

# CIVIL ENGINEERING, B.SC.

## Degree Requirements

### Civil Engineering Departmental Program

Course	Title	Hours
Students must complete the Preliminary Engineering Program requirements for graduation. 37.5		
CHEM 1110	Introductory Chemistry 2: Interaction, Reactivity, and Chemical Properties <sup>1</sup>	3
CHEM 1126	Introduction to Chemical Techniques for Engineering 2 <sup>1</sup>	1.5
CIVL 2770	Civil Engineering Materials	5
CIVL 2780	Civil Engineering Systems	4
CIVL 2790	Fluid Mechanics	4
CIVL 2800	Solid Mechanics 1	4
CIVL 2830	Graphics for Civil Engineers	2
CIVL 2840	Civil Engineering Geomatics	3
CIVL 3590	Numerical Methods in Engineering Analysis	4
CIVL 3690	Environmental Engineering Analysis	4
CIVL 3700	Environmental Engineering Design	4
CIVL 3730	Geotechnical Materials and Analysis	4
CIVL 3740	Hydraulics	4
CIVL 3750	Hydrology	4
CIVL 3760	Structural Analysis	4
CIVL 3770	Design of Steel Structures	4
CIVL 3790	Transportation Engineering 1	4
CIVL 4220	Geotechnical Design	4
CIVL 4380	Infrastructure Engineering and Construction Management	4
CIVL 4390	Reinforced Concrete Structures	4
CIVL 4400	Transportation Engineering 2	4
CIVL 4590	Design Project	6
ENG 2030	Engineering Communication: Strategies for the Profession	3
or ENG 2040	Engineering Communication: Strategies, Practice and Design	
ENG 3000	Engineering Economics	3
ENG 3020	Technology, Society and the Future	3
GEOL 1340	The Dynamic Earth	3
MATH 2130	Engineering Mathematical Analysis 1	3
MATH 2132	Engineering Mathematical Analysis 2	3
STAT 2220	Contemporary Statistics for Engineers	3
<b>Options</b>		
One of the following options:		3
Civil Engineering:		
Indigenous Knowledge Course <sup>2</sup>		
Environmental Option:		
PHIL 2750	Ethics and the Environment <sup>3</sup>	
<b>Electives</b>		
One of the following options:		19-20
Civil Engineering Technical Electives <sup>4</sup>		

Environmental Option Technical Electives <sup>4</sup>	Total Hours
	165-166

- <sup>1</sup> The former CHEM 1310 may be used in lieu of the combination of CHEM 1110 and CHEM 1126.
- <sup>2</sup> Students are required to take at least one of the courses from the list of Indigenous Knowledge courses. ENG 4100 may be used to meet this requirement when the course content satisfies the requirements for an indigenous course. Students admitted to Civil Engineering in Fall 2021 who have completed two complementary studies elective courses (or 6 credit hours) prior to admission to the program, may use one of those courses in place of the Indigenous Knowledge course. A complementary studies course is any course from the Faculty of Arts or the Faculty of Management at the 1000 level or above, with the exception of ARTS 1110 Introduction to the University which may not be used for credit in the Price Faculty of Engineering.
- <sup>3</sup> Students pursuing the Environmental Option must take PHIL 2750 as their complementary studies elective.
- <sup>4</sup> Technical elective courses offered vary from year to year and may have limited enrollment. Courses offered in the current year are listed on the online timetables on the Department website.

### Civil Engineering Technical Electives (5 courses) <sup>1,2,3,4</sup>

A minimum of 3 courses must be taken from Group A and up to 2 from Group B, with no more than one course from outside the Department of Civil Engineering.

