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***SUBMITTED TO OUCQA FOR INFORMATION – May 14, 2020***

***APPROVED BY TRENT UNIVERSITY’S SENATE COMMITTEE – May 5, 2020***

# Final Assessment Report & Implementation Plan

# Chemistry BSc

# Biochemistry and Molecular Biology BSc

# Environmental Chemistry BSc

# Completed by the Cyclical Program Review Committee (CPRC)

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| **Degree Programs Being Reviewed** | **BSc Chemistry****BSc Biochemistry and Molecular Biology****BSc Environmental Chemistry** |
| **External Reviewers** | **Dr. Martin Stillman, University of Western Ontario** **Dr. Paul Rowntree, University of Guelph** |
| **Internal Representative** | **Dr. Barry Saville, Forensic Science, Trent University** |
| **Year of Review** | **2019-2020** |
| **Date of Site Visit** | **November 18 & 19, 2019** |
| **Due Date for Implementation Report by the Program** | **October 1, 2022** |
| **Date Prepared by CPRC** | **April 8, 2020** |
| **Date Approved by Provost & VP Academic** | **April 23, 2020** |
| **Signature of Provost & VP Academic** | **A close up of a logo  Description automatically generated** |

Chemistry is the central discipline of science, with interdisciplinary links to all other physical and life science disciplines. The Chemistry Department offers a comprehensive range of courses in the fundamentals of analytical, biochemical, environmental, inorganic, organic, and physical chemistry. Based on this offering of courses, the Department of Chemistry offers a BSc in Chemistry and in collaboration with other academic units, a BSc in Biochemistry & Molecular Biology and a BSc in Environmental Chemistry.

Accredited by the Canadian Society for Chemistry, Trent’s BSc Chemistry introduces students to advanced concepts, learning different analytical instruments used to detect and quantify different kinds of chemicals, how to prepare samples, calibrate and operate various instrumentation, and interpret the results of analyses.

The BSc Environmental Chemistry program provides students with a thorough grounding in fundamental chemical principles and a detailed understanding of environmental issues. Students graduating from the program will have experience with advanced instrumentation and modern analytical techniques and will be prepared to handle challenging environmental problems from a multidisciplinary perspective.

Graduates from the BSc Biochemistry & Molecular Biology program will have a detailed understanding of the processes that control and mediate health, illness, reproduction, growth, and ultimately life itself. Students will have opportunities to work closely with faculty on research related to the study of modern methods in protein chemistry, bioengineering, and molecular biology.

**Summary of Process**

During the 2019-2020 academic year, the BSc Chemistry, BSc Biochemistry & Molecular Biology and BSc Environmental Chemistry programs underwent a review. Two arm’s-length external reviewers (Dr. Martin Stillman, University of Western Ontario and Dr. Paul Rowntree, University of Guelph) and one internal representative (Dr. Barry Saville, Forensic Science, Trent University) were invited to review the self-study documentation. The site visit took place at the Peterborough campus on November 18 and 19, 2020.

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 program that involved a review of all relevant documentation (self-study, appendices, IQAP) in advance of the site visit. A two-day site visit took place where reviewers met with senior administration, faculty, students and staff.

Once the external reviewers’ report was received, both the Program and Dean provided responses to the Report. The Cyclical Program Review Committee (CPRC) reviewed and assessed the quality of the degree program based on the four review documents and reported on significant program strengths, opportunities for improvement and enhancement, and the implementation of recommendations.

The Implementation Plan identifies those recommendations selected for implementation and specifies the proposed follow-up and the person(s) responsible for leading the follow-up. Academic units, in consultation with the respective Dean(s), will submit an Implementation Report in response to the recommendations identified for follow-up. The Report is due October 1, 2022.

**Significant Program Strengths**

* Students gain first-hand experience in chemical research, experience using specialized equipment for modern experimental and theoretical chemistry, including spectrometers and high-performance liquid chromatography equipment.
* Students benefit from a high degree of faculty contact and one-to-one instruction; faculty who have received awards for their teaching and research.
* Students have the unique opportunity to assist faculty in research or develop independent research projects through research project courses or summer employment as a student research assistant, experience that provides a solid foundation for employment or further education through graduate studies and/or professional programs.
* Students acquire a wealth of transferrable skills - using equipment and methods similar to those used in industrial, academic, and government laboratories.

**Opportunities for Program Improvement and Enhancement**

* Consideration should be given to accrediting the BSc programs in Environmental Chemistry and Biochemistry & Molecular Biology. This would be an effective tool to recruit students in programs that would be tested against the National standard.
* Students indicated that online course offerings could be more robust, and the quality of current online course offerings could be improved.
* Consideration should be given to developing co-op and internship opportunities for all of the Chemistry programs. This would provide students with a valuable and competitive advantage.

**Complete List of Recommendations**

**Recommendation 1**

**That Limited Term Appointments have contracts that extend to the known horizon of the staffing need, or the 60-month contractual limit (whichever is shorter).**

**Program Response**

The department supports extending LTA appointments specifically where an existing faculty member contributes to an administrative position.

**Decanal Response**

Departments currently have the opportunity to recommend multi-year LTA appointments of up to 5 years in duration.

**Recommendation 2**

**That renewal of LTA contracts be made earlier to allow them to plan for the next year’s academic cycle, including the supervision of undergraduate projects.**

**Program Response**

The department supports the hiring of LTA contracts and reappointments earlier in the academic year to ensure stability and optimize opportunity for both the department and LTA members.

