

ONE-YEAR FOLLOW-UP REPORT

PERIODIC PROGRAM REVIEW (PPR)

**Bachelor of Engineering
in Civil Engineering
Faculty of Engineering and Architectural Science**

Submitted to:
Vice-Provost Academic
FEAS Dean

Submitted by:
Department of Civil Engineering
September 16, 2022

In accordance with the Institutional Quality Assurance Process (IQAP), this one-year follow-up report provides:

- a. Updates on the status of the initiatives outlined in the Implementation Plan;
- b. Expanded Learning Outcomes (per May 27, 2021 feedback memo);
- c. Update on the action plan to address academic integrity concerns raised; and
- d. Report on EDI initiatives to improve diversity of students, with particular attention to Indigenous students.

Since items b) and c) above are identical to item #2 and #4, respectively, of the Implementation Plan, the following updates will include an update on the implementation plan and an update on the EDI initiatives.

EDI Initiatives – Item d)

Regarding the EDI initiatives, the Department established a departmental EDI committee of two faculty members, one staff, one undergraduate student, and one graduate student. The EDI Committee is chaired by Dr. Bilal Farooq. In 2021/22, the Committee reviewed the department’s EDI status and developed an EDI work plan. The EDI work plan has been submitted to the Dean for review.

Updates on Initiatives in the Implementation Plan

The updates on the initiatives outlined in the Implementation Plan are provided below, following the original format of the Plan.

IMPLEMENTATION PLAN

Priority Recommendation # 1: Increase faculty complement
Rationale: <i>An increase in faculty complement will address the high student-to-faculty ratio, which is currently the highest among FEAS departments as well as the other 29 civil engineering programs in Canada. Also, hiring new RFA members will address the uneven enrolment in undergraduate courses and assist in reducing the significant number of courses currently offered by CUPE Sessional Instructors. Moreover, new hires will also help ease the current low presence of female faculty members in the department.</i>
Implementation Actions: <ol style="list-style-type: none"> 1. <i>Consult with faculty members and the Teaching Standard Committee to identify pertinent courses in both the undergraduate and graduate programs and teaching assignment gaps to be fulfilled by new faculty members.</i> 2. <i>Respond to an internal CFP of an NSERC CRC Tier 2 hire.</i> 3. <i>Work with the Dean, FEAS to advocate for the new RFA positions.</i> 4. <i>Special attention will be paid to hiring female faculty members as the department currently has only 2 female faculty out of 22.</i>
Timeline: <ul style="list-style-type: none"> ✓ <i>Develop a proposal for the NSERC CRC Tier 2 in the area of sustainable and resilient infrastructure using digital twin and artificial intelligence, 2021/2022</i> ✓ <i>Advocate for four new RFA faculty positions by 2025</i> ✓
Responsibility for <ol style="list-style-type: none"> a) leading initiative: <i>Department Chair</i> b) approving recommendation, providing resources, and overall monitoring: <i>Dean of FEAS, Provost</i>
One-year follow-up: <ol style="list-style-type: none"> 1) <i>Teaching Load Analysis</i> <p>The chair completed a teaching load analysis based on the current undergraduate and graduate curricula. In total, the undergraduate and graduate programs altogether require 73 (50 + 23) constant, regular teaching</p>

loads to be undertaken by the department. Meanwhile, the department has 22 faculty members including the president. Considering the other teaching release for two Associate Deans (-5), the Chair (-2), two Associate Chairs (-1 each), FYO Director (-2) and CRC and MEIE program director (-2), the current faculty members provide only 50 (= 21*3 – 13) teaching loads. In addition, every year there are 3 to 4 faculty members (= 22/6, where 6 is the typical sabbatical cycle) taking sabbatical leave. This reduces the total effective number of teaching loads that the department can take to 38 to 41 loads. Therefore, **only a half (52% to 56%) of the total loads are taught by the normal teaching loads of the department**, and the other half are delivered by RFA overloads and CUPE instructors. Over the years, the department has been continuously hiring 20 to 25 CUPE instructors, causing an administrative burden and some concerns regarding the overall quality of the undergraduate and graduate programs.

Since several years ago, the department has through a number of planning tools (e.g., CEAB accreditation, PPR, strategic planning, annual budgeting) identified at least four new tenure-track positions to cover the following courses:

- i) Construction Engineering and Management: CVL207, CVL742, CV8102, CV8105
- ii) Transportation Engineering: CVL316, CVL910, CV8407
- iii) Geotechnical Engineering: CVL423, CV8603, CV8604
- iv) Structural Engineering: CVL320, CVL70A, CVL906

All these courses have consistently been taught by CUPE1 instructors or overloaded RFA members.

