

FINAL ASSESSMENT REPORT

**PERIODIC PROGRAM REVIEW (PPR)
Bachelor of Engineering
In Civil Engineering
Faculty of Engineering and Architectural Science**

In accordance with the Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the undergraduate **Civil Engineering** program. The report identifies the significant strengths of the program, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The Implementation Plan identifies who will be responsible for leading the implementation of the recommendations; who will be responsible for providing any resources entailed by those recommendations; and timelines for acting on and monitoring the implementation of the recommendations.

SUMMARY OF THE PERIODIC PROGRAM REVIEW OF THE CIVIL ENGINEERING PROGRAM

The Civil Engineering (CVL) program submitted a self-study report to the Vice-Provost Academic on November 13, 2019. The self-study presented the program description and learning outcomes, an analytical assessment of the program, and program data including the data collected from student and alumni surveys along with the standard University Planning data tables. Appended were the course outlines for all core required and elective courses in the program and the CVs for all faculty members in the Department of CVL and other faculty who have recently taught core courses (required and/or elective).

One arm's-length external reviewer, Dr. Hesham El-Naggar, Department of Civil and Environmental Engineering, Western University, and one internal reviewer, Dr. Chris Evans, Department of Chemistry and Biology at Ryerson University, were appointed by the Dean of the Faculty of Engineering and Architectural Science from a set of proposed reviewers. They reviewed the self-study documentation and then conducted a virtual site visit via video conferencing on April 7 and 8, 2020.

The visit included meetings with the Vice-Provost Academic; Dean and Associate Dean (Undergraduate Studies), Faculty of Engineering and Architectural Science; Chair, Associate Chair Undergraduate, Associate Chair Graduate, Civil Engineering; and the Chief Librarian. The Peer Review Team (PRT) also met with several members of the CVL program, including staff, students, and faculty members, as well as with the Chairs of the Departments of Chemistry and Biology, Computer Science, and Mathematics.

In their report, dated May 7, 2020, the PRT provided feedback that describes how the CVL program meets the IQAP evaluation criteria and is consistent with the University's mission and academic priorities. The main areas of strength identified by the PRT include:

- The program provides a solid curriculum which is current and meets societal needs. Further, the curriculum content supports the program learning outcomes articulated in the self-study and these, in turn, map well to Ryerson's Undergraduate Degree Level Expectations.
- The Department of Civil Engineering is comprised of a strong, well-qualified faculty base. Faculty members generally feel well supported by the Department, Faculty and University.

- The staff are highly committed, feel well supported and are creative problem solvers who enjoy their work and their working environment.
- The students of the Civil Engineering program are generally of high quality.
- The Faculty of Engineering and Architectural Science (FEAS) provides good support to the program, as does the Ryerson University Library and Archives.

The PRT also identified areas for improvement, such as:

- The student-to-faculty ratio is very high and can have negative impacts on program delivery and student engagement.
- Students interviewed by the PRT raised the issue of academic integrity lapses. The PRT encourages the program to continue to work towards a culture of ethics with respect to academic integrity.
- Career placement issues and general career relevance of course materials and relevant projects within the program were also noted by students.
- Issues related to physical infrastructure, including insufficient laboratory space and broken elevators require attention.

The Chair of the Civil Engineering program submitted a response to the PRT Report in November, 2020. The response to both the PRT Report and the Program's Response was submitted to the Vice-Provost Academic by the Dean of the Faculty of Engineering and Architectural Science on May 5, 2021.

The Academic Standards Committee completed its assessment of the Civil Engineering Program Review on June 10, 2021. The Committee indicated that a thorough, analytical and self-critical program review was conducted. The School integrated into the developmental plan feedback from students, alumni, employers and peer reviewers, and outlined a comprehensive plan for program enhancements moving forward.

The Academic Standards Committee recommends that the program continue, as well as provide a one-year follow-up report, as follows:

1. The mandated One-Year Follow-up Report be submitted by June 30, 2022 to include:
 - 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.

