

Program Progress Report
Institutional Quality Assurance Program (IQAP) Review
Civil Engineering – Undergraduate Programs

Date of Site Visit: March 28 – 29, 2023

Progress Report Prepared by: Dr. Lydell Wiebe (Department Chair), Dr. Mohamed Hussein (Associate Chair, Undergraduate), Melissa Furtney (Academic Department Manager as of August 21, 2025) and Sarah Sullivan (Academic Department Manager until August 21, 2025).

Please outline below how recommendations from the initial program review have been addressed. [Please fill in one table for each recommendation from the original Final Assessment Report]

Recommendation #1: Consider changing the way the capstone design projects are identified (involving industry more directly and making the projects more focussed within subdisciplines), and by ensuring students have the required skills before tackling specific design tasks (coordinating delivery of the fourth-year electives).
Responsibility for Implementation: Department Chair and Associate Chair, Undergraduate
Anticipated Timeline for Completion: Discussions over the next 8 months, with potential changes to follow.
Additional Notes/Commentary: The department's initial response to the Review Team's final assessment noted that the capstone design project course has undergone significant improvements over the last few years, and there is still opportunity to improve. The immediate next steps were to meet with the 2023-24 capstone instructors, most of whom have been teaching this course for several years, to discuss the IQAP Review Team's recommendations and opportunities for implementation.
Progress (check one) ☒ Completed ☐ In Progress ☐ Other (please explain)
Department's Comments: The IQAP review team's comments were considered through a meeting of the Associate Chair Undergraduate with the capstone instructors on April 25, 2024, and a meeting of the Chair, Associate Chair Undergraduate, and capstone instructors on June 12, 2025. In both meetings, we discussed the merits of alternative delivery formats for capstone, including more focused projects and greater industry involvement. We also discussed student feedback on the format of our capstone course, and we noted that McMaster placed first in the CSCE national capstone competition in 2024 and second in 2025. While we recognize the merits of more focused projects, we believe that the multidisciplinary and open-ended nature of our project format is a unique strength that equips our students for

success. As appropriate, though, we will offer to connect students with industry mentors for additional support in developing their capstone projects.

Regarding the delivery of final-year electives, we reintroduced the Foundation Engineering course that had been cancelled in 2023/24 due to a lack of teaching staff, and we are currently hiring in geotechnical engineering to fill this need on a longer-term basis. We also moved Building Science from Term 2 to Term 1, beginning 2024-2025. While it is not possible to have all technical electives completed before the capstone course, the capstone instructors do bring critical pieces to students on an as-needed basis.

Dean's Comments:

The Faculty supports the Department's response and agrees with the approach outlined. We recognize the unique value of the multidisciplinary, open-ended capstone format in preparing students for success. While recent recognition at national competitions is noteworthy, it is also important to keep in mind that the key measure of success is how well the course supports students in achieving the CEAB Graduate Attributes, which may not always align with external competition metrics.

QAC Comments (to be filled in by Quality Assurance Committee):

It appears that the reviewers' recommendations have been taken into consideration in discussions with instructors for the capstone. Improvements have been made over the last few years, and the focus on students being able to achieve CEAB Graduate Attributes seems to be the most important consideration

Recommendation #2: Integrate software in a more systematic way through the program – introducing some software earlier in the program and maintaining use of software skills (e.g. programming) through the later years.

Responsibility for Implementation:

Associate Chair, Undergraduate and Undergraduate Affairs Committee

Anticipated Timeline for Completion: Discussions over the next 8 months, with potential changes to follow.

Additional Notes/Commentary: The department provided the following response to the Review Team's recommendation: We plan to continue building on improvements made over the last few years to enhance our students' education in digital literacy for civil engineering. This recommendation could affect several courses and will be referred to the Undergraduate Affairs Committee for development. In particular, we are currently exploring the possibility of launching a new Level II Course "Introduction to Civil Engineering," which is envisaged to include an introduction to several software packages.

Progress (check one)

Completed

☒ In Progress

Other (please explain)

Department's Comments:

Significant progress has already been made on this front, particularly through the introduction of CIVENG 2X03 (Introduction to Civil Engineering). This course includes a major software component, with 5 different software packages taught throughout the semester, each including a computer lab and an assignment. This is designed to provide a solid foundation of software skills that students can develop in subsequent courses. For example, whereas AutoCAD has previously been an optional tool for students to use in CIVENG 2A03 (Surveying and Measurement), it is now being required for all students to use.

