

Final Assessment Report for the 2017-2018 Cyclical Program Review of Biology

INTRODUCTION

In accordance with Laurier's Institutional Quality Assurance Procedures ([Policy 2.1](#)), this Final Assessment Report provides a summary of the review process for the Department of Biology prepared by the Quality Assurance Office, along with an identification of strengths of the program(s) under review authored by the Dean of the Faculty of Science and the Dean of the Faculty of Graduate and Postdoctoral Studies. All recommendations made by the external review committee are listed in order, followed by a summary of the Department's response, and the Deans' responses. As applicable, decanal responses have been identified as coming from the Dean of the Faculty of Science (FOS), or the Dean of the Faculty of Graduate and Postdoctoral Studies (FGPS). Recommendations not approved for implementation have been identified, and those that have been prioritized are listed in the Implementation Plan.

The Final Assessment Report is reviewed and approved by the Associate Vice-President: Teaching and Learning and the Vice-President: Academic. Following completion of the Final Assessment Report, it is approved by the Program Review Sub-Committee and Senate Academic Planning Committee. Approval dates are listed at the end of this report. Final Assessment Reports are submitted to Senate as part of an annual report on cyclical reviews, and to the Ontario Universities Council on Quality Assurance for information. Final Assessment Reports and Implementation Reports are posted on the public-facing page of the [Quality Assurance Office](#) website.

The Implementation Plan for the recommendations prioritized in the Final Assessment Report can be found at the end of this report. Units will submit their first Implementation Report two years following approval of the Final Assessment Report at Senate. The Implementation Report will include comments from the unit on actions taken toward the completion of recommendations, comments from the relevant Dean(s) related to the progress made, and comments from the Program Review Sub-Committee, which is responsible for approving the Implementation Report and deciding if further reports are required. The Senate Academic Planning Committee will also approve the Implementation Report.

SUMMARY OF REVIEW PROCESS

The Department of Biology's last cyclical review took place in 2011-2012. The programs being reviewed were:

- Honours BSc Biology
- Honours BSc Biology and Chemistry
- Honours BSc Biology and Mathematics
- Honours BSc Biology and Psychology
- Honours BSc Environmental Science
- Honours BA Biology
- Honours BA Biology in Combination
- MSc in Integrative Biology

The Self-Study process was collaborative and led by the Department Chair, with contributions and feedback from department faculty. In addition to the Self-Study (Volume I), the Department also submitted a copy of full-time faculty curricula vita (Volume II), a volume of course syllabi, and a list of proposed external reviewers (Volume III). A draft of the Self-Study was reviewed by the Quality Assurance Office, Dean of Science and Dean of the Faculty of Graduate and Postdoctoral Studies prior to submission of the final version.

As per Laurier's IQAP, the external review committee for the review consisted of two external reviewers from outside the university, and one internal reviewer from Laurier but outside of the department. The review committee was selected by the Program Review Sub-Committee on October 19, 2017, and the site visit was scheduled by the Quality Assurance Office for March 5-6, 2018.

The review committee consisted of Dr. Chris Alksnis from the Department of Psychology at Wilfrid Laurier, Dr. Christian Lacroix from the Department of Biology at the University of Prince Edward Island, and Dr. Frances Pick from the Department of Biology at the University of Ottawa. During the two-day site visit, the review committee met with the following individuals and groups:

- Dr. Pam Bryden, Acting Dean of Science
- Dr. Douglas Deutschman, Dean: Faculty of Graduate and Postdoctoral Studies
- Dr. Scott Ramsay, Chair: Department of Biology
- Library Representatives: Ms. Charlotte Innerd, Head of Collections, and Ms. Debbie Chaves, Liaison Librarian
- Dr. Paul Jessop, Acting Vice-President: Academic, and Dr. Kathryn Carter, Associate Vice-President: Teaching and Learning
- Full-time faculty
- Support staff
- Contract Academic Staff
- Biology undergraduate students
- Dr. Jim McGeer, Undergraduate Advisor
- Dr. Kelly Munkittrick, Executive Director: Cold Regions and Water Initiatives, and Una Glisic, Manager: Research Compliance and Strategic Initiatives
- Biology graduate students
- Dr. Tristan Long, Graduate Officer
- Ms. Melanie Whitwell, Senior Administrative Assistant, and Ms. Tricia Lutz, Administrative Assistant

The review committee submitted their completed report on April 4, 2018. The executive summary from the report is provided below.