Presented to Senate for Approval: **October 5, 2021**

Start date of next Periodic Program Review: **2024-25**

SUMMARY OF THE REVIEWERS' RECOMMENDATIONS WITH THE PROGRAM'S AND DEAN'S RESPONSES

RECOMMENDATION 1. The PRT recommends that the student-to-faculty ratio be addressed as soon as possible. The current ratio is very high (nearly 28:1). It is the highest within FEAS and, indeed, the highest among the 30 Civil Engineering programs in Canada. This high ratio will have negative impacts on program delivery, student engagement and faculty morale. A decision to hire is beyond the scope of the Department alone. It must be supported by the Dean and, ultimately, by the University's senior administration.

Department's Response: The student-faculty ratio mentioned above should be 29.3:1. The reason is that the University provided a faculty position to the Department in replacement of the University President position in the Department as a loan. This means that when the President comes back to the Department as a faculty

member, the replacement of a faculty retirement at that time will not be granted. In any case, the faculty hires are beyond the scope of the Department's own actions. The Department will continue submitting requests to the Dean in annual basis per the self-identified Recommendation # 1 in the Department Developmental Plan.

Dean's Response: The Faculty of Engineering and Architectural Science continuously monitors the staffing requirements for its programs. Civil Engineering has hired three faculty positions over the last four years and FEAS continues to advocate for more faculty positions.

RECOMMENDATION 2. Strengthen the culture of ethics and academic integrity. Both undergraduate and graduate students raised the issue of academic integrity lapses. While this issue is not unique to Civil Engineering, the PRT asks the program, and FEAS as a whole, to continue to work towards a culture of ethics with respect to academic integrity.

Department's Response: 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. Since this recommendation was not among the Department Developmental Plan in the self-study report, 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.

Dean's Response: FEAS supports the Chair of Civil Engineering in his stated efforts to develop an action plan and timeline to address the stated concerns of the reviewers with respect to cultivating a stronger culture of ethics with respect to academic integrity. We would also like to reinforce that this is an area of significant importance and focus for the entire Faculty.

In March 2018, FEAS launched a Faculty Task Force with ambitions to identify, pilot and spread the professional development, resource and other needs required to advance the vision of the *All In Approach to Education* with an intentional focus on micro and macro ethics for students as members of the Ryerson community and as future professionals.

Our Senior Manager, Education Planning and Development is working in partnership with the Faculty Task Force and individual Civil Engineering faculty members to address ethics and integrity. For example, we have already developed several new case studies that integrate ethical concepts into curriculum at various levels. We are also continuously reinforcing the importance of academic integrity through our co-curricular programming at Faculty level (i.e. the FEAS Peer Network Program) and Ryerson wide. For example, the University has launched a game, 'Academic Integrity in Space' that students can play to learn more about the University's policies and practices.

RECOMMENDATION 3. Strengthen the number of career-related opportunities and student awareness of them. Career placement issues were noted by students. These included a shortage of internship placement opportunities for those pursuing the optional Co-operative Internship Program, as well as lack of information about career opportunities post-graduation. The respondents were also concerned that information about career opportunities was not being conveyed effectively to them. The department should identify and implement ways to create a more extensive pool of internship placements and career opportunities, as well as means to ensure students and graduates are aware of them. Initial steps along this path have been proposed by the program in its self-identified Recommendation 3.

Department's Response: This recommendation is part of the self-identified Recommendation #3 in the Department Developmental Plan to increase industry database and communication in the Department to bring ample Co-operative Internship Program (CIP) positions to students. In addition to the CIP Co-coordinator position in the Department, the Dean of FEAS created a new position for a Senior Manager, Co-operative Internship & Experiential Learning Initiatives to assist in increasing enrollment in the CIP program. As for providing information to students about career opportunities post-graduation, the Department informs 4th-year students of job opportunities as received from industry partners. Also, the Department supports the Ryerson Civil Engineering Student Society and the CSCE Ryerson Chapter to host an annual industry symposium with presenters from

industry to inform student how to search for career jobs. The Geomatics group in the Department hosts a Geomatics Career Fair every year. Also, Ryerson University organizes the Ryerson Career Fair for students every year. The Department will hone in this matter to increase student satisfaction.

Dean's Response: In late 2017, FEAS launched a central office to manage optional co-operative internship programs (CIP) for all of the engineering programs except Chemical Engineering which has a mandatory co-operative program. Since this time, the team has grown from 1 staff member to 5. This team collaborates with existing embedded staff within departments (including Civil Engineering) to support all aspects of CIP including new on-line platforms (Salesforce and Orbis) for efficient student and employer engagement related to applications, job postings, etc; student and employer recruitment events and workshops; administration and evaluation of the placement experiences; and delivery of soft skill development modules associated with career readiness and professional networking. In Fall 2019, the FEAS CIP office rolled out the first centralized student enrolment in FEAS CIP.

