

# Executive Summary

Graduate Program in Biomedical  
Engineering  
Cyclical review year 2012-  
2013

Approved by  
the  
Ottawa-Carleton Committee on Graduate Quality Assurance  
(OCCGQA) Carleton University Committee on Quality Assurance  
(CUCQA) University of Ottawa Graduate Program Evaluation  
Committee (GPEC)

|                                 |  |
|---------------------------------|--|
| <b>Name of Program Reviewed</b> | Biomedical Engineering   |
| <b>Degrees</b>                  | Maîtrise en sciences appliquées en génie biomédical (M.Sc.A.) /<br>Master of Applied Science in Biomedical Engineering (MASc)  |
| <b>Type of Program</b>          | Ottawa-Carleton Joint Program  |
| <b>Fields</b>                   | There are four fields in the program: <ul style="list-style-type: none"><li>• Medical Instrumentation</li><li>• Biomedical image processing</li><li>• Biomechanics and biomaterials</li><li>• Medical informatics and telemedicine</li></ul> |
| <b>Final Evaluation</b>         | Good quality program with report (Report due July 2016)  |
| <b>Program Start Date</b>       | 2006   |

## Significant Strengths of the Program

The MASc program of the OCIBME is judged by the OCCGQA Evaluation Committee as being of “good quality with report”. The overall assessment of the MASc program is positive. The uniqueness of the interdisciplinary program is noted along with the diverse opportunities it offers to students from both institutions in the shared program.

Program strengths include the existence of well-equipped, state-of-the-art labs for biomedical engineering researchers and students. The program offers students diverse experiential learning opportunities in institutions, hospitals, and industry. These strengths contribute to an increase in program admissions, also attributed to the well-qualified, research-intensive, and professionally active members of the biomedical engineering faculty from both institutions, who are from a wide range of disciplines, including physics, biology, chemistry, and mechanical and aerospace engineering.

## Areas for Improvement and Enhancement

Program weaknesses include the lack of introductory or qualifying courses (designated as prerequisites) within the program to ensure that non-engineering students receive enough training to

be recognized as biomedical engineers.

While the stated goal of the program is to foster professional skills development, further interaction between researchers and students is needed. Student feedback reveals that research training and career orientation within the program is insufficient.

The interdisciplinary program lacks sufficient physical space for its students, and does not have a central administrative office.

The number of identified program faculty members from the two institutions is impressive, but the program is unable to substantiate a complete response from all members and lacks a mechanism to ensure faculty participation in the program, e.g., course offerings and graduate supervision. Moreover, the pending and planned retirements of currently active members raise concerns with regard to the continuing participation of a critical mass of faculty members active in the fields of biomedical engineering.

Finally, coordination and communication of administrative functions among participating academic departments needs improvement, e.g., with respect to the inaccessibility of courses registration lists between the institutional members.

## **Recommendations**

It is recommended that the OCIBME:

1. Clarify its position on admission guidelines for non-engineering students and, as necessary, address the need to teach basic engineering skills to non-engineering students to grant them status as biomedical engineers.
2. Provide a clear plan for faculty retirements including commitments to replace retiring members with new positions in the designated fields of biomedical engineering.
3. Endeavor to find additional physical space for its students, enhanced program counseling and support to students, and improved communications between the member institutions.
4. Improve student preparation for professional activities and career possibilities through increased opportunities for cooperative and experiential learning, and through by tracking the professional experiences of students by developing an ongoing exit survey of graduates.
5. Enhance the operation and administration of the program by developing a new program website, by providing common, coordinated, and centralized administrative support for the MASc program with emphasis on sharing registration information, and by establishing a students' program advisory committee.
6. Examine the teaching relief status of both the Director and the Associate Director so that both institutional leaders may receive equal relief in order to facilitate and enhance student contact.
7. Develop a membership renewal process to facilitate tracking faculty involvement in the program.
8. Develop closer collaboration with the Faculty of Medicine of the University of Ottawa.
9. Consider the extension of extending the MASc to include new programs such as a professional (non-thesis) MEng, and a new PhD program in biomedical engineering.

## **Implementation Plan**

### **Calendar and Deadlines**

A report addressing recommendations 1 and 2 should be submitted by July 1, 2016. The remaining

recommendations should be addressed before the next cyclical evaluation scheduled for July 1, 2020.

**Authorities**

The Director of the OCIBME will be responsible for implementing these recommendations with the assistance of the Associate Director of the OCIBME. Together, they will oversee the application and implementation of the recommendations in their respective institutions.