#### Group A (Select 3 to 5 courses)

Course	Title	Hours
CIVL 3710	Finite Element Analysis	4
CIVL 4020	Masonry Design and Construction	4
CIVL 4022	Properties and Design of Concrete Mixtures	4
CIVL 4024	Sustainable Building Design: Principles of Best Practice <sup>4</sup>	4
CIVL 4030	Advanced Structural Design	4
CIVL 4032	Bridge Engineering	4
CIVL 4040	Structural Dynamics	4
CIVL 4100	Engineering Management and the Environment	4
CIVL 4120	Water Treatment Plant Design	4
CIVL 4130	Solid Waste Management	4
CIVL 4180	Environmental Systems	4
CIVL 4200	Groundwater Contamination	4
CIVL 4230	Geotechnical Engineering	4
CIVL 4232	Geotechnical Earthquake Engineering	4
CIVL 4250	Groundwater Hydrology	4
CIVL 4300	Design of Urban Water Systems	4
CIVL 4350	Hazardous Waste Treatment	4
CIVL 4360	Water Resources Planning and Management	4
CIVL 4410	Transportation Systems	4
CIVL 4420	Highway Pavement Design	4
CIVL 4470	Watershed Processes	4

#### Group B (Up to 2 courses, only 1 from outside of Civil Engineering)

Course	Title	Hours
BIOE 4560	Structural Design in Wood	4
CIVL 4000	Uncertainty Analysis in Civil Engineering Systems	4

CIVL 4332	Civil Engineering Thesis Project	4
CIVL 4500	Contemporary Topics in Civil Engineering	4

<sup>1</sup> Technical elective courses offered vary from year to year and may have limited enrollment. Courses offered in the current year are listed on the online timetables on the Department website.

<sup>2</sup> Students are encouraged to discuss their program of courses with members of the instructional staff to obtain advice concerning the best choice of electives for their needs.

<sup>3</sup> Students may take one technical elective course with a significant engineering science and/or design component from another department subject to the approval by the department head (or designate) of Civil Engineering.

<sup>4</sup> CIVL 4024 can not be held with BIOE 4412 or BIOE 4700.

NATV 2012		6
or HIST 2010	Indigenous History in Canada (C)	
NATV 2020	The Métis in Canada	3
or HIST 2020	The Métis in Canada (C)	
POLS 2802	Introduction to Indigenous Politics	3
POLS 3870	Politics of Indigenous-Settler Relations	3
ENG 4100	Contemporary Topics in Engineering Practice <sup>1</sup>	4

<sup>1</sup> ENG 4100 may be used to meet this requirement when the course content satisfies the requirements of an Indigenous course (amended July 5, 2021).

### Environmental Option Technical Electives (5 courses) <sup>1,2,3</sup>

A minimum of 3 courses must be taken from Group A and up to 2 from Group B, with no more than one course from outside the Department of Civil Engineering.

#### Group A (Select 3 to 5 courses)

Course	Title	Hours
CIVL 3710	Finite Element Analysis	4
CIVL 4100	Engineering Management and the Environment	4
CIVL 4120	Water Treatment Plant Design	4
CIVL 4130	Solid Waste Management	4
CIVL 4180	Environmental Systems	4
CIVL 4200	Groundwater Contamination	4
CIVL 4250	Groundwater Hydrology	4
CIVL 4300	Design of Urban Water Systems	4
CIVL 4350	Hazardous Waste Treatment	4
CIVL 4360	Water Resources Planning and Management	4
CIVL 4470	Watershed Processes	4

#### Group B (Up to 2 courses, only 1 from outside of Civil Engineering)

Course	Title	Hours
BIOE 4460	Air Pollution Assessment and Management	4
CIVL 4000	Uncertainty Analysis in Civil Engineering Systems	4
CIVL 4332	Civil Engineering Thesis Project	4
CIVL 4500	Contemporary Topics in Civil Engineering	4
SOIL 4500	Remediation of Contaminated Land	3

<sup>1</sup> Technical elective courses offered vary from year to year and may have limited enrollment. Courses offered in the current year are listed on the online timetables on the Department website.

<sup>2</sup> Students are encouraged to discuss their program of courses with members of the instructional staff to obtain advice concerning the best choice of electives for their needs.

<sup>3</sup> Students may take one technical elective course with a significant engineering science and/or design component from another department subject to the approval by the department head (or designate) of Civil Engineering.

### Indigenous Knowledge Courses

Course	Title	Hours
NATV 1200		6
NATV 1220	Indigenous Peoples in Canada, Part 1	3
NATV 1240	Indigenous Peoples in Canada, Part 2	3