2) CRC Tier 2 Opportunity

There was an internal CFP of CRC Tier 2 in the Fall 2022. The department’s Strategic Planning Committee prepared a proposal in the area of Smart and Resilient Infrastructure Systems, hoping that the position will fill in any of the four tenure-track vacancies identified in 1). The proposal highlighted the interest of hiring a female faculty member. Unfortunately, the proposal was not successful.

Recently, as part of a CFREF proposal, Dean Duever ‘approved a new ECR hire in transportation engineering (EDI hire) in the event of a successful CFREF application. Budget permitting, the faculty will assume the salary of the faculty member after the grant expires.’

3) Limited Term Faculty (LTF)

Given the current budgeting environment, hiring LTFs seems to be a valid short-term solution to the faculty shortage. The Department has reached an agreement in principle with the Dean (and the OVPFA) to hire an LTF position. The exact area of teaching focus of the position has yet to be determined by the Department in Fall 2022.

Priority Recommendation #2: Address gaps of learning outcomes revealed in the curriculum mapping

Rationale: *The ASC recommend that the Learning Outcomes (LOs) be expanded to a more detailed version with sub-categories that fall under each of the main categories, in order to increase relevance and specificity for Civil Engineering. In addition, the UDLEs are to be mapped to program LOs.*

Implementation Actions:

- 1) Review the CEAB Graduate Attributes, the Program LOs, and the UDLEs, and create a learning outcome mapping;
- 2) Review the current curriculum mapping;
- 3) Revise the curriculum mapping.

Timeline: All these action items to be completed by the end of 2021/22 academic year.

Responsibility for

a) leading initiative: *Associate Chair/Undergraduate Program*

b) approving recommendation, providing resources, and overall monitoring: *Department Chair, Associate Dean/Undergraduate Programs*

One-year follow-up:

Most of the materials has been collected and a draft of the map has been made; however, since the curriculum has been changed and a few new courses (such as CVL914, CVL920 and CVL602) have been proposed and approved and they haven't been offered yet. They will be offered for the first time in 2023/2024 academic year. These new courses don't have the finalized course outlines and/or the learning outcome yet, so, this task will be completed in the next year.

Priority Recommendation #3: Conduct follow-up student and alumni feedback surveys

Rationale: *The ASC recommend that a follow-up student and alumni feedback surveys on the program be conducted in the one-year follow-up study. This is also part of PRT Suggestion #3 on seeking feedback from employers and CIP students. Such a survey will also be timely to review the performance of the restructured curriculum introduced in 2014.*

Implementation Actions:

- 1) Discuss the aims, scope, method and timeline of the feedback survey;
- 2) Design survey questions;
- 3) Implement the survey;
- 4) Analyze survey data;
- 5) Develop action plan based on the survey results.
- 6) Report results to the Department Retreat and Program Advisory Council

Timeline:

- 1) Survey planning, Fall 2021
- 2) Survey implementation, Winter 2022
- 3) Survey analysis, Winter 2022

Responsibility for

a) leading initiative: *Department Chair*

b) approving recommendation, providing resources, and overall monitoring: *Dean for additional fund, considering hiring students through the Career Boost program.*

One-year follow-up:

The FEAS Graduating Class Exit Survey was performed in April and May 2022, and the results were analyzed. They indicated several areas that we need to improve. For example, many students feel that we instructors failed to provide timely feedback to their work and that we are disinterested in obtaining their feedbacks to improve our teaching. In terms of skills training, we probably need to make efforts to improve our students' oral communication (i.e., presentation) skills. In the meantime, it looks like we should whet students' intellectual curiosity to encourage them to explore post-graduate studies and maintain life-long learning. The Survey Results Report was shared to the department; plans for addressing the revealed weakness are being developed.

The Alumnus Survey is deferred to Year 2022/23 due to lack of resources. Due to COVID and back-to-campus activities, and sick leave of a critical administrative staff who was supposed to take on this administrative role, the department is not able to implement this plan in 2021/22. A small budget was earmarked in the 2022/23 budget.

