

Final Assessment Report

Civil Engineering (MEng, MAsc, PhD)

June 2015

Background:

The Department of Civil & Environmental Engineering (CEE) (Civil Engineering until 2006) is one of the founding Departments of the University of Waterloo. The department began offering its graduate program in 1960, with its first Master's degree being awarded by the University in 1962. CEE's graduate program provides in-depth training and research opportunities in four fields of study: Environmental & Water Resources (E&WR), Geotechnical (GEO), Structures, Mechanics & Construction (SM&C), and Transportation (TRANS). Degrees offered include: Master of Engineering (MEng) in Civil Engineering or Nuclear Engineering (approved in 2004), a Master of Applied Science (MAsc) in Civil Engineering, and a Doctor of Philosophy (PhD) in Civil Engineering. In Fall 2013, CEE's student population consisted of 972 undergraduate students, and 244 (204.6 Full-Time Equivalent [FTE]) graduate students.

CEE underwent a successful review in 2007. At that time, reviewers concluded: "Amongst the twelve Civil Engineering graduate programs in Ontario, the quality of the program at the University of Waterloo ranks in the top two."

Summary of Review Process

Submission of Self-Study by Program: August, 2014

Site visit: January 26-27, 2015

External Examiners' Report: February 12, 2015

Departmental response: April 10, 2015

Review Team

External Reviewers: Dr. Leonard Lye, Department of Civil Engineering, Memorial University

Dr. Ernest Yanful, Department Civil & Environmental Engineering, University of Western Ontario

Internal Reviewer: Dr. Maria Liston, Department of Anthropology, University of Waterloo

The Associate Provost, Graduate Studies selected the external reviewers from a list provided by CEE. The Review Team conducted a site review over two days on January 26-27, 2015; the self-study report was provided to the Review Team prior to the visit.

The site review included meetings with the Provost & Vice President Academic, Associate Provost of Graduate Studies, Faculty of Engineering Dean and Associate Dean of Graduate Studies, CEE Chair and Associate Chair of Graduate Studies and representatives of CEE faculty, graduate students, and staff. The Review Team was given a tour of the CEE research facilities.

Summary of Review.

The External Reviewers, Dr. Leonard Lye and Dr. Ernest Yanful, submitted a very positive report of the graduate programs in Civil Engineering (MEng, MAsc and PhD). They concluded that: “the UWaterloo Civil Engineering graduate program is very strong and comparable to civil engineering programs at other top Canadian universities.”

Strengths:

- “CEE graduate students at UWaterloo feel good about their program, especially the quality of courses and instruction.”
- “Faculty members in the CEE program are well qualified in their various fields.”
- The research productivity of faculty “is comparable to average productivity of faculty members in research intensive Civil Engineering departments in Canada”.
- “CEE admission standards ... are in line with the standards of other major engineering departments in Canadian and U.S. universities”.
- “The moral of faculty staff and students is high”.

Weaknesses:

- The number of faculty supporting the GEO stream (4) is minimal.
- Graduate students raised concern about the availability and flexibility of graduate courses.
- Most PhD students “do not complete their comprehensive examination within the required four terms, but in the fifth term or later”.
- Funding for international MAsc students should be “increased to provide a sufficient living stipend”.
- Travel conference support should be increased to encourage participation in conferences.

Reviewer Recommendations & Department Responses:

1. *“There should be a clearer written policy in the calendar regarding minimum passing grades in engineering and course failures. The minimum passing grade in a graduate engineering course is not mentioned in the calendar. It is, however, mentioned that an overall average mark of 70% is required for progression.”*

We agree. Implementation to occur within the next 12 months.

2. *“CEE should encourage and monitor the participation of CEE students in the new MASc and PhD Collaborative Water Program. Students should not miss this unique opportunity.”*

We agree. Implementation to occur within the next 12 months.

3. *“Inequalities in the quality of graduate student office space should be addressed. The plan to renovate current inadequate and dated offices being used by GEO graduate students is commendable and should be implemented.”*

This is being addressed to the greatest extent possible. Substantial financial resources are required for us to execute our plans to continue to renovate existing CEE space into higher-quality graduate student office space. This is a multi-year effort that may take five or more years and at least \$300,000 to be realized.

4. *“The 4 FTE faculty complement for the GEO group is the minimum and that UWaterloo should do all it can to increase or at least maintain this number. This should be considered mission critical.”*

The GEO field of study will continue to be supported by 4 FTE faculty members. An increase in the faculty complement in this field of study is not anticipated in the foreseeable future.

5. *“More graduate courses in the GEO area should be offered on a regular basis.”*

Over the next 24 months we will carefully monitor the graduate courses in the GEO area with a view to increasing their availability and timing. In the next year (2015/16), two faculty members in this area are planning to take sabbatical leave, and one will be retiring (January 01, 2016). We have begun advertising to replace the impending retirement.

6. *“The funding level for international MASc students should be increased so that sufficient funds are available for living expenses after the payment of fees.”*

While we agree that this is a concern, there is little CEE can do aside from requiring supervisors to increase their funding level for international MASc students. We are not prepared to take action on this recommendation; however, we will continue to encourage supervisors of international MASc students to provide higher-than-minimum GRS payments.

7. *“To encourage conference attendance and participation by graduate students, travel support should be increased. The department, faculty, graduate student union and the university could share this increase.”*

Although we do not have supporting data, we believe conference attendance by CEE graduate students is quite high, particularly for PhD students. The largest part of these expenses should be borne by the supervisor since it is in their best interest to disseminate their research findings at these venues and provide their graduate students with a rewarding experience. We will collect the appropriate data to make an informed conclusion, and then re-visit this recommendation within the next 12 months.

The Dean of Engineering, Dr. Pearl Sullivan, viewed the External Review Report to be positive and endorsed the Department response. She commended the Department for the progress on a number of recommendations

This report will go to Senate Graduate and Research Council on June 8, 2015, and to Senate on June 15, 2015.