The FEAS CIP office is continuing to work on improving the co-op placement rate of civil and other engineering students through the following activities: 1) identifying and working closely with students who are less engaged (i.e. do not apply to posted jobs, apply but do not secure interviews and/or job offers), 2) continuing to work with existing employers and promote jobs that are more relevant to specific engineering disciplines, 3) developing more partnerships with new employers/industries interested in specific engineering disciplines, aiming towards a 3 job postings to 1 student ratio, and 4) planning employer engagement events/opportunities that target specific engineering discipline students. We are reaching first and second year students to promote CIP earlier so that they are better prepared to meet the expectations set by the program and employers.

RECOMMENDATION 4. Curriculum-related recommendations

a) Introduce project-based, integrative curricular elements earlier in the program. A significant number of program students feel their courses are not sufficiently career relevant. The PRT recommends that the program explore introducing project-based course elements as early as Year 2. The idea would be that these project elements, which would continue in Years 3 and 4, would allow students to start the process of integrating their course material to address real-world issues earlier in the program. This would make the relevance of program courses to the world of work more evident. The PRT feels this approach would also augment the integrating role of the capstone design project courses.

b) Review the grading variation for CHY102 and considering revision or elimination. The rationale provided for the CHY102 grading variation does not make sense. It must be addressed. This is an issue for the Faculty rather than the program, per se, and can probably be best dealt with through the Office of the Dean.

c) Adjust the content of select courses to better support Learning Outcomes. While the courses generally map well to the program LOs, the self-study did identify several gaps (See Section 3.1.b of this Report). Efforts should be made to ensure that course content appropriately supports program learning outcomes.

d) Assessment methodologies mapping for capstone design project courses. As presented in self-study Appendix A-I-I (Course Method and Assessment Matrix) and summarized in section 3.4.b of this report, the mapping of assessment methodologies to LOs for the capstone projects CVL71A/B and CVL72A/B seem incomplete. The program should review the mapping to confirm whether this is simply a reporting error. If it is not a reporting error, the program must revise the assessment approach in these capstone courses to avoid, for example, having a final report worth 65% of the course grade that apparently maps to no learning outcomes (e.g., both CVL 71B and CVL 72B).

Department's Response: a) The Curriculum Committee, the Department Council, and the Program Advisory Committee will discuss this recommendation and develop an action plan and timeline for implementation. This will include changes in the contents of a few courses in years 2 and 3 in the undergraduate program.

b) The Dean's office will deal with this recommendation.

c) The CEAB-GA Co-ordinator will communicate with the Associate Chair and the Curriculum Committee to address the gaps in the curriculum mapping with respect to Individual and Team Work, Communication Skills, and Life-

Long Learning. Changes are expected to be in the curriculum mapping, course contents and assessment methods. d) The Associate Chair and the Curriculum Committee will discuss this issue with faculty members who teach the Capstone Project courses to ensure consistency in course contents, delivery and assessment methods.

Dean's Response: FEAS supports the Chair of Civil Engineering in his stated efforts to develop an action plan and timeline to address the stated concerns of the reviewers with respect to introducing project-based, integrative curricular elements earlier in the program.

FEAS is confident that Civil Engineering faculty members have access to the resources they need to integrate project based learning opportunities into their courses. For example, the Senior Manager, Education Planning and Development recently created a database of pedagogical resources for this purpose. Furthermore, as a result of the pandemic, the Canadian Engineering Education Association has created E-CORE, a national collaborative initiative providing support and resources to all engineering educators.

With respect to the issue of a potential grading variation for CHY102, we have checked with the Department of Chemistry and Biology and confirmed that there are no grading variations for CHY 102.

With respect to the recommendations to adjust the content of select courses to better support Learning Outcomes, FEAS supports the Chair's stated commitment to ensure the CEAB GA (Graduate Attributes) Coordinator communicates with the Associate Chair and the Curriculum Committee to address the gaps in the curriculum mapping with respect to Individual and Team Work, Communication Skills, and Life-Long Learning. Changes are expected in the areas of curriculum mapping, course contents and assessment methods.

