

***SUBMITTED TO OUCQA FOR INFORMATION – August 1, 2024***

***APPROVED BY TRENT UNIVERSITY’S SENATE COMMITTEE – December 5, 2023***

# Final Assessment Report & Implementation Plan – Executive Summary – MSc Environmental and Life Sciences and PhD Environmental and Life Sciences

# Completed by the Cyclical Program Review Committee (CPRC)

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| **Degree Programs Being Reviewed** | MSc Environmental and Life Sciences  PhD Environmental and Life Sciences |
| **External Reviewers** | Dr. Jim Staples, University of Western Ontario  Dr. Steve Lougheed, Queen’s University |
| **Internal Representative** | Dr. David Firang, Department of Social Work, Trent University |
| **Year of Review** | 2022-2023 |
| **Date of Site Visit** | March 9-10, 2023 |
| **Due Date for Implementation Report from the Program** | Dec 1, 2024 |
| **Date Prepared by CPRC** | Nov 1, 2023 |
| **Date Approved by Provost & VP Academic** | Nov 16, 2023 |
| **Signature of Provost & VP Academic** |  |

The ENLS Graduate Programs are interdisciplinary programs that focus on research and advanced student training with an emphasis on the rigorous development of new knowledge using advanced scientific approaches and instruments. ENLS students, graduates, and faculty use this new knowledge and training to address environmental issues growing in importance (e.g., water quality, sustainability, infectious diseases, and the conservation of biodiversity).

The Environmental & Life Sciences (ENLS) Program is one of the oldest environment-focused graduate programs in Canada and one of the first graduate programs established at Trent University. The ENLS Graduate Program encompasses six (6) fields of study: Physical Geography, Trace Contaminant Toxicology and Chemistry, Ecosystem Biogeochemistry, Stress Physiology, Cell Biology and Genetics, and Ecology and Conservation Biology. Masters’ students are required to take the equivalent of 2 half-courses (including 1 core course - ENLS 5000H Research Foundations) and submit a thesis. Ph.D. students are required to take the equivalent of 1 half-course and submit a thesis based on original research.

ENLS is among the largest and most research-productive programs at Trent (e.g., as stated in Self-Study - in 2021 their students contributed to 158 research papers, representing 40% of all Trent publications listed on the Web of Science for that year). The ENLS Graduate Program faculty is drawn from Biology, Geography, Chemistry, and Environmental Sciences as well as other programs within the Trent School of the Environment. Faculty are award-winning professors and globally-recognized leaders in their fields of expertise. In addition, ENLS is home to government research scientists appointed as adjunct faculty - including the large complement of Trent-based researchers working for the Ontario Ministry of Northern Development, Mines, Natural Resources, the Ontario Ministry of the Environment, and Forestry. As the external reviewers note, by incorporating an excellent group of adjuncts, ENLS attracts strong students by offering opportunities for collaboration, internships, and diverse hands-on training.

**Overview**

During the 2022-2023 academic year, MSc Environmental and Life Sciences, and PhD Environmental and Life Sciences underwent a review. Two arm’s-length external reviewers (Dr. Jim Staples, University of Western Ontario and Dr. Steve Lougheed, Queen’s University) and one internal representative (Dr. David Firang, Department of Social Work, Trent University) were invited to review the self-study documentation. The site-visit took place at the Peterborough campus on Mar 9-10, 2023.

This Final Assessment Report (FAR), in accordance with Trent University’s Institutional Quality Assurance Policy (IQAP), provides a synthesis of the cyclical review of the graduate degree programs. The report considers four evaluation documents: the Program’s Self-Study, the External Reviewers’ Report, the Program Response, and the Decanal Response.

A summary of the review process is as follows: the academic unit completed a self-study that addressed all components of the evaluation criteria as outlined in Trent’s IQAP. Appendices included: Curriculum Vitae, Course Syllabi, Data Tables, Student and Alumni Surveys and a Library Statement of Support. Qualified external reviewers were invited to conduct a review of the programs that involved a review of all relevant documentation (self-study, appendices, and IQAP policy) and participation in a virtual visit. During the virtual site visit, reviewers met with senior administration, faculty, students, and staff.

The External Reviewers’ Report identified eight (8) recommendations. Ideally, recommendations will focus on a culture of ongoing and continuous improvement and prioritizing student-centred learning and experiences.