<p>Priority Recommendation #4: Strengthen the culture of ethics and academic integrity</p>
<p>Rationale: <i>Ethics and Academic Integrity concerns were raised by the PRT based on student feedback. In response to the PRT report, the Department “agrees that there is an issue with academic integrity among a few students in the program. The Department encourages faculty members and sessional instructors to report identified cases of academic misconduct to the Academic Integrity office for action. ... the Department Chair, Associate Chair for Undergraduate Program, Curriculum Committee and Departmental Council will discuss developing an action plan and time line to address this concern.”</i></p>
<p>Implementation Actions:</p> <ol style="list-style-type: none"> 1. Review the current practice in assignment grading, exam proctoring and grading, and overall grading; 2. Include the academic integrity issue as part of the survey in #3; 3. Develop plan to enhance ethics and academic integrity
<p>Timeline:</p> <ol style="list-style-type: none"> 1. Review current practice: Fall 2021 2. Survey: Fall 2021/Winter 2022 3. Plan development: Winter 2022
<p>Responsibility for</p> <p>a) leading initiative: <i>Associate Chair/Undergraduate</i></p> <p>b) approving recommendation, providing resources, and overall monitoring: <i>Department Chair, Department Council</i></p>
<p>One-year follow-up:</p> <p>1) <i>Grade Distribution</i></p> <p>The PPR identified a few courses that have either a consistently low or high average grade. A meeting was held to discuss this situation and instructors stated that this has been improved over the past year. In Winter 2022 all course instructors were reminded of the grade distribution. Except for one course, the winter grade distribution was better than before.</p> <p>2) <i>Development of Departmental Guidelines of Course Management</i></p> <p>The Department revised and refined the departmental guidelines of course management that was initially established in 2016 without sufficient consultation. The new document provides clearer guidelines on exams, exam invigilation, lecture cancellation, tutorial and lab cancellation, guest lectures, grading scheme, group projects, and course outline review and revisions. The document was thoroughly discussed first through the Undergraduate Curriculum Committee, and unanimously approved by the Departmental Council.</p>

<p>Priority Recommendation #5: Continually review and improve program curriculum</p>
<p>Rationale: <i>The action will help keep the program dynamic, relevant and responsive to the evolving needs of the civil engineering discipline, its practitioners, and the society at large</i></p>
<p>Implementation Actions:</p> <ol style="list-style-type: none"> 1. Ask Curriculum Committee to regularly review and improve, as needed, <ul style="list-style-type: none"> ○ the mapping of program learning objectives to courses for consistency and coverage ○ assessment methods and evaluation weights in program courses ○ course management policies 2. Ask the CEAB-GA Co-Ordinator to regularly review the Graduate Attribute assessments submitted by faculty and CUPE instructors for possible course and program curriculum improvement. Establish an efficient procedure to: <ul style="list-style-type: none"> ○ collect course materials and CEAB-GA assessment reports after the end of each term, ○ review CEAB GA assessment reports by the CEAB-GA Co-Ordinator, and

- review of the entire outcome of GA assessments and potential curriculum improvement by the Curriculum committee twice times per year.
3. Encourage faculty members and CUPE instructors to abide by timelines, be pro-active in communicating with students through emails and course websites, participate more in teaching conferences, and help students learn better by evenly spreading course topics and assessments across the semester.
 4. Ask the Associate Chair for undergraduate program to establish procedure to monitor the progress of course delivery by CUPE instructors.
 5. Encourage undergraduate student representatives in the departmental council to be more proactive with respect to reporting any issue regarding course delivery and learning environments and increase their interaction with their peers in this regard.
Establish strategies to increase participation in surveys conducted by students, alumni, employers and Advisory Council members.

Timeline:

1. *Department Chair mandates the Curriculum Committee to develop a plan, Fall 2021*
2. *CEAB-GA Coordinator gives a presentation to faculty members and CUPE Instructors on GA assessment requirements and provides feedbacks on previous assessment reports;*
3. *Associate Chair for undergraduate program establishes a procedure for monitoring the progress of courses delivery by CUPE instructors, Winter 2021*
4. *Department Chair coordinates the progress of this priority item with Items #2 and #3; Fall and Winter 2021*

Responsibility for

a) leading initiative: *Associate Chair, Undergraduate Program*

b) approving recommendation, providing resources, and overall monitoring: *Department Chair*

One-year follow-up:

1) *Learning Outcomes*

This task will be completed by next year follow-up as explained in the Priority Recommendation #5.

2) *Capstone Project Courses*

The department reviewed the practice of capstone project courses and compared it with those of other programs in the FEAS and other civil engineering programs across Canada. The capstone project quality of the program is very good in general, except that the capstone projects can be more multidisciplinary even within the civil engineering field. For example, currently, bridge projects look at only the structural engineering aspect, and transportation projects only the transportation engineering aspect. The capstone project instruction group was encouraged in the beginning of Fall 2022 to explore the opportunities of multidisciplinary projects. From the teaching load point of view, this program's capstone project courses take 10 – 14 teaching loads every year, whereas the other civil engineering programs across Canada often uses two to three coordinators (four to six loads) to manage the projects, leaving students themselves to seek helps from other faculty members and project clients (who are often P.Eng.). Additional internal discussions are required to develop a more sustainable and affordable solution.

3) *CEAB Graduate Attributes Assessment and Continuous Improvement Process*

The department keep monitoring the submission of CEAB Graduate Attributes reports of each course, as this is an important element of continuous improvement of a curriculum. The department is planning to take more coordinated effort in 2022/23 to develop a program-level CI process, including the review of the courses offered by non-civil engineering instructors.

