

CIVIL ENGINEERING

The Graduate Program in Civil Engineering offers advanced training leading to Master of Applied Science and Doctor of Philosophy degrees. Three main research themes distinguish the program: infrastructure, resilience, and sustainability.

Infrastructure rehabilitation and replacement is the principal goal of this theme. Research focuses on above-ground infrastructure, such as roads, bridges, buildings, wastewater treatment facilities, and on buried infrastructure, such as stormwater collection networks, and large-scale tunnels. Other focus areas include intelligent transportation systems and freight transport networks.

The resilience theme emphasizes the performance of civil infrastructure during extreme loading events, including fires, and the influence of climate change. The development of novel materials and construction technologies that improve the resilience of civil infrastructure to ensure post-extreme-event functionality, such as earthquakes and floods, is one of the primary objectives.

Sustainability research focuses on developing technologies for construction using recycled and renewable materials. Other focus areas include construction over marginal-quality lands, post-mining rehabilitation of landscapes, remediation of contaminated groundwater, sustainable building design, and resource recovery.

MASTER OF APPLIED SCIENCE PROGRAM

ADMISSION REQUIREMENTS

The minimum requirements for admission to the MASc degree program in Civil Engineering is a bachelor's degree (BASc, BEng or equivalent) in Civil Engineering (or a closely-related discipline). A minimum B average in the final two years of the bachelor's degree program is required for admission.

DEGREE REQUIREMENTS

MASc Degree by Thesis

1. Courses

Candidates for the MASc degree are required to successfully complete **five one-term courses, at least three of which must be core courses from the subdiscipline** in which the student is pursuing the MASc degree. Of the remaining two courses, one can be a **technical elective** selected either from courses in Civil Engineering that are outside of the subdiscipline, or from courses offered by other graduate programs within the Lassonde School of Engineering or from courses offered by the Graduate Program in Environmental Studies or by the Graduate Program in Geography. The last remaining course can be an **open elective**, which can either be another technical elective or can be selected from courses offered by other York University Faculties. Of the five one-term courses, a maximum of two can be directed reading courses.

The requirements for the MASc degree also include non-credit complementary activities. All MASc students are required to register in the **non-credit course Civil Engineering 6000 0.0: Graduate Seminar Series in Civil Engineering** for every term during their study period. Each student must attend a minimum of ten graduate seminars and give at least one graduate seminar based on the student's research project. All MASc students are also

required to take a non-credit course on **engineering ethics** offered by the Lassonde School of Engineering, **Engineering 6000 0.0: Engineering Ethics**.

2. Thesis

MASc students are required to register for a non-credit master's thesis course for every term during their study period, **Civil Engineering 6002 0.0: MASc Civil Engineering Thesis**. A thesis supervising committee is assigned to oversee the student's academic progress, including courses and research. Each MASc student is required to submit an annual progress report. A meeting of the student's supervisory committee is held prior to the completion of the annual progress report. The student may be asked to undergo corrective measures if the supervisory committee finds the student's progress in the program to be unsatisfactory.

Each MASc student must submit a thesis on their research project in written form and defend the thesis in an oral examination to a thesis examination committee. Criteria for examining the thesis includes academic excellence, innovation, contribution to the state-of-the-art, and quality of both the written thesis and the oral presentation.

PROGRAM LENGTH

The expected degree completion time for full-time MASc students is 6 terms (2 years). For those MASc students who complete degree requirements earlier than 6 terms, they must register and pay fees for a minimum of the equivalent of 3 terms of full-time study. All requirements for a master's degree must be fulfilled within 12 terms (4 years) of registration as a full-time or part-time master's student in accordance with Faculty of Graduate Studies' registration policies.

DOCTOR OF PHILOSOPHY PROGRAM

ADMISSION REQUIREMENTS

The minimum requirements for admission to the PhD degree program in Civil Engineering are a bachelor's degree (BASc, BEng or equivalent) and a master's degree (MASc, MEng or equivalent) in Civil Engineering (or a closely-related discipline). A minimum B average in the coursework for the master's degree program is required for admission.