Following receipt of the External Reviewers’ Report, the Program and Dean provided responses to the Report. Based on the four review documents, the Cyclical Program Review Committee (CPRC) then reviewed and assessed the quality of the degree programs and reported on significant program strengths, opportunities for improvement and enhancement, and the implementation of recommendations.

The Implementation Plan identifies eight (8) recommendations for implementation and specifies the proposed follow-up and the person(s) responsible for leading the follow-up. The Academic Unit, in consultation with their Dean, will submit an Implementation Report in response to the recommendations identified for follow-up. The Report is due December 1, 2024.

**Significant Program Strengths**

**Continuous Improvement**

ENLS continually modifies its regulations, curriculum, learning environment, and course content with the aim of improving the quality of its teaching, training, and student experiences. As new approaches and technologies emerge, ENLS continues to build course options that address new opportunities.

The Programs have moved in lockstep with new technology changes – their two data analysis courses (ENLS 5001H Research design and data analysis and ENLS 5015H-AMOD 5240H: Statistical aspects of modelling) now both exclusively involve the use of coding-based approaches for data management, analysis, and visualization. To support these coding-based approaches, ENLS has also offered annual coding workshops aimed at improving data skills; furthermore, ENLS has introduced new courses that provide the skills to implement technological advances (ENLS – FRSC 5800H Bioinformatics) and long-standing courses are regularly updated to train students to use the latest technology in their field (ENLS 5088H/ICAN 5001H: Mass spectrometry).

**Interdisciplinarity**

The reviewers highlighted the strong interdisciplinarity of the program drawing from faculty expertise across disciplines within the University. As the external reviewers said, “The key strength of the ENLS graduate program (both MSc and PhD) is its interdisciplinarity, which allows students to access an unrivalled variety of expertise and specialized infrastructure”.

**Experiential Learning Opportunities & High-Impact Practices**

The Programs are built around enquiry-based experiential learning. Students work one-on-one with one or more ENLS faculty to develop and execute a research project. The core experience for ENLS students involves sustained high-impact practices that take students all the way from project conceptualization through the various stages of implementation to its communication at the end of the program. These practices include in-lab and in-field experiences, research collaborations with other students and supervisors, hands-on instrumentation training, culminating in the production of a graduate thesis. All students are guaranteed employment as a GTA, which provides them with valuable transferrable skills including communicating and working with people from different backgrounds and differing levels of ability. High-impact practices – in which students are immersed in nearly every aspect of the scientific endeavour – are hallmarks of the student experience within the ENLS Program.

**Partnerships and Relationships**

An important feature of the programs is the inclusion of adjuncts from the Ontario Ministry of Natural Resources and Forestry (MNRF) as supervisors and active participants, which provides students a unique perspective on potential careers after graduating – but also allows students to participate in science that could result in policy changes by the government. This is achieved through strong partnerships and collaborations with external communities, professions, and other institutions, as well as within our colleges, departments, and programs.

**Equity, Diversity, and Inclusion**

ENLS works to remove barriers to participation in research by advocating for increased support for international students, higher stipends for all students (domestic and international), students experiencing some form of difficulty (e.g., financial, mental health, unexpected leaves of absence), and by facilitating changes in supervision when student-supervisor conflicts emerge. The Program routinely advocates for changes in program procedures that might further reduce barriers to inclusion. The number of faculty members who directly engage with Indigenous communities through research has also increased in recent years. The external reviewers highlighted the strong Indigenous Studies programs at Trent.

**Faculty**

ENLS faculty are highly productive researchers with access to state-of-the art facilities and are highly successful in terms of grant support. As stated in the self-study, the regular ENLS faculty held 88% TriCouncil funding as of 2022. Of note, most of the NSERC Discovery Grant awardees at Trent are ENLS faculty. This speaks to a strong commitment by faculty to graduate student-driven research.

**Opportunities for Program Improvement and Enhancement**

**Interdisciplinarity**

While the interdisciplinarityof the program is to be commended, it also, ironically, leads to some of the challenges within the program. The reviewers noted that the disciplinary breadth leaves some faculty and students feeling orphaned within the program and working in silos. Faculty colleagues need to reflect on the importance of interdisciplinary research opportunities and what is needed to support and promote interdisciplinarity.