Priority Recommendation #6: Increase quality of Graduate Assistants

<p>Rationale: <i>This recommendation is to reflect on student and alumni surveys.</i></p>
<p>Implementation Actions:</p> <ol style="list-style-type: none"> 1. <i>Review the process of selecting GAs in the department to ensure that the best GAs with enough technical background and good communication skills are selected by professors and CUPE instructors.</i> 2. <i>Establish online procedure for the submission and marking of assignments and lab reports by the GAs.</i> 3. <i>Ask the curriculum committee to establish an annual student survey and/or encourage student representative in the departmental council to be more proactive in conveying student learning issues to the council.</i> 4. <i>Provide space for professors and staff for brainstorming ideas for improvement.</i> 5. <i>The Associate Chair for the undergraduate program meets with GAs more frequently to their needs to perform their duties and to hear from them regarding issues and potential improvements.</i>
<p>Timeline:</p> <ol style="list-style-type: none"> 1. <i>The department leadership team meets to develop an overall strategy, September 2021</i> 2. <i>Problems and solution alternatives are discussed and consulted across the department through department meetings, department council meetings, and graduate council meetings as well as with the Dean; October and November 2021</i> 3. <i>The best solution is approved by the Council, Winter 2022.</i>
<p>Responsibility for</p> <p>a) leading initiative: <i>Associate Chair/Undergraduate, Associate Chair/Graduate Studies</i></p> <p>b) approving recommendation, providing resources, and overall monitoring: <i>Department Chair, Department Council, Graduate Council; Dean, FEAS for budget</i></p>
<p>One-year follow-up:</p> <p>Several leadership team meetings and departmental meetings as well as council meetings were held to discuss this issue. The following strategies were introduced and implemented since Winter 2022:</p> <ol style="list-style-type: none"> 1) Graduate students were encouraged to contact the course instructor or responsible RFA member to discuss the contents and expectations of the target courses before they apply for a GA position; 2) Course instructors were given opportunities to review the GA applications and provide their preference list from high to low; 3) Course instructors were encouraged to interview the GA applicants before providing their preference list; 4) The GA assignment decision was distributed to instructors and GAs at least two weeks before the job starts so that they have sufficient time to review, adjust and prepare for course materials; 5) The departmental policy was reiterated that technical staff provides hands-on review of all physical labs to GAs; 6) The importance of GA to the undergraduate program was highlighted in the GA training sessions and graduate student orientation.

<p>Priority Recommendation #7: Expand Civil Engineering Department outreach</p>
<p>Rationale: <i>This recommendation is meant to increase awareness and reputation of the civil engineering department at the national and international levels, with an ultimate goal of attracting highly-qualified undergraduate and graduate students to join Ryerson University.</i></p>
<p>Implementation Actions:</p> <ol style="list-style-type: none"> 1. Establish a faculty role as an Outreach Co-Ordinator to join efforts with the Administration Manager to jointly administer the outreach activities to be developed. 2. Establish an Outreach committee from faculty members, staff and graduate and undergraduate students to work with the Outreach Co-Ordinator and the Administration Manager in developing and implementing outreach activities.

3. Organize and prepare outreach materials for events, including banners, A-Frames, promotional items, print materials, tables, chairs, etc.
4. Consider promoting the department through media, newspaper, websites, e-mails, radio, television, community Fairs, annual on-campus University-Industry Open House, etc.
5. Contact local industry and alumni to increase industrial internships and host annual job fair on campus, especially for fourth-year undergraduate students.
6. Encourage students to participate in national and international engineering competitions and community outreach projects.

Timeline: *The assigned Outreach Co-ordinator and the Administration Manager will take the lead with the department chair, associate chairs to implement the action plan within the next 5 years.*

- 1. Complete the students and alumni survey as per item #2, Spring 2022**
- 2. Form an Outreach Committee, Fall 2022**
- 3. The Outreach Committee develops a work plan, Fall 2022**
- 4. Implement the plan, 2022 - 2024**

Responsibility for

a) leading initiative: *Outreach Co-Ordinator; Administration Manager*

b) approving recommendation, providing resources, and overall monitoring: *Department Chair*

One-year follow-up:

The students and alumni survey was deferred to 2022/23, as explained in Item #3.

A new Department Advisory Council was established for 2022/23. With new members from both public and private sectors, the Council was mandated to provide external support in the following aspects:

- i) Client support for capstone projects;
- ii) Co-op & internship placements;
- iii) Research collaboration and liaison.

In addition, the Council agreed to meet twice a year (November and May) instead of only once.

The other planned activities will be implemented in the following years.