Finally, with respect to recommendations for assessment methodologies mapping for capstone design project courses, FEAS supports the Chair's stated commitment to ensure that the Associate Chair and Curriculum Committee will discuss this issue with faculty members who teach the Capstone Project courses to ensure consistency in course contents, delivery and assessment methods.

RECOMMENDATION 5. Laboratory space for new faculty. This issue is not unique to Civil Engineering. It is a concern across all disciplines at Ryerson in which faculty rely on access to lab space to carry out their research. Solutions to this issue are beyond the scope of the Department to address on its own. The PRT encourages the Dean – who is aware of the concerns – to work with the Department and with senior administration to find creative solutions. Failure to do so risks stifling the careers of promising new faculty members which may have negative impacts on the undergraduate program and its delivery.

Department's Response: The Department have been working continuously with the Dean to address space need. In spring 2020, The Dean assigned a new space in the CUI building to two environmental engineering professors to assist in creating environmental labs for research. Also, he made an agreement with the Aerospace Engineering Department to allow a structural professor to use the Wind Tunnel lab in research. Moreover, he assigned a storage space for research materials in the ENG building which is currently under construction to resolve the storage space issue in the Department. The Department will continue working with faculty members and the Dean to address space concerns.

Dean's Response: In Spring 2020, the Dean assigned a new space in the CUI building to two environmental engineering professors in Civil Engineering to assist in creating environmental labs for research. Moreover, the Dean made an agreement with the Department of Aerospace Engineering to allow a structural engineering professor to use the Wind Tunnel Lab for research. Furthermore, the Dean assigned a storage space for research materials in the ENG building which is currently under construction to resolve the lab material storage space issue in the Department of Civil Engineering. The Dean will continue working with the Department of Civil Engineering and faculty members to address space concern.

RECOMMENDATION 6. The state of elevators in the Monetary Times Building. The elevators have been out of commission for months at a time. Apart from the legislative infractions this implies, it means that faculty, staff and students have had to deal with impaired access to classrooms, offices and labs on a daily basis. This is not acceptable for a university which prides itself on its commitment to equity, diversity and inclusion, and it

undermines program delivery. Both the Department and Dean are aware of this issue but cannot solve it on their own. The PRT calls on the senior administration to take this problem in hand and quickly find a permanent solution.

Department's Response: The Department will continue reporting malfunction of the elevator to the University with the hope that the University really provides a permanent solution.

Dean's Response: The Monetary Times Building elevator was on a list of nine elevators campus wide that were slated for modernization in the 2020/2021 academic year. The modernization project includes the installation of new equipment, controllers, interior cab finishes and life safety upgrades. The project for modernizing the Monetary Times Building elevator was completed and passed TSSA inspection in February 2021 and is back in service.

RECOMMENDATION 7. Gender balance. The self-study data demonstrate that the faculty and student cohorts in the program are heavily skewed towards men (about 85% male to 15% female). This is not unique to Civil Engineering but is a North America-wide reality for engineering programs. The PRT recognizes that both the Department and FEAS as a whole have worked diligently over a number of years to deal with this issue. Nonetheless, the PRT recommends that both the Department and FEAS continue to strive to improve gender balance.

Department's Response: The PRT recommendation # 1 to address the high-student faculty ratio will reinforce this recommendation for gender balance. Also, the Action Plan of the self-identified Recommendation # 1 in the Department Developmental Plan includes addressing gender balance. Once a new faculty position is assigned to the Department, the Department Hiring Committee (DHC) will work with the Dean and Human Resources to explore ways to address gender balance.

Dean's Response: Civil Engineering is among numerous STEM disciplines and professions which continue to face a significant challenge with respect to equity, diversity and inclusion. When FEAS (and other partner universities) were awarded funding from Hydro One in 2012 to attract and retain more women to the profession, we had already engaged in over 20 years of programming that had failed to move the needle. The Hydro One University Partnership came at a time that coincided with a larger cultural shift in public awareness about how identity issues such as race, disability, sexual identity and class—or broadly speaking: issues of privilege, play a more significant role in marginalization than gender alone. FEAS realized we needed to change our perspective. We needed to diversify our understanding of diversity.