Our next step is to develop a more systematic plan for integrating software tools throughout the undergraduate curriculum. The Associate Chair Undergraduate (Mohamed Hussein) is leading the development of our Department's digital plan, and will discuss this as part of the meetings with the subdiscipline groups within our Department in 2025-2026. Several courses already use different software packages and/or programming skills, and we plan to support communication among these instructors to promote alignment of what is taught.

For interested students, the Department of Computing and Software offers a minor in Computer Science, open to all engineering students.

Dean's Comments:

The Faculty strongly supports the Department's plan to integrate software skills across the curriculum more systematically. Embedding a structured approach to software and programming exposure will ensure that students not only gain familiarity with key tools but also develop transferable digital competencies that align with CEAB Graduate Attributes and industry expectations. We endorse the Department's efforts to coordinate across courses and subdisciplines and encourage continued attention to both consistency and progressive skill development.

QAC Comments (to be filled in by Quality Assurance Committee):

Led by the Associate Chair UG, there is a department digital plan to organize the use of software packages and programming skills and align these with what is being taught across the curriculum. Some improvements have already been made (such as the requirement for AUTOCAD use by all)

Recommendation #3: Improve performance of teaching assistants by strengthening mentoring by faculty or senior TAs, by assessing competence (not just financial need) when making TA assignments, and by using rubrics more consistently. Aim for increased engagement of the students in tutorials and lectures by giving partial marks for class engagement.

Responsibility for Implementation:

Department Chair and Associate Chair, Undergraduate

Anticipated Timeline for Completion: Discussions over the next 8 months, with potential follow-up as needed.

Additional Notes/Commentary: The department's initial response to the Review Team's recommendations regarding improved TA performance included a plan that would involve the Associate Dean, Academic, who would advise on best practices for TA training and mentoring that can

then be promoted to all instructors.

Suggestions regarding the assessment of TAs need to comply with the collective agreement between the TA Union and the University and cannot be initiated at the Department level.

We noted that financial need is not the current basis for TA assignments in the Department of Civil Engineering. There is a guaranteed minimum amount of funding for all MASc and PhD students, which includes a TAship. Assignment of additional TAships is via a competitive application process and is geared towards unfunded Year 5 PhD students as per their collective agreement.

Regarding participation grades, in addition to the fluids course identified by the reviewers (CIVENG 2004), a pilot project was underway in CIVENG 4N04 (Steel Structures) in Fall 2023 where students would receive partial credit for lecture participation. We stated that this would be discussed at Department Meetings in 2023- 2024 in order to share best practices.

Progress (check one)

☒ Completed

☐ In Progress

☐ Other (please explain)

Department's Comments:

Regarding TA assignments and performance, we explored systematic ways of assessing TA performance through conversation among the Chair (Lydell Wiebe), Academic Department Manager (Sarah Sullivan), and Engineering Manager of Staffing & Administration (Amber Bukata). As part of this, we received a set of TA Performance Management Guidelines that outline how we can address performance concerns in accordance with their collective agreement. The result was that, if the Department wanted to institute performance assessment of all TAs, it would require the Chair and/or ADM to have a private meeting with each TA individually, which is not feasible for the 100 TA positions that we fill each semester. Instead, we have encouraged faculty to provide detailed instruction and mentorship to their TAs, and to connect with the Associate Chair (Undergraduate), ADM, or Chair if they have any questions or concerns. The ADM requests input from both TAs and faculty before assigning TAs to courses every year.

Regarding participation grades, this opportunity was discussed at the Department Meeting on September 14, 2023, and some instructors have experimented with it. The literature shows that there are several effective ways of increasing student engagement in addition to assigning attendance grades. These include active learning and integrating principles of Universal Design for Learning (UDL) in course delivery, both of which are also used by instructors in our program.

Dean's Comments:

The Faculty supports the Department's thoughtful approach to TA assignment and performance management. We recognize the constraints associated with implementing a formalized evaluation process for such a large number of TAs, and we agree that emphasizing faculty mentorship, clear guidance, and open channels for addressing concerns is a practical and effective path forward. We also support the Department's exploration of strategies to foster student engagement beyond participation grades, including the use of active learning and UDL principles, which align with Faculty-wide priorities for inclusive and effective teaching.