External Reviewers' Report Executive Summary

The department of Biology at WLU houses a vibrant suite of unique programs and is by all accounts operating successfully at existing enrolment levels and with the resources currently in place. Any further growth must be planned and mitigated to avoid increasing workload or exceeding available physical infrastructure as this may ultimately affect the quality of graduate and undergraduate programs. The members of the department are actively engaged in research and provide a suitable setting for training graduate and undergraduate student researchers. Similarly, any increased need for resources in this particular aspect of the program should be met with additional support, especially as it pertains to recognizing the efforts of those faculty members who supervise several students.

Following receipt of the External Reviewers' Report, the Department collaborated on a Unit Response, which was submitted on May 7, 2018.

RECOMMENDATIONS AND RESPONSES

The External Reviewers' Report included 21 recommendations, which have been listed verbatim below, followed by a summary of the department's response, and the relevant decanal responses.

Recommendation #1: Establish tools and metrics to assess learning outcomes in BA and BSc programmes.

Unit Response: The department agreed with this recommendation, identified the partnerships necessary in order to implement it, and indicated that the Canadian Council of University Biology Chairs has struck a task force to develop recommendations on learning outcome assessment, which is expected to be available in November 2018.

FOS Decanal Response: Establishing tools and metrics to assess learning outcomes is an important priority for the Department. The unit has already identified key partnerships to help in implementing this recommendation. Following the report from the Canadian Council of University Biology Chairs, the Department will begin to establish the necessary metrics.

Recommendation #2: In light of increasing enrolments in the Biology programmes, the department is encouraged to raise entrance requirements for the Honours BSc and BA.

Unit Response: The department agreed with this recommendation, indicated that for the coming year, the average cut-off had been raised by one percentage point, and stated that further increases to admissions cut-offs would need to be coordinated with the Dean of Science's Office and the Strategic Enrolment Management Committee.

FOS Decanal Response: As a whole, the Faculty of Science has aimed this year to keep target enrolment numbers slightly lower than in the past, allowing the cut-off averages to increase slightly across the board. The Dean of Science Office continues to analyze historical data to make informed decisions about entrance requirements and cut-off grades. Perhaps more important than raising the average cut-off is to limit potentially

the number of repeated courses in the final year of high school. Continued work in the Dean of Science Office will help the Department make informed decisions.

Recommendation #3: In light of the growing success of the graduate programmes in Biology, the department is encouraged to raise minimum entrance requirements for MSc.

Unit Response: The department indicated that the Biology graduate studies committee would be tasked with following up on this recommendation and making suggestions for further action.

FOS Decanal Response: The Department should also consult with the Faculty of Graduate and Postdoctoral Studies in their discussion of this recommendation. In addition, surveying other Ontario University graduate programs and their entrance requirements might be worthwhile. One possible thought is to indicate the average entrance grade over several years to prospective students rather than minimum.

FGPS Decanal Response: It makes sense to evaluate the current criteria with an eye to making entrance requirements more stringent. Care should be exercised since the applicant pool is small and there needs to be strong enough demand. Application numbers in 2018 were modest and somewhat lower than 2017. Any increase in admissions standards should be discussed in a broader context of graduate recruitment and department needs,

Recommendation #4: Improve communication and explanation of concentrations in Biology. This should help as well in the recruitment of students into the Research Specialization (4th year Honours thesis). Currently, the regular faculty members have the capacity to mentor more Honours undergraduate students for independent research in their labs.

Unit Response: The department agrees with recommendation and indicated that during the 2017 – 2018 academic year, substantial effort had been put into promoting awareness of the options and requirements for completion a concentration.

FOS Decanal Response: The Department has already done considerable work on their program concentrations this year. At this point, it will be important to continue to promote awareness and track student movement through the concentrations.

Recommendation #5: Provide laboratory experiences in first year Biology courses. The department appears committed to achieving this goal within two years, at least for Biology students. It may not be feasible to provide lab experiences for non-majors, who would only then follow lectures and tutorials.