**Decanal Response**

The Dean agrees that it would be desirable to finalize staffing plans early in the academic year to allow for timely searches of new faculty. The current deadlines are restricted by Trent’s institutional budget process and approval timelines.

**Recommendation 3**

**That additional laboratory facilities should be created, or the schedule expanded to include weekends and evenings, if current enrollments are maintained.**

**Program Response**

The department agrees entirely that the current laboratory infrastructure is not appropriate to meeting the growth to-date and the projected even potentially modest growth going forward. Evenings are currently a routine part of laboratory scheduling for our large first- and second-year courses. Weekend scheduled labs would be difficult step and would require restructuring of both departmental and university operating procedures.

**Decanal Response**

The Dean is aware of the current challenges that have resulted from increased enrolment in existing and new programs. The Dean is working with the department and with Facility Management on plans to renovate additional laboratory space for chemistry teaching.

There is limited capacity for additional evening labs in selected courses. Additional staff to support after hour deliveries may be a consideration.

**Recommendation 4**

**That additional laboratory staff should be hired to properly supervise off-hours laboratory sections.**

**Program Response**

The department supports providing professional staff coverage for the evening hours of laboratory operation. This would provide a greater degree of safety oversight, support for laboratory GTAs and AAs and reduce the number of overtime hours currently used by existing staff to cover some of these time slots. The department will study the possibilities in consultation with the Office of the Dean of Science

**Decanal Response**

Pending the availability of new financial resources for additional laboratory staff, additional hiring or modified working hours for existing positions may be possible considerations.

**Recommendation 5**

**That the Institution and Departments consider the potential benefits of Co-op streams for these majors.**

**Program Response**

The department is keen to explore additional opportunities for experiential learning for our students. While a certified co-op program may be challenging for the size of our department, we are interested in working with the Experiential Learning Office to facilitate student summer work opportunities both on and off campus.

**Decanal Response**

Many students, including chemistry majors, are now routinely asking for experiential learning opportunities. Based on the current enrolment numbers in chemistry, the department is encouraged to explore internship opportunities (i.e. full-time one semester program related experiences in a professional work environment) and integrate those into the curriculum. The Experiential Learning Office would be a valuable resource to develop such a program and has a toolkit available to help with course integration.

**Recommendation 6**

**That the Institution explore alternatives to the secondment of highly capable senior faculty into administrative roles.**

**Program Response**

The department recognizes the particular opportunity cost of having chemistry faculty members serve in administrative roles, at the same time, the department appreciates the need for highly qualified individuals to serve in these positions and is happy to support the contributions of its faculty to the well-being of the university community. As noted for recommendation #1 above, the department is very much in support of connecting the term of appointment for an LTA to a secondment of a faculty member into an administrative role.

**Decanal Response**

As an institution, we are aware of the challenges that arise when faculty accept senior administrative appointments in the university (or elsewhere). However, it should be noted that these appointments are career decisions of individual faculty that ought to be supported by the institution, rather than secondments. It is vital that each department develops sound succession plans to maintain a balanced mix of junior, mid-career and senior faculty, though this ideal may not always be accomplishable, given the limited size of many of our departments. To mitigate the (temporary) departure of faculty, departments have the additional opportunity to request multi-year replacements.

**Implementation Plan**

The Implementation Plan provides a summary of the recommendations that require action. The Academic Unit in consultation with their Dean will be responsible for moving forward with the recommendations to ensure that each is completed within the recommended timeframe.

The Academic Unit will submit an Implementation Report to their Dean reporting on the completion and/or status of each recommendation. The Dean will review the Implementation Report prior to submitting the report to the Office of the Provost.

**DUE DATE FOR IMPLEMENTATION REPORT: OCTOBER 1, 2022**

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| **Recommendation** | **Proposed Follow-Up***If no follow-up is recommended, please clearly indicate ‘No follow up report is required’ and provide rationale.* | **Position Responsible for Leading Follow-up** |
| Recommendation 1That Limited Term Appointments have contracts that extend to the known horizon of the staffing need, or the 60-month contractual limit (whichever is shorter). | No follow-up required.Departments currently have the opportunity for multi-year appointments. |  |
| Recommendation 2That renewal of LTA contracts be made earlier to allow them to plan for the next year’s academic cycle, including the supervision of undergraduate projects.  | No follow-up required.Budget approval timelines (which includes LTA hiring) are outside departmental and decanal jurisdiction. |  |
| Recommendation 3That additional laboratory facilities should be created, or the schedule expanded to include weekends and evenings, if current enrollments are maintained.  | Department and Dean, in conjunction with Facility Management, to develop a plan for laboratory renovations by September 2021. | Chair and Dean |
| Recommendation 4That additional laboratory staff should be hired to properly supervise off-hours laboratory sections. | Department and Dean to review staffing levels for laboratory supervision by September 2021. | Chair and Dean |
| Recommendation 5That the Institution and Departments consider the potential benefits of Co-op streams for these majors. | Department to consult with Experiential Learning Office to explore internship possibilities and if feasible, develop internship options (course) by September 2022. | Chair |
| Recommendation 6That the Institution explore alternatives to the secondment of highly capable senior faculty into administrative roles. | No follow-up required.Succession in senior administrative roles relies on capable senior faculty and budgetary constraints do not always allow the appointment from outside the university. |  |