QAC Comments (to be filled in by Quality Assurance Committee):

The department clarified the process for TA assignment in their response. The AD Academic will be responsible for best practices for TA performance. All faculty are asked to provide detailed mentorship and instruction to TAs. There has been some uptake of participation grades.

Recommendation #4: Improve the laboratory facilities and the access of the undergraduate students to laboratory tests and embedment of lab experiments in more classes. Secure lab spaces for the Transportation group.

Responsibility for Implementation:

Associate Chair, Undergraduate and Undergraduate Affairs Committee

Anticipated Timeline for Completion: Discussions over the next 8 months, with potential follow-up as needed.

Additional Notes/Commentary: In response to the Review Team's recommendations the department noted: Our current laboratory facilities include the Applied Dynamics Laboratory (labs related to structures, materials, and surveying), the Water Laboratory, the Geotechnical Laboratory, and a Design Studio. The Water Laboratory has been renovated since the previous IQAP review in order to expand its capacity, providing to a much-enhanced experience in the associated undergraduate courses. We see a need for similar enhancements to our other laboratory spaces, particularly if our enrollment is to grow, but still believe that we are providing quality experiential learning opportunities to our students within the constraints of our current facilities.

Space has been a considerable issue in the Faculty of Engineering, but the department will explore with the Faculty any possibilities to improve on the status-quo, including more effective use of the existing space and the planned new engineering building.

Embedding laboratory experiments in more classes will be referred to the Undergraduate Affairs Committee for discussion.

Dedicated laboratory space for our Transportation Group would help tremendously with enhancing the digital content of our curriculum, which is central to many of the activities in transportation-related curriculum. The department already has ongoing discussion on this aspect with the leadership of the Faculty of Engineering.

Progress (check one)

Completed

☒ In Progress

Other (please explain)

Department's Comments:

We are proud to announce the recent establishment of the JNE Experiential Learning Fund, which will support a variety of experiential learning activities for our students (most notably the numerous site visits within CIVENG 2X03). Our students' hands-on experiences are not limited to dedicated laboratories, as our region is a living laboratory for civil engineering.

The Applied Dynamics Laboratory building is currently undergoing a major renovation that will, among other things, bring natural light to previously dark spaces, including the classroom that is used when undergraduate laboratories occur in this building. Our graduate spaces, including those in this building, are currently being renovated to transition to a hotelling model to accommodate the preference and numbers of our graduate students. This will complement the space that is currently dedicated to transportation-focused students through the McMaster Institute for Transportation and Logistics (MITL).

As indicated in our initial response, our water lab has been renovated recently, and we continue to look for further opportunities to improve our other laboratory spaces. While we wait for such resources to become available, we do believe that we are currently providing quality experiential learning opportunities to our students.

Dean's Comments:

The Faculty concurs that space is an ongoing challenge, and we commend the Department for its creativity in ensuring students have meaningful experiential learning opportunities despite these constraints. The integration of site visits through CIVENG 2X03, supported by the JNE Experiential Learning Fund, is an excellent example of leveraging our region as a "living laboratory" for civil engineering. We also recognize the Department's significant efforts to upgrade laboratory and classroom spaces, including recent renovations to the water lab and the ongoing improvements in the Applied Dynamics Laboratory. These initiatives demonstrate a strong commitment to enhancing both the quality and accessibility of experiential learning for students. The Faculty likewise plans to invest in infrastructure and renovations to further support these goals and ensure continued excellence in the student learning environment.

QAC Comments (to be filled in by Quality Assurance Committee):

It appears this has been addressed through the JNE Experiential Learning fund and reassessment of the use of current spaces and potential improvements

Recommendation #5: Provide mentors to all junior faculty members, including regular checkpoints with senior colleagues or the chair.

Responsibility for Implementation:
Department Chair

Anticipated Timeline for Completion: This process has been initiated and will be ongoing.

Additional Notes/Commentary: The department outlined the following in response to the Review Team's recommendations:

- The Department chair will assign a mentor to all newly hired faculty members. (This began in 2022.)
- The Departmental Tenure and Promotion Committee will meet annually with all junior faculty members and formal written feedback will be provided by the Department Chair.
- Ongoing informal mentoring of junior faculty members by their senior colleagues will be further encouraged in department meetings.