Unit Response: The department indicated that it agreed with this recommendation partly, and that work transitioning the current tutorials into labs had already begun. Revisions to the practical component of the first year courses would continue within the constraints of human and financial resources. The department did not think it would serve students well to limit labs only to Biology majors.

FOS Decanal Response: The Department response to this recommendation is appropriate. Limiting laboratory experiences to only Biology majors will not serve the Department well in the long run, given the number of students in other programs who either complete a minor in Biology or switch into the program. The Department is working within the confines of both personnel and financial resources.

Recommendation #6: Provide lists of pertinent electives for BA in Biology, through consultation with other faculties at WLU (notably Arts).

Unit Response: The department disagreed with this recommendation and indicated that it had made changes during the previous year to allow students more flexibility in their elective choice.

FOS Decanal Response: The recommendation goes against the inherent flexibility within the BA Biology program. The recent changes to elective choice for the BA program will make it easier for students to take a range of Arts courses as suits their passions and interest.

Recommendation #7: Explore the feasibility of accreditation for the BSc in Environmental Science (discussed on p. 98 of report). This involves examining whether the current programme courses align with the general requirements of accreditation (contact ECO Canada)

Unit Response: The department indicated that it would like to allow the BSc in Environmental Science a bit more time to mature before changes are made, and that a version of the program that met accreditation requirements could be considered for the Milton campus.

FOS Decanal Response: With the Milton campus now a reality, the recommendation for accreditation for the BSc in Environmental Science makes the most sense for the suite of program offerings being consider for the Milton campus. Indeed, the Milton campus location and partnerships already established in town make accreditation a very appealing option for Environmental Sciences. The Department has a member on the current Milton Curriculum Subcommittee and such representation will be important in the next couple of years.

Recommendation #8: Improve offerings in molecular biology through new or revised laboratory (including computer labs for bioinformatics) and theory courses. This would likely require the hiring of a faculty member in this area and is in line with the assessment by the department of their needs in terms of faculty member(s) (p.102). A regular faculty member is desirable as someone actively engaged in research is more likely to stay on top of the rapid advances, both theoretical and technological.

Unit Response: The department agreed with this recommendation and indicated that it had been included in their strategic plan, indicating that implementation would require planning around faculty expertise, curriculum changes, and space.

FOS Decanal Response: The Department has made the need for expansion within the molecular biology area a clear area of priority. The Dean of Science Office is aware of this priority. As the University moves more firmly into RCM budgeting, faculty hiring across the entire Faculty may be considered.

Recommendation #9: As indicated above in recommendation 5, the department should proceed with the implementation of first year practical laboratory sessions for undergraduate students beyond existing tutorials. This will give the department the opportunity to test and apply new assessment methods at an early stage in the students' progression through the Biology degree programs.

Unit Response: The department indicated that their response to this recommendation has been addressed in relation to recommendations #1 and #5.

FOS Decanal Response: This recommendation has been addressed by the Department.

Recommendation #10: The department is encouraged to hold an annual retreat to discuss, review, plan, and implement approaches to assess their students. This will represent a coordinated effort to complement current efforts taking place in individual courses.

Unit Response: The department agreed with this response indicating that it had been annual practice to hold a departmental retreat, which had always proven fruitful, and that they would continue to do so going forward.

FOS Decanal Response: The Department has always prioritized opportunities to engage their members in discussion regarding teaching, curriculum, and strategic planning. They should be congratulated for engaging in such planning retreats as frequently as they currently do.

Recommendation #11: Any projected increase in enrolment or number of course offerings (i.e. first year labs, spring semester) should be evaluated for its impact on existing resources as it will likely require new human and physical resources. Even though students are enthusiastic about the potential expansion of course offerings during the spring semester, the department must ensure that the quality of its program and teaching staff is maintained and needs to achieve balance to avoid straining existing resources.

Unit Response: The department indicated that it recognized that any expansion of course offerings would need to be decided within the context of available resources.

FOS Decanal Response: The Department has maintained a clear view on providing high quality instruction. As the Faculty moves to offering more courses in the Spring semester, the Dean of Science Office is fully aware that this may require additional resources.

