Co-op Program

CIVIL ENGINEERING
COURSE-BASED MASTER'S

The course-based master's in civil engineering prepares students to carry out and implement development projects and practice as a professional engineer to address the specific needs of clients and employers.

WHAT OUR STUDENTS CAN DO FOR YOU

Project Management

- Project planning and execution
- Project monitoring and oversight
- Progress and cost tracking reports

Research and development

- Setting up test benches
- Trials and data collection
- Interpretation of results

Design

- Surveys and drawings
- Feasibility studies, estimates, supplier sourcing, bid submission and follow-up
- Equipment production and installation follow-up

Construction

- Site preparation and monitoring
- Administrative management: preparing purchase orders, etc.
- Sampling, inspections and tests

Operations management

- Analyzing and solving problems
- Procedure development
- Staff training
- Employee supervision

KNOWLEDGE AND SKILLS

Students complete 30 master's course credits before starting their co-op work term to finish their program. They specialize in one of the following pathways: concrete, environmental, geotechnical, water resources or structures. There is also the option for a general pathway that covers all specializations. All pathways include multiple engineering management courses.

Elective educational activities (3 credits per activity)	
Concrete pathway 18–30 credits	Materials characterization techniques, hydraulic binders, advanced concrete technology, microstructure and chemical physics of cement and concrete, concrete durability and repair, infrastructure auscultation and instrumentation techniques, composite materials in construction and rehabilitation, degradation of materials, green building materials, life cycle assessment and ecodesign, rheology of cementitious materials
Environmental pathway 18 credits	Soil drainage, life cycle assessment and ecodesign, management of contaminated sites, urban wastewater treatment plants, urban water systems design, water treatment plant design, environmental geochemistry, characterization of contaminated environments
Geotechnical pathway 18–24 credits	Soil drainage, applied rock mechanics, environmental geotechnics, soil dynamics and vibration, earthworks, slope stability, geomechanics, continuum mechanics
Water resources pathway 18–21 credits	Geomatics for integrated water resources management, fluvial hydraulics, hydrology and hydraulics measurement, open-channel flow modelling, urban water systems design, hydrologic modelling, continued study of fluid mechanics
Structural pathway 18–30 credits	Composite materials in construction and rehabilitation, structural stability, structural dynamics, aluminum structures, structural earthquake engineering, overhead power line structures, advanced design of steel structures, advanced design of concrete structures, bridges and structures design, design of wood structures, calculating loads and designing structures per Canadian standards, finite element methods
Engineering project management 0–12 credits	Financial analysis in engineering, creativity and problem solving, engineering project management: processes, engineering project management: monitoring and oversight, managing a career in engineering, CAPM® exam preparation course, managing product development, Six Sigma and Zero Waste, engineering negotiations and dispute resolution, effective communication in engineering

ORGANIZATION OF STUDY (S) AND WORK TERM (W)

1st year			2nd year
FALL	WIN	SUM	FALL
S-1	S-2	S-3	W-1