Over the course of 2017-2018, we undertook a series of actions to transform a traditional focus on Women in Engineering (WIE) towards a holistic view of Equity, Diversity and Inclusion (EDI). For example, Dean Thomas Duever has spoken at a number of public events on the topic, reiterating a message he stated in an OpEd published in OSPE's Voice Magazine in December 2017 and at the 'Navigating the Glass Obstacle Course' Conference.

In 2017 FEAS carried out two student surveys that provided direction regarding what students wanted FEAS to do to create a more inclusive learning environment. One survey was administered to female engineering students only (through the Hydro One Partnership) and another was targeted strategically to students who were affiliated with identity-based groups or expressed interest in tackling identity issues on campus. The results were revealed in an identity dialogue survey as well as focus groups. This feedback informed the development of a new Office of Equity, Diversity and Inclusion to replace what was formerly called the Women in Engineering Office. The appointed Manager of the FEAS Equity and Community Inclusion Office is a past recipient of Ryerson's Alan Shepard Equity, Diversity and Inclusion Award.

Engineering outreach at the Faculty of Engineering and Architectural Science includes a number of activities for students in grades 3 to 12 including:

- Eureka (<http://www.ryersonsummerdaycamps.com/portfolio-item/eureka/>)
- Engineering Badge Day (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/girl-guides-ontario-engineering-badge-day/>)
- Engineering Experience (<https://www.ryerson.ca/engineering-architectural-science/community->

engagement/kids-parents-teachers/engineering-experience/)

- Go CODE Girl (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/go-code-girl/>)
- Go ENG (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/go-eng/>)
- Pitch Black (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/pitch-black/>)
- WEMADEIT (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/we-made-it/>)
- Global Changemakers Engineering Competition (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/global-changemakers/>)

These programs are designed to reach audiences representing identity based groups traditionally marginalized from engineering programs and are offered as part of a larger strategy managed by the FEAS Equity, Diversity and Inclusion Office. This Office is currently working with Ryerson's Student Pow Wow Committee which is distributing five engineering workshop videos to their stakeholders in the Indigenous community.

With respect to undergraduate student recruitment, the Engineering Admissions team has been conducting 70+ virtual school visits/events in addition to the current Schools Ryerson visits posted on our site currently. The team also liaises with the Aboriginal Outreach and Recruitment Officer, Thunder Alphonse in Aboriginal Student Services when it comes to providing application support and admission academic counselling applicants who self-identify as Indigenous.

In 2018, the Faculty began the process of intentional culture change by adopting the All-In Approach to Education (AIA), which articulates the Faculty's vision to develop critical, collaborative and imaginative leaders equipped to engage in ethical, sustainable and democratic practice. In 2020-2021, the All-In Approach is a driving force in the Faculty's strategic planning, advancement goals, student recruitment and retention, curricular and co-curricular programming, internal culture change and community engagement.

The All-In Approach is a philosophy and pedagogical framework rooted in our commitment to developing creative and ethical leaders who are ready to co-create transformational futures. At its core, the AIA is a response to the societal call for a culture shift in engineering and architectural science. This ethos is demonstrated by our on-going commitment to improve engineering outreach and recruitment and work toward a more inclusive and diverse culture and community.

FEAS Departments have made significant changes to faculty recruitment, interview and selection process in keeping with enhanced guidelines related to equitable hiring at Ryerson University. FEAS' strategic vision and ongoing collaborations are grounded in the compelling evidence that an integrative, diverse and inclusive engineering and architectural science culture accelerates learning, professional development, and innovation in the academy and broader society.

When the COVID-19 pandemic hit in March 2020, FEAS launched Communities of Practice to support learning and unlearning with respect to Teaching and Learning and Equity, Diversity and Inclusion. These events have been well attended.

PRT's Further Suggestions:

Suggestion 1. To support the Department's outreach ambitions, the FEAS as a whole may wish to consider the SciXchange model used in Ryerson's Faculty of Science (<https://www.ryerson.ca/scixchange/>). This Faculty of Science-wide initiative is devoted to, among other things, commitment to community engagement, fostering of collaborations, provision of experiential learning opportunities for students and promotion and support of faculty in science communication and outreach.

Department's Response: The Department provided an action plan and timeline for the Department outreach in the self-identified Recommendation # 7 in the Department Developmental Plan. The Department will discuss with the Dean the SciXchange model for possible implementation in FEAS.