Recommendation #12: Research funding stability or sustainability is critical to the maintenance of research opportunities for both undergraduate and graduate students. We encourage the department to seek creative ways (within the parameters of the collective agreement) to recognize graduate level supervision and other professional activities (i.e. editorial board membership, external grant applications) that enhance the reputation of the department and its programs. We recognize that this issue will require more formal discussions at the level of the Faculty and institution.

Unit Response: The department supports this recommendation, but indicated that completing it was outside their purview and would involve faculty-wide initiatives.

FOS Decanal Response: The recommendation falls within the boundaries of the collective agreement.

FGPS Decanal Response: Research funding is an important aspect of graduate student training and support. Efforts to incentivize / reward exceptional success might be a mechanism to increase overall funding. This idea would have to involve discussions at several levels.

Recommendation #13: Provide more formal teaching relief (of ~ 1 course/year) to faculty members in order to regain or expand research programmes.

Unit Response: The department noted that the achievement of this recommendation is closely tied to recommendation #12.

FOS Decanal Response: Again, this recommendation falls within the boundaries of the collective agreement.

Recommendation #14: Formally recognize that graduate teaching is a part of faculty teaching and workload.

Unit Response: The department noted that progress toward completion of this recommendation had already been made through select graduate courses, and that further action would be contingent upon decisions related to recommendation #12.

Decanal Response: The Department has moved toward including select graduate courses as part of workload, which is a positive move. Courses with low enrolment, however, should not typically be included in workload. As the Department indicates, this too falls within the boundaries of the collective agreement.

FGPS Decanal Response: As noted above, this is influenced by the collective agreement. Small graduate courses can be wonderful, but they are also costly and a luxury that many departments cannot afford. Decisions about the curriculum (and indirectly class size) need to be made based on the overall needs of the department and/or program.

Recommendation #15: Provide additional faculty resources in molecular biology. This is a critical and expanding area for contemporary biology (including genomics, bioinformatics, epigenetics, synthetic biology, biotechnology). Should the new campus of WLU go forward, additional staff members will also be needed to deliver environmental biology at the undergraduate level and sustain graduate programmes and the momentum of research.

Unit Response: The department reiterated the importance of developing capacity in this area and noted that implementation of this recommendation was contingent upon recommendation #12.

FOS Decanal Response: Budgetary decisions, such as faculty hiring, are the purview of the Dean of Science Office. As the University moves more firmly into RCM budgeting, faculty hiring across the entire Faculty may be considered.

Recommendation #16: Given rates of attrition, efforts need to be made to support students who are struggling, by identifying why, when and where attrition arises and ultimately providing additional assistance through the office of the Dean of Science as well as academic counselling and learning centers.

Unit Response: The department agreed with this recommendation and noted that there are Faculty-level retention initiatives underway that they are happy to participate in.

FOS Decanal Response: The Dean of Science Office is currently engaged in a number of retention initiatives, of which the Department has been a willing participant.

Recommendation #17: The department, in collaboration with the relevant support unit(s) on campus, is encouraged to track alumni satisfaction. This will likely require leadership at the institutional level. The Alumni Association could help in facilitating the gathering of such information for Biology.

Unit Response: The department agreed with this recommendation (and #18 below), but believes that leadership in soliciting feedback from Biology alumni should come from Alumni Relations, rather than be the responsibility of the department.

FOS Decanal Response: Alumni feedback and alumni satisfaction surveys are important pieces of information that should be tracked annually. It would be advantageous to work with our Alumni Relations Officer to develop such questions that could be asked annually of our graduate students and alumni.

Recommendation #18: As in Recommendation 17 above, alumni satisfaction should be tracked. This will require institutional involvement. The Alumni Association could perhaps help in facilitating the gathering of such information for Biology.

Unit Response: See response to recommendation #17.

FOS Decanal Response: See response to recommendation #17.

Recommendation #19: Options for graduate level courses beyond campus should be sought, promoted, and integrated as seamlessly as possible (for students) into the fabric of the graduate programs.

Unit Response: The department is in partial agreement with this recommendation but believes that the current options for students to take options from other institutions are working and are aligned with related goals for the MSc program.

FOS Decanal Response: Graduate courses at other institutions (other than the University of Waterloo) are subjected to a \$1,100 fee, shared between the Department and the Faculty of Science. As the current options at Laurier and the University of Waterloo appear to be working well for the Department, it does not appear efficient to go beyond campus for graduate courses more than is already the norm.

