

DEPARTMENT OF CIVIL ENGINEERING

5 YEAR MODEL PROGRAM

For students starting second year fall 2021

Students are expected to follow either the 4 year or the 5 year model program as closely as possible. This will ensure prerequisite and timetable requirements are met.

Note: c = corequisite

Offered in all 3 terms (Fall/Winter/Summer)

Offered fall & winter terms

* common to all engineering programs

| FALL TERM | | | | WINTER TERM | | | |
|--|--|-------|-----------------------------------|--|------------------------------------|-----|---|
| FIRST YEAR (2020) | | hr | Prerequisites (15 hrs) | (2021) | | hr | Prerequisites (16.5 hrs) |
| ENG 1440 * | Eng Statics | 3 | | MATH 1210 * | C/L Algebra | 3 | |
| ENG 1460 * | Thermal Sci | 3 | | MATH 1710 * | App Calc 2 | 3 | 1500/1510 p or c PHYS 1050 |
| MATH 1510 * | App Calc 1 | 3 | | ENG 1430 * | Eng Design | 3 | |
| PHYS 1050 * | Physics | 3 | p or c MATH 1510 | CHEM 1100 * | Intro Chem 1 | 3 | |
| Written English Requirement * | Choose course from approved List | 3 | | CHEM 1122 * | Intro Chem Techs for Engineering 1 | 1.5 | |
| | | | | COMP 1012 * | Comp Prog Eng | 3 | p or c MATH 1510 |
| SECOND YEAR (2021) (14 hrs) | | | | (2022) (13 hrs) | | | |
| Complementary Elective (Arts or Management) * 3 | | | | CIVL 2790 | Fluid Mechanics | 4 | ENG 1440, MATH 1700/1710 |
| ENG 1450 * | Intro Elec Eng | 3 | | GEOL 1340 | Dynamic Earth | 3 | (formerly GEOL 2250) |
| MATH 2130 * | Math Analysis 1 | 3 | MATH 1700/1710, 1210 | MATH 2132 * | Math Analysis 2 | 3 | MATH 1700/1710, MATH 1210 |
| CIVL 2830 | Graphics | 2 | c CIVL 2840 | ENG 2030 or ENG 2040 | Eng Communication | 3 | Written English Course, ENG 1430 |
| CIVL 2840 | CE Geomatics | 3 | p or c MATH 1210, c CIVL 2830 | | | | |
| THIRD YEAR (2022) (18.5 hrs) | | | | (2023) (20 hrs) | | | |
| CHEM 1110 | Intro Chem 2 | 3 | CHEM 1100 | CIVL 2770 | CE Materials | 5 | ENG 1440; CIVL 2800 |
| CHEM 1126 | Intro Chem Techs for Engineering 2 | 1.5 | | CIVL 2780 | CE Systems | 4 | MATH 1700/1710 |
| CIVL 2800 | Solid Mech 1 | 4 | MATH 1700/1710, ENG 1440 | CIVL 3590 | Numerical Meth | 4 | COMP 1012, p or c MATH 2132 |
| CIVL 3750 | Hydrology | 4 | p or c STAT 2220 | CIVL 3740 | Hydraulics | 4 | CIVL 2790 |
| STAT 2220 * | Eng Statistics | 3 | MATH 1700/1710 | ENG 3000* | Eng Economics | 3 | (formerly CIVL 4050) |
| Indigenous Knowledge Course* | Choose course from approved list. See last page | 3 hrs | (Civil Program) | | | | |
| (Indigenous Knowledge Course can be taken any term as scheduling allows) | | | | | | | |
| FOURTH YEAR (2023) (20 hrs) | | | | (2024) (16 hrs) | | | |
| CIVL 3690 | Enviro Eng Analysis | 4 | CHEM 1310, ENG 2030/40, STAT 2220 | CIVL 3700 | Enviro Eng Des | 4 | CIVL 3690 |
| CIVL 3730 | Geo Mat Analysis | 4 | CIVL 2800, 2770 GEOL 1340/2250 | CIVL 3770 | Design of Steel Struct | 4 | CIVL 2770, 3760 |
| CIVL 3760 | Struct Analysis | 4 | CIVL 2800 | | | | |
| CIVL 3790 | Transp Eng 1 | 4 | CIVL 2840, 2770, 2780 STAT 2220 | | | | |
| Technical Elective | | 4 | | 1 or 2 Technical Electives | | 8 | |
| (5 technical electives required in total) | | | | (5 technical electives required in total) | | | |
| Complementary Elective #2 - Environmental Option ONLY | | | | | | | |
| PHIL 2750 | Enviro Ethics (E) | 3 | (Environmental Option Only) | | | | |
| (Enviro option students can move tech elective course to different term) | | | | | | | |
| FIFTH YEAR (2024) (20 hrs) | | | | (2025) (13 hrs) | | | |
| CIVL 4220 | Geotech Des | 4 | CIVL 3730 | ENG 3020 | Tech Soc | 3 | Written English (formerly CIVL 4460) |
| CIVL 4380 | Infrastructure | 4 | CIVL 4050 or ENG 3000 | CIVL 4590 | Design Project | 6 | ENG 2010/30/40, CIVL 2840, 3690, 3730, 3740, 3750, 3770, 3790 |
| CIVL 4390 | Reinforced Con Struct | 4 | CIVL 2770, 3760 | | | | |
| CIVL 4400 | Trans Eng 2 | 4 | CIVL 3790 | 1 or 2 Technical Electives | | 4 | |
| Technical Elective | | 4 | | (5 technical electives required in total) | | | |
| (5 technical electives required in total) | | | | | | | |

Technical electives (TE) offered vary from year to year. See final page for complete TE course list or on the Civil website

Check current course schedule on Civil Engineering website for details.

Total credit hrs: 166

DEPARTMENT OF CIVIL ENGINEERING
For students starting second year fall 2021

4 YEAR MODEL PROGRAM

Students are expected to follow either the 4 year or the 5 year model program.

This will ensure prerequisite and timetable requirements are met.

| FALL TERM | | | | WINTER TERM | | | |
|--|---|-----|---|---|------------------------|----|---|
| FIRST YEAR (2020) | | hr | Prerequisites (19.5 hrs) | (2021) | | hr | Prerequisites (18 hrs) |
| Complementary Elective (Arts or Management) * 3 | | | | ENG 1430 | Eng Des | 3 | |
| CHEM 1100 & 1122 | Intro Chem1 and lab | 4.5 | | ENG 1440 | Eng Statics | 3 | |
| COMP 1012 | Comp Prog Eng | 3 | | ENG 1450 | Intro Elec | 3 | |
| MATH 1510 | App Calc 1 | 3 | | ENG 1460 | Thermal Sci | 3 | |
| PHYS 1050 | Physics | 3 | p or c 1500/1510 | MATH 1210 | C/L Algebra | 3 | |
| Written English Requirement Choose course from approved List | | | | MATH 1710 | App Calc 2 | 3 | 1500/1510, p or c PHYS 1050 |
| SECOND YEAR (2021) (22.5 hrs) | | | | (2022) (23 hrs) | | | |
| CHEM 1110