Progress (check one)

☒ Completed

☐ In Progress

☐ Other (please explain)

Department's Comments:

Implementing mentorship is an ongoing process, but a comprehensive structure is in place. Our mentoring system for Assistant Professors now includes:

1. The Chair connects each Assistant Professor with one Teaching Mentor and one Research Mentor, with the assignments reviewed annually based on suggestions from the junior faculty member. The mentor and mentee are encouraged to meet at least once per term, and many choose to meet more often.
2. The Chair invites all Assistant Professors for a meeting over coffee every term to discuss issues of common interest, and offers individual meetings as needed.
3. Each Assistant Professor has an Annual Meeting with the T&P Committee, which provides feedback on their CV and other available information. The conversation is documented in a letter from the Chair.
4. The Department's Associate Chair Research is tasked with assisting all Assistant Professors in finding support for development of research proposals as requested.
5. Our Department is very supportive, with all colleagues eager to help out as requested.
6. The Faculty's Instructional Development and Evaluation Committee (IDEC) provides an annual review of every Assistant Professor's teaching. This is done by one colleague from within the Department and one from outside the Department, who have an initial meeting with the instructor, visit their class, have a debrief meeting, and document the process in a report that goes to the Chair.
7. The Faculty offers a Fireball Academy, with regular workshops on issues that are especially relevant to newer faculty.
8. McMaster's MacPherson Institute is available to support on teaching-related activities and offers regular training sessions. This includes the three-day Instructional Skills Workshop (ISW), which new hires are expected to complete as part of their employment contract.
9. Research support is available through the office of the Associate Dean Research (2 dedicated staff to foster collaborations), Research Office for Administration, Development and Support (ROADS), and the McMaster Industry Liaison Office (MILO).
10. Every year, the University hosts a series of sessions for new faculty on various aspects of the academic life.

Dean's Comments:

The Faculty supports the Department's comprehensive mentoring structure for Assistant Professors. The addition of designated teaching and research mentors provides a consistent point of connection that complements the wide range of existing Faculty and University supports.

QAC Comments (to be filled in by Quality Assurance Committee):

It appears the Chair has developed a robust process for including feedback from T&P, AD Research support, IDEC Annual review, workshops and sessions.

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Recommendation #6: Another faculty member is needed in the Geotechnical Engineering area.
Responsibility for Implementation: Department Chair
Anticipated Timeline for Completion: July 2026
Additional Notes/Commentary: A faculty search in this area was initiated in early 2023 with a candidate identified and hopeful to start once immigration processes are completed. An additional faculty search in the Geotechnical research area is currently underway.
Progress (check one) ☐ Completed ☒ In Progress ☐ Other (please explain)
Department's Comments: An offer was made and accepted in early 2024 for a tenure-track position in geotechnical engineering. Unfortunately, the successful candidate's visa application has been under review for about 18 months, with no decision until now. We still hope that she will join us soon. While we wait, we have initiated a new search for an additional tenure-track position in geotechnical engineering. Applications will be reviewed in October 2025, with a target start date of July 2026.
Dean's Comments: The Faculty acknowledges the challenges the Department has faced with the delayed arrival of the new geotechnical hire and supports the decision to initiate a second search. These efforts reflect a strong commitment to addressing program needs and ensuring long-term stability in this critical area.
QAC Comments (to be filled in by Quality Assurance Committee): Recruitment is underway

Recommendation #7: Mentor and evaluate sessional instructors.
Responsibility for Implementation: Associate Chair, Undergraduate

Anticipated Timeline for Completion: The Associate Chair, Undergraduate will connect with all Sessional Faculty one month before the start of term.
Additional Notes/Commentary: The department initially noted that the Associate Chair, Undergraduate will connect with all new Sessional Instructors to offer advice and support through out the semester.
Progress (check one) ☒ Completed ☐ In Progress ☐ Other (please explain)
Department's Comments: Implementation is ongoing, but it is part of the Associate Chair Undergraduate's process to connect with all Sessional Instructors after they are appointed to their courses, especially for those who have not previously taught at McMaster. Student evaluations of teaching are collected by the university, shared with the Chair, and considered when making future selections for sessional instructors.
Dean's Comments: The Faculty supports this plan for engaging and reviewing Sessional Instructors and agrees it is an appropriate approach.
QAC Comments (to be filled in by Quality Assurance Committee): AD UG is responsible for to connect with all sessional instructors. Student evaluations are part of the considerations for hiring