



FINAL ASSESSMENT REPORT

Executive Summary

March 2017

Master of Science and Doctor of Philosophy in Applied Bioscience

Program Review

Dean: Dr. Greg Crawford

Dean of Graduate Studies: Dr. Langis Roy

Under UOIT's Quality Assurance Framework, all degree programs are subject to a comprehensive review every eight years to ensure that they continue to meet provincial quality assurance requirements and to support their ongoing rigour and coherence.

On the completion of the program review, the self-study brief together with the reviewers' report and the assessment team's response are reviewed by the appropriate standing committee of Academic Council, and are subsequently reported to Academic Council, the Board of Governors and the Quality Council.

In 2015-2016 a program review was scheduled for the Master of Science and Doctor of Philosophy in Applied Bioscience program.

This is the first program review for this program and the internal assessment team is to be commended for undertaking this assignment in addition to an already challenging workload and within very tight deadlines. The following pages provide a summary of the outcomes and action plans resulting from the review, identifying the strengths of the program as well as the opportunities for program improvement and enhancement. A report from the program outlining the progress that has been made implementing the recommendations will also be put forward in eighteen months' time.

External Reviewers: Dr. Mike Bidochka (Brock University), Dr. Heather Carnahan (Memorial University of Newfoundland), Dr. Marc Lucotte (Université du Québec à Montréal)

Site Visit: May 17-18, 2016

The Applied Bioscience MSc and PhD graduate programs are built on a solid foundation of high-quality instruction and research that is highly relevant to the needs of society, capitalizing on both the interdisciplinary and multidisciplinary nature of both the Faculty of Science and the Faculty of Health Sciences to offer students unique opportunities in their field of study. The interdisciplinary focus of the Applied Bioscience program enhances the learning environment of APBS graduate students who come from various academic backgrounds and disciplines. Students from these varied backgrounds can easily work closely with one another as most of the research labs are in close proximity within the Science Building.

Significant Strengths of the Program

- Excellent fundamental research taking place
- Unique opportunity to address research questions from an interdisciplinary perspective
- Fertile environment for innovative and creative research collaborations and exceptional educational opportunities
- Team of very dedicated faculty members at the forefront of their research fields, dedicated to the mentorship and success of their graduate students
- Small size of the program promotes communication between faculty, supervisors, and peers
- Graduates are succeeding while in the program and after graduation

Opportunities for Program Improvement and Enhancement

- Recruitment is a challenge due to current lack of national and international reputation, and funding constraints; funding is particularly important for international student recruitment
- Student funding and financial concerns negatively impact the physical and mental health of the students and ultimately their research productivity
- The interdisciplinary and multidisciplinary nature of the program represents a unique challenge
- Current fields do not accurately encompass the research of all Applied Bioscience core graduate faculty
- The diversity of research interests in the program makes it difficult for some students to connect with graduate students outside of their own labs
- There are no trained technicians dedicated to the Applied Bioscience program to teach students how to use equipment

The External Review

The external reviewers met with senior leaders, as well as the Chair of the Internal Assessment Team and Graduate Program Director, and staff members from the Faculty and the Office of Graduate Studies. In addition, meetings were held with faculty members and graduate students. A guided facility/lab tour was provided and the reviewers visited graduate student offices and several research labs. The external reviewers recognized the excellence of APBS faculty and facilities and were impressed with the quality and achievements of the graduate program in the short time since its inception. Overall, the review process was a positive one and the reviewers had useful suggestions for improvement of the Applied Bioscience graduate program.

Summary of Reviewer Recommendations and Faculty Responses

Recommendation

Improve the interdisciplinary aspects of the M.Sc. and Ph.D. programs in Applied Bioscience by introducing comprehensive exam, altering the content of the APBS6010 course to require students to address interdisciplinary issues related to their research, and merging the four special topics courses into a single team-taught course.

Response

The four special topics courses are already one course which is the required seminar course but with four separate course codes (7100G Special Topics in Biomolecular Science; 7200G Special Topics in Ecosystem Health; 7300G Special Topics in Forensic Bioscience; 7400G Special Topics in Human Health Biology). It would make sense to have a single course code for the seminar, as it will help to unify the

APBS students. The program does not see that the seminar course needs to be team-taught. This course is currently managed by a single APBS faculty member and should continue as such.

The current model for the PhD Qualifying exam in APBS consists of a written proposal submitted by the candidate, followed by a comprehensive examination portion, which tests the depth and breadth of the candidate's knowledge. There is currently no explicit emphasis on interdisciplinary issues and at this time the structure of the examination will not be changed since the faculty will be emphasizing the multidisciplinary strengths within the APBS program. The APBS faculty, however, will continue to discuss ways in which the Qualifying exam structure can be improved, given the diverse nature of the program.