**Recruitment and Student Funding**

Two of the key issues the Programs face is recruitment and student funding, which is highlighted in the Reviewers’ Report. The Programs are going through somewhat of a transition period with respect to faculty renewal and agree that this provides an opportunity to re-evaluate their fields of study, potentially rebranding some of these so that they fully capture the research foci of existing faculty.

**Equity, Diversity, and Inclusion**

The Reviewers recommended that the programs can improve equity, diversity, and inclusion by creating more common spaces where students and faculty can meet to exchange ideas and better understand the diversity within ENLS; in addition, this would give more opportunities for social and academic interactions which would be beneficial for student mental health post-covid. ENLS has a role in facilitating a shift towards greater participation by under-represented groups by removing barriers to student training and promoting the success of their students. While the number of faculty members who directly engage with Indigenous communities through research has increased in recent years, it is not clear if such engagement has translated directly into systemic incorporation of Indigenous perspectives into the ENLS curriculum.

**Implementation Plan**

The Implementation Plan identifies those recommendations that require action by the academic unit. The Chair or Director, with members of the academic unit, will be responsible for leading the follow-up in consultation, and where appropriate, with Dean(s) and other university departments.

The Academic Unit will report on actions taken and the status of each recommendation by the due date provided. The (Associate) Dean will be responsible for reviewing the Implementation Report and submitting the final report to the Office of the Provost.

**DUE DATE FOR IMPLEMENTATION REPORT: Dec 1, 2024**

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| **Recommendation** | **Proposed Follow-Up**  If no follow-up is recommended, indicate ‘No follow-up report is required’ and provide rationale | **Specific Timeline**  Indicate specific timeline for addressing or completing recommendation | **Position Responsible for Leading Follow-up** |
| **Recommendation 1**  That the Program reduce international PhD tuition to domestic rates. | No follow-up is required.  This falls beyond the scope of this review; tuition rates are set by the Board. Recently, the value of international graduate scholarship were increased. |  |  |
| **Recommendation 2**  That the Program augment stipends for both MSc and PhD students to reflect a reasonable cost of living in Peterborough, and index it to inflation. | No follow-up is required.  As above, Graduate Student funding is approved by the Board. Funding is provided as a GTA; determined by the CUPE 2 Collective Agreement. |  |  |
| **Recommendation 3**  That the Program reinstate disciplinary streams/specializations with more current, relevant names. | Programs should explore the idea of updating the stream names as a recruitment tool.  The Implementation Report will provide an update on field/stream names. | April 2024 | ENLS Director |
| **Recommendation 4**  That the Program establish a formal process between ENLS leadership and department chairs to ensure long-term planning for both graduate and undergraduate teaching. | Programs should consult with department Chairs during staffing plan time. In addition, a review of these processes will be undertaken as part of the TUFA CA.  The Implementation Report will provide an update on the staffing process. | Ongoing | ENLS Director with Associate Dean/Dean Graduate Studies |
| **Recommendation 5**  That the Program establish a formal process between ENLS leadership and departments regarding faculty hires that could impact the ENLS program. | No follow-up is required.  Hiring requests are included in Annual Department Staffing plans for consideration by Deans, and is part of the annual budget process. |  |  |
| **Recommendation 6**  That the Program invite students to establish an ENLS student society (with representatives from each stream/specialization). | The program should explore with students the interest in starting an ENLS student society. A Student Group would enhance social activities for students and allow students to share concerns.  The Implement Report will provide an update. | Sept 2024 (Society to be formed) | ENLS Director |
| **Recommendation 7**  That the Program enhance the sense of community by creating more common spaces where students and faculty can meet to exchange ideas and better understand the diversity within ENLS. | No follow-up is required.  Although we recognize the benefit of shared space, this does not currently affect the direct quality of the program.  The Dean notes that this is a high priority for graduate studies and they will continue to explore options. The Program with the student group is encouraged to liaise with the Colleges to see if there are spaces that can be booked. |  |  |
| **Recommendation 8**  That the Program Promote EDI in the recruitment and application process by collecting applicant and student information where possible to identify underrepresented groups and by redacting any information on application forms that may trigger unconscious bias by any ENLS faculty/staff who assess the applicants. | The program should explore ways to implement best practices in EDI in both the admissions process as well as supervisor training.  The Implementation Report will provide an update on any EDI practices/processes implemented. | Sept 2024 | ENLS Director |