Dean's Response: The Faculty of Engineering and Architectural Science (FEAS) is a devoted supporter of the Faculty of Science's (FoS) SciXChange. In fact, in 2016 when the concept for SciXChange was initially discussed, the FEAS Manager, Equity and Community Inclusion (FEAS) met with FoS counterparts many times to share FEAS successes and best practices in STEM outreach. We understand that FEAS outreach efforts were an important part of their environmental scan which informed their direction, [as outlined in their strategic plan](#). We have continued to share best practices, collaborate on outreach activities and support our shared ambitions of advancing inclusion and equity in STEM.

FEAS is inclusive of a number of STEM disciplines and professions which continue to face a significant challenge with respect to equity, diversity and inclusion. When FEAS (and other partner universities) were awarded funding from Hydro One in 2012 to attract and retain more women to the profession, we had already engaged in over 20 years of programming that had failed to move the needle. [The Hydro One University Partnership](#) came at a time that coincided with a larger cultural shift in public awareness about how identity issues such as race, disability, sexual identity and class—or broadly speaking: issues of privilege, play a more significant role in marginalization than gender alone. FEAS realized we needed to change our perspective. We needed to diversify our understanding of diversity.

Over the course of 2017-2018, we undertook a series of actions to transform a traditional focus on Women in Engineering (WIE) towards a holistic view of Equity, Diversity and Inclusion (EDI). For example, Dean Thomas Duever has spoken at a number of public events on the topic, reiterating a message he stated in an OpEd published in OSPE's [Voice Magazine in December 2017](#) and at the '[Navigating the Glass Obstacle Course](#)' Conference.

In 2017 FEAS carried out two student surveys that provided direction regarding what students wanted FEAS to do to create a more inclusive learning environment. One survey was administered to female engineering students only (through the Hydro One Partnership) and another was targeted strategically to students who were affiliated with identity-based groups or expressed interest in tackling identity issues on campus. The results were revealed in an identity dialogue survey as well as focus groups. This feedback informed the development of a new Office of Equity, Diversity and Inclusion to replace what was formerly called the Women in Engineering Office. The appointed Manager of the FEAS Equity and Community Inclusion Office is a past recipient of Ryerson's [Alan Shepard Equity, Diversity and Inclusion Award](#).

In 2018, the Faculty began the process of intentional culture change by adopting the [All-In Approach to Education](#) (AIA), which articulates the Faculty's vision to develop critical, collaborative and imaginative leaders equipped to engage in ethical, sustainable and democratic practice. AIA is an overarching philosophy that recognizes how a student's success depends on their academic, personal, community and professional experiences at Ryerson University and beyond. This philosophy recognizes that equity diversity and inclusion are practices that must be woven into all that we do.

In 2019, FEAS' Senior Manager, Education Planning and Development completed a 200+ reference literature review on best practices in pedagogy related to the themes of the All-In Approach and released a comprehensive model for operationalizing AIA values. In it learning outcomes for the five AIA hubs (Well-being, Academic Success, Leadership, Career Development and Experiential Learning) were defined. That same year, each department undertook a mapping exercise to better understand the Faculty's strengths and gaps in supporting holistic student development.

In 2020-2021, the All-In Approach is a driving force in the Faculty's strategic planning, advancement goals, student recruitment and retention, curricular and co-curricular programming, internal culture change and community engagement.

Engineering outreach at FEAS includes a number of activities for students in grades 3-12 including:

- Eureka (<http://www.ryersonsummerdaycamps.com/portfolio-item/eureka/>)
- Engineering Badge Day (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/girl-guides-ontario-engineering-badge-day/>)
- Engineering Experience (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/engineering-experience/>)

- Go CODE Girl (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/go-code-girl/>)
- Go ENG (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/go-eng/>)
- Pitch Black (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/pitch-black/>)
- WEMADEIT (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/we-made-it/>)
- Global Changemakers Engineering Competition (<https://www.ryerson.ca/engineering-architectural-science/community-engagement/kids-parents-teachers/global-changemakers/>)