The minimum requirement for transfer from the MASc to the PhD degree program in Civil Engineering is successful completion of MASc course requirements with an overall "A" average. In addition, a research plan must be submitted to the supervisory committee for approval in consultation with the Graduate Program Director. It is normally expected that the student making a transfer request will have completed three terms of full-time study after initial registration and no more than five terms of full-time study after initial registration into the MASc program.

❖ *Note that direct entry into the PhD degree program after completing a Bachelor's degree in Civil Engineering (or a closely-related discipline) is not permitted.*

DEGREE REQUIREMENTS

1. Courses

Coursework requirements for PhD students fall under **one of the following three options**:

Option 1: A PhD student with a master's degree in Civil Engineering from York University: The requirement is **three half courses**, two of which are required to be **technical electives** plus one **open elective**. These courses must be different from those taken by the student as part of the student's master's degree program.

Option 2: A PhD student with a master's degree in Civil Engineering (or a closely-related discipline) not from York University: The requirement is **three half courses**, two of which must be core courses plus one **technical elective**.

Option 3: A PhD student who has transferred from the MSc degree program to the PhD degree program: The requirement is **two half courses**, one of which must be a **technical elective** and the other an **open elective**. These two required courses must be different from those taken by the student in fulfilling the requirements of the student's master's degree program.

The requirements for the PhD degree also include non-credit complementary activities. All PhD students are required to register in the **non-credit course Civil Engineering 6000 0.0: Graduate Seminar Series in Civil Engineering** for every term during their study period. Each PhD student is required to attend a minimum of ten graduate seminars and give at least two graduate seminars based on the student's research project. Each PhD student is also required to take a non-credit course on **engineering ethics** offered by the Lassonde School of Engineering, **Engineering 6000 0.0: Engineering Ethics**, unless the student has previously taken this course as part of the student's master's degree program.

2. Dissertation Course and Supervisory Committee

All PhD students are required to register for a non-credit PhD dissertation course for every term during their study period, **Civil Engineering 6001 0.0: PhD Civil Engineering Thesis**. A dissertation supervising committee is assigned to oversee the student's academic progress, including courses and research. Each PhD student is required to submit an annual progress report. A meeting of the student's supervisory committee is held prior to the completion of the annual progress report. The student may be

asked to undergo corrective measures or, in exceptionally serious cases, withdraw from the program, if the supervisory committee finds the student's progress in the program to be unsatisfactory, regardless of whether the student has successfully completed the PhD comprehensive examination and has met the PhD dissertation proposal presentation and defence requirements.

3. Comprehensive Examination and Research Proposal

Each PhD student is required to pass a PhD comprehensive examination within the first 12 months of the PhD program. Any exceptions must be approved by the Graduate Program Director. Each PhD student is required to present and defend a PhD research proposal to an examination committee within the first 24 months of the student's PhD program in the form of a formal written document and open seminar format. Any exceptions must be approved by the Graduate Program Director. Failure of the PhD comprehensive examination or unsuccessful defence of the research proposal after the second attempt will result in a recommendation to the Faculty of Graduate Studies to withdraw the student from the PhD degree program.

4. Dissertation and Defence

Each PhD student is required to submit a thesis in written form and defend the thesis in an oral examination to a PhD thesis examination committee. Criteria for examining the thesis includes academic excellence, innovation, contribution to the state-of-the-art, and quality of both the written thesis and the oral presentation.

PROGRAM LENGTH

Doctor of Philosophy students must register and pay fees for a minimum of the equivalent of six terms of full-time registration. Normal degree completion time for full-time PhD students is 12 terms (4 years). For full-time PhD students who transferred from the MSc program, the normal degree completion time is 12 terms (4 years). All requirements for a doctoral degree must be fulfilled within 18 terms (6 years) of registration as a full-time or part-time doctoral student in accordance with Faculty of Graduate Studies' registration policies.