Recommendation

Require students to highlight the applied aspects of their research in the APBS6010 course

Response

The APBS 6010G course does not involve the students' own research; as such the reviewers are likely referring to the seminar course, as students present their own work in this venue. The applied aspects of the students' own work could be easily incorporated into the seminar course by requiring students to highlight interdisciplinary aspects of their research as they present their seminar and by faculty asking questions regarding the interdisciplinary potential of the work during the question period.

Recommendation

Provide a budget to the GPD to support outstanding international students, bring in external speakers, and provide seed funding for interdisciplinary research projects.

Response

We certainly recognize that such a budget would be valuable for fostering more collaborative, interdisciplinary research within APBS. Under the current financial conditions this is unlikely to happen soon, although the faculty will continue to look for opportunities to enhance student support, visiting researchers, and seed money.

Recommendation

Improve the funding situation for graduate students (increase stipends, change rate of teaching assistant pay for M.Sc. to Ph.D. transfer students, and provide flexibility in tuition deadlines at end of program).

Response

Funding is usually provided through a combination of research grants/contracts, TAships and internal/external scholarships. TA funding is subject to a collective agreement and is negotiated with the union. APBS faculty already fund students at a higher rate than the minimum required by Graduate Studies; the current grant funding levels are not conducive to the faculty providing increased stipends. The institution is actively working to increase external support for graduate and undergraduate scholarships.

The APBS faculty are working toward introducing a defined program length that will allow students to enrol in part time studies (for example, after wet-lab work has been completed). This will help alleviate the financial burden of students toward the end of their degree.

Recommendation

Develop a communications plan that includes updating the website to facilitate recruitment, and

improving communication with students and faculty.

Response

The APBS faculty agree and plan to meet as a unit at least once per year to discuss the graduate program.

Recommendation

Provide workload credit for teaching in graduate courses.

Response

To our knowledge, this already occurs.

Recommendation

Add two new fields and reformat the previous four fields so they do not become silos in the M.Sc. and Ph.D. programs in Applied Bioscience, but instead can be used for recruitment.

Response

The external reviewers were concerned that graduate students see themselves primarily within the narrow confines of their particular specialization, rather than as APBS graduate students. As the graduate culture within APBS is still relatively young and the program itself still has relatively small numbers, this will take time to gel. Improvements such as renaming the seminar course so that it has a single course number and the addition of more interdisciplinary facets to both the seminar and APBS 6010G will be a critical first step in making the APBS a more cohesive group.

The dean and APBS faculty will review the recommendations for additional specializations, including resource implications, over the coming year.

Recommendation

Provide support for technical support in research labs.

Response

Additional technical support would free up faculty to be more productive in writing grant proposals, conducting research, supervising students and publishing their work, however in light of fiscal constraints this is unlikely to occur in the near future.

Recommendation

Hiring decisions for new Applied Bioscience faculty members should involve a recommendation from current Applied Bioscience faculty members.

Response

Positions are usually allocated to a Faculty and may have teaching obligations in both a graduate and undergraduate program. For example, the Faculty of Science may look for a professor to teach in undergraduate Chemistry as well as a discipline related to Applied Biosciences. We would expect to seek feedback from the Applied Bioscience faculty on the field(s) of expertise to search for, as well as feedback on presentations by candidates for a position.

Plan of Action

The table below presents a timeline of the actions planned to address the recommendations from the external report.

Proposed Action	Timeline	Person/Area Responsible
Reframe APBS as cohesive, interdisciplinary program: (1) Consolidate the four Special Topics courses (APBS 7100G, 7200G, 7300G & 7400G) in addition to APBS 7050G into one course number and change the course name to "Applied Bioscience Seminar Series"	For input into the 2018 calendar	GPD, APBS faculty
Reframe APBS as cohesive, interdisciplinary program: (2) Add interdisciplinary/multidisciplinary component into APBS 6010G	Completed Fall 2016	GPD, APBS 6010G instructor
Assess the value and cost of adding additional specializations	Complete assessment, with recommendations, by Spring 2018	GPD, Dean(s), APBS faculty
Development of a APBS communication plan	Spring 2018	GPD, APBS faculty, Faculty of Science Web committee
Establish annual APBS retreat to foster interdisciplinary discussions	Spring 2017	GPD will organize meetings on an annual basis, starting Spring 2017
Establish criteria to allow students to switch to part time studies	Spring 2018	GPD, APBS faculty

Due Date for 18-Month Follow-up on Plan of Action: January 2018

Date of Next Cyclical Review: 2023-24