In our outreach programming, one of our priorities is conveying the social impact of engineering. The following participant quote following a Pitch Black workshop is an example of this: *“I like that the activity was presented in a real-life scenario so that you can see how you would apply that knowledge in real life.”* Another priority is designing programming that provides students the confidence to continue their STEM journey after a workshop, the following quote following an outreach event for grade 8 students exploring the basics of programming is an example of this: *“Paari and Warda (facilitators) were incredible. I used to think of programming as very overwhelming and I had no clue what to do. Now I understand how the commands work together to create messages and solve problems using variables.”* Since March 2020, the FEAS Equity, Diversity and Inclusion Office has reached over 2570 students and 40 teachers through our virtual programming such as Pitch Black, Powering Up, Go Code Girl, Go ENG and the Global Changemakers Engineering Competition.

We have seen an overwhelming interest in engineering outreach programs in the last few years, as evidenced by our oversubscribed Go CODE Girl 2021 event, which resulted in a waitlist of nearly 200 students. In response to this, the FEAS Equity, Diversity and Inclusion Office offered two additional Go CODE Girl events.

We know that these outreach events are transformative, as nearly 88% of students survey respondents report actively considering a career in engineering after participating in the Global Changemakers Engineering Competition. This competition event is designed for grade 7-10 women to explore real life problems that engineers face around the world, while also understanding how engineering can be used to support the [United Nations’ Sustainable Development Goals](#).

FEAS outreach programs are designed to reach audiences representing identity based groups that have been systematically marginalized from engineering programs. These programs are offered as part of a larger strategy managed by the FEAS Equity, Diversity and Inclusion Office.

Suggestion 2. The PRT applauds the efforts made by the program to ensure consistency in teaching practice and assessment across the program. Encouragement of faculty and instructors to take advantage of institutional professional development opportunities is also noteworthy. The PRT suggests that such efforts continue and be expanded. For example, perhaps the Department could introduce departmental teaching awards to augment those already offered by FEAS and the University. These would be aimed at faculty, sessional instructors and, importantly, graduate assistants. The latter might help with the issue of GA quality noted in the self-study. This could also support a more robust framework for feedback to GAs about their performance.

Department’s Response: The Department suggests that the University increases the number of awards to faculty members, Sessional Instructors, Graduate Assistants and staff, given the large population at the University, faculty and department levels.

Dean’s Response: Ryerson University currently offers the following teaching awards: Chancellor’s Award of Distinction, President’s Award for Teaching Excellence, Provost’s Award for Teaching Excellence, Dean’s Teaching Award – Faculty, and Dean’s Teaching Award – Contract Lecturers. The Faculty of Engineering and Architectural Science will investigate the suggestion of establishing teaching awards for graduate assistants.

Suggestion 3. The PRT suggests a continuous process of seeking feedback from employers as well as from

internship/co-op students on the relevance and assessment of LOs and related skills. While this creates some work for the Department, it is likely to yield more useful information for program improvement than relying on surveys carried out once every 8 or so years.

Department's Response: The Department will work on increasing the frequency of conducting student and alumni surveys. The Dean's office can conduct surveys among CIP students and their employers given the new administrative structure of the CIP program in FEAS.

