listed but only 30 are offered, as a result several courses are not offered with the program cycle of some students, providing a source for frustration.

According to the Department:

The Department plans to streamline its undergraduate course listings. This will be carried out over the upcoming spring/summer term in time for submission to UPC in fall 2011. Some 4th year specialty courses will be folded into a smaller number of variable topics courses; other courses will be listed as "taught in alternate years" or perhaps "offered by demand".

Dean Cheel comments that this response “should adequately address the concerns of the reviewers.”

ARC considers that this recommendation has been accepted and is in the process of being implemented.

Implementation Plan (First Priority)

Responsibility for approving:	Department
Responsible for resources:	Chair of the Department
Responsible for implementation:	Chair of the Department
Timeline:	Chair to report by December, 2012.

7. Promote the MICA and Co-op programs locally, provincially and nationally.

According to the Department:

In order to make the MICA program much more visible, we need

- a) staff to support and run the online BOTS program that can be viewed at <http://www.brocku.ca/bots>;
- b) resources to create on-line portfolios of computer-based work by MICA students, which will greatly help to show potential students the unique and innovative aspects of the MICA program and also to boost the effectiveness of the MICA webpages as a recruiting tool;
- c) a dedicated computer server that would allow our students to create and post Maple programs online so future students could see the kind of mathematical projects they will undertake here at Brock.

Dean Cheel responds:

New and/or novel ideas for better promotion of these programs will be considered for funding from the Faculty budget. This past year the Faculty formed its 'Recruitment Committee' and we expect several new initiatives for promoting all of our programs will be forthcoming.

ARC considers that this recommendation has been accepted and is in the process of implementation. It notes that support from units such as University Marketing and Communications and Office of the Registrar (Undergraduate Recruitment) will be essential to such implementation.

Implementation Plan (First Priority)	
Responsible for approving:	Dean, University Marketing and Communications and Office of the Registrar (Undergraduate Recruitment)
Responsible for resources:	Provost/VP, Academic
Responsible for implementation:	Dean and Department Chair
Timeline:	Dean to report by December, 2012.

Responsible for approving:	Dean, University Marketing and Communications and Office of the Registrar (Undergraduate Recruitment)
Responsible for resources:	Provost/VP, Academic
Responsible for implementation:	Dean and Department Chair
Timeline:	Dean to report by December, 2012.

8. Create an Awards Committee in the Department charged with identification of award opportunities and coordination of nominations for students and faculty to Department, Faculty, University and external awards.

As Dean Cheel reports:

The department has not responded to this recommendation but the Office of the Dean will consider this suggestion when the opportunities for such awards arise. In the mean time we will encourage the department to nominate students, faculty and staff for internal and external awards.

ARC considers that this recommendation does not appear to have been accepted.

Although a suggestion concerning a specific mechanism is suggested to the Department, the Committee sees the issue as one which is more appropriately addressed at the Faculty level.

Implementation Plan (Second Priority)

Responsible for approving:	All departments and the Faculty
Responsible for resources:	Dean
Responsible for implementation:	Department and Dean
Timeline:	Dean to report by December, 2012.

D. Recommendations to be Implemented

The IQAP requires that ARC “set out and prioritize the recommendations that are selected for implementation.” Using the specific ARC proposals enunciated above, the following priorities are proposed:

First Priority:

Recommendations 3, 4, 5, 6, and 7.

Second Priority

Recommendations 1 and 8.

E. Recommendations that Will Not be Implemented

Recommendation 2.

/pb