FGPS Decanal Response: FGPS agrees with the department and dean of sciences. Access to courses at institutions other than Waterloo present larger logistical and financial problems for students and the departments. This should only be encouraged as a regular practice if there are significant gaps in the graduate curriculum. This positive review provides evidence that Laurier is meeting the needs of its graduate students.

Recommendation #20: Program pathway checklists, currently available as paper copies, are excellent means for undergraduate students to track their progress and plan their course selection. These forms should be distributed widely to students at an early stage in their career and made readily available electronically.

Unit Response: The department noted that there is a student-focused service ready to launch (MyDegree) that will fulfill the intention of this recommendation.

FOS Decanal Response: MyDegree will fulfill the intention of this recommendation.

Recommendation #21: The department should produce a regular newsletter / bulletin to inform students about ongoing activities in the unit and broadly promote existing social media feeds (i.e. departmental Twitter account and <https://storify.com/thelonglab/seminar-posters-for-laurierbiology>) to further develop a sense of community among students, staff, and faculty.

Unit Response: The department does not believe that this recommendation is a priority and noted that several mechanisms for information dissemination amongst its various constituent groups already exist.

FOS Decanal Response: As noted, there are other alternatives within the Faculty for distributing this information. As the Department and faculty become more familiar with our new websites, there may also be ways of posting information on the current student website.

STRENGTHS OF THE PROGRAM(S)

The Department of Biology offers a number of excellent programs at both the undergraduate and graduate levels. While there have been recent increases in the undergraduate enrolment in the Faculty of Science, the Department has effectively and efficiently handled these additional demands. Members of the Department are actively involved and productive in research, providing a rich and engaging experience for their undergraduate and graduate students.

OPPORTUNITIES FOR IMPROVEMENT AND ENHANCEMENT

Currently one of the greatest opportunities for enhancement is the expansion of Science to the Milton campus. The BSc in Environmental Science is one of the degrees currently being discussed as an initial program at Milton, given the location and linkages that can be leveraged. The Department will play a key role in deciding how Environmental Science will take shape in Milton.

SIGNATURES

Dr. Pam Bryden May 30, 2018



Dr. Douglas Deutschman May 30, 2018



Dr. Kathryn Carter June 26, 2018



Dr. Paul Jessop June 27, 2018



Approved by Program Review Sub-Committee: September 13, 2018

Approved by Senate Academic Planning Committee: October 4, 2018

Submitted to Senate (for information): May 22, 2019

Implementation Report Due Date: May 22, 2021

RECOMMENDATIONS PRIORITIZED FOR IMPLEMENTATION AND ACTION PLAN

Recommendation to be Implemented	Responsibility for Implementation	Anticipated Completion Date	Responsibility for Resourcing (if applicable)	Additional Notes
Recommendation #1: Establish tools and metrics to assess learning outcomes in BA and BSc programmes.	Department	May 2020		
Recommendation #2: In light of increasing enrolments in the Biology programmes, the department is encouraged to raise entrance requirements for the Honours BSc and BA.	Department of Dean of Science Office	May 2019		Department should continue to work alongside the Dean of Science Office in examining entrance requirements for the program, including minimum cut offs.
Recommendation #3: In light of the growing success of the graduate programmes in Biology, the department is encouraged to raise minimum entrance requirements for MSc.	Department, Dean of Graduate and Postdoctoral Studies	May 2019		Examine past GPAs for entering students to determine if any changes are warranted.
Recommendation #7: Explore the feasibility of accreditation for the BSc in Environmental Science (discussed on p. 98 of report). This involves examining whether the current programme courses align with the general requirements of accreditation (contact ECO Canada)	Department, Dean of Science, Milton subcommittee	May 2020	Milton	Work with various units on campus to accredit the BSc in Environmental Science at the Milton campus

<p>Recommendation #17 and #18: The department, in collaboration with the relevant support unit(s) on campus, is encouraged to track alumni satisfaction</p>	<p>Department, Dean of Science Office</p>	<p>May 2019</p>	<p>Faculty of Science</p>	<p>Work with Alumni Relations Officer on creation of alumni satisfaction survey for FoS</p>
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