Dean's Response: The Faculty of Engineering and Architectural Science thanks the PRT's team for this suggestion. The FEAS CIP Office seeks feedback from employers as well as from internship/co-op students in various ways. The engagement activities with employers carried out by the FEAS CIP Office include: 1) Periodic engagement meetings: These meetings are held throughout the year during employer engagements with existing employer partners and through the Office's business development activities, outreaching potential new employer partners. During these meetings, the Office collects employers' feedback about labour market insights and hiring trends; 2) Employer check-in meetings: These meetings are held with host employers to collect their feedback about the placed students' performance; and 3) Annual alignment meetings: These meetings are held at the end of the hiring/placement cycle (June-August) with the aim of having in-depth conversations with the CIP top hiring employers about their relationship with the Faculty, their experience with CIP, and feedback on future engagements and collaborations. The two main groups of students served by the FEAS CIP Office are: enrolled students who intend to participate in the co-operative internship program and placed students who are employed by an employer partner. The FEAS CIP Office collects feedback from internship/co-op students through various activities, including 1) One-on-one advising meetings (enrolled students): These meetings are scheduled by students based on their needs. During these meetings students ask questions, share concerns, and through this process, they provide us with feedback on ways to improve current processes in CIP; 2) Group drop-in sessions (enrolled students): These sessions are scheduled regularly for students to ask questions and clarify concerns, similar to the one-on-one meetings but as a group. In these sessions, the Office has open conversations about what concerns students in CIP. During these conversations, the Office highlights what might not be working well and addresses any gaps in how we support our students in CIP; 3) Post-workshop/event feedback surveys/forms (enrolled + placed students): These forms/surveys are shared with students after selected events and workshops to collect student feedback. This is a work in progress as the Office aims to include these forms/surveys after all workshops and events this year; 4) Check-in surveys (placed students): These are mandatory check-in surveys sent to all placed students. The aim of these surveys is to check on the students' safety, wellbeing and job onboarding, and to provide the students with the opportunity to connect with a CIP staff if they need to express any concerns or feedback about their placement; 5) One-on-one check-in meetings (placed students): These are mandatory meetings following the first check-in survey sent to students during the first 1 to 3 months of their placement. During these 20-30 minute meetings, CIP staff connect with the students to follow up on their survey feedback and further engage with students to uncover any issues, and highlight future engagement opportunities in CIP, (i.e. CIP alumni engagement, attending CIP events and workshops that are planned for placed students etc.); and 6) Competency & career development surveys (placed students): These are currently in development and will follow the check-in surveys.

As proposed by the program in the self-study:

- 1. Increase faculty complement**
- 2. Increase Quality of Graduate Assistants**
- 3. Improvement of the program co-curriculum**
- 4. Continually review and improve program curriculum**
- 5. Promote wellness, sensitivity and inclusivity attributes in faculty and staff**
- 6. Morale of faculty members**
- 7. Civil Engineering Department Outreach**

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 a) leading initiative: <i>Department Chair</i> b) approving recommendation, providing resources, and overall monitoring: <i>Dean of FEAS, Provost</i>

Priority Recommendation #2: Address gaps of learning outcomes revealed in the curriculum mapping
Rationale: <i>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.</i>
Implementation Actions: <ol style="list-style-type: none">1) <i>Review the CEAB Graduate Attributes, the Program LOs, and the UDLEs, and create a learning outcome mapping;</i>2) <i>Review the current curriculum mapping;</i>3) <i>Revise the curriculum mapping.</i>
Timeline: <i>All these action items to be completed by the end of 2021/22 academic year.</i>
Responsibility for a) leading initiative: <i>Associate Chair/Undergraduate Program</i> b) approving recommendation, providing resources, and overall monitoring: <i>Department Chair, Associate Dean/Undergraduate Programs</i>

Priority Recommendation #3: Conduct follow-up student and alumni feedback surveys
Rationale: <i>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.</i>
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.*

Priority Recommendation #4: Strengthen the culture of ethics and academic integrity

Rationale: *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.”*

Implementation Actions:

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

Timeline:

1. Review current practice: Fall 2021
2. Survey: Fall 2021/Winter 2022
3. Plan development: Winter 2022

Responsibility for

a) leading initiative: *Associate Chair/Undergraduate*

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

Priority Recommendation #5: Continually review and improve program curriculum

Rationale: *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*

Implementation Actions:

1. Ask Curriculum Committee to regularly review and improve, as needed,
 - 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:
 - 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 2022*
4. *Department Chair coordinates the progress of this priority item with Items #2 and #3; Fall 2022 and Winter 2023*

Responsibility for

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

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

Priority Recommendation #6: Increase quality of Graduate Assistants

Rationale: *This recommendation is to reflect on student and alumni surveys.*

Implementation Actions:

1. *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.*
2. *Establish online procedure for the submission and marking of assignments and lab reports by the GAs.*
3. *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.*
4. *Provide space for professors and staff for brainstorming ideas for improvement.*
5. *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.*

Timeline:

1. *The department leadership team meets to develop an overall strategy, September 2021*
2. *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*
3. *The best solution is approved by the Council, Winter 2022.*

Responsibility for

a) leading initiative: *Associate Chair/Undergraduate, Associate Chair/Graduate Studies*

b) approving recommendation, providing resources, and overall monitoring: *Department Chair, Department Council, Graduate Council; Dean, FEAS for budget*

Priority Recommendation #7: Expand Civil Engineering Department outreach

Rationale: *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.*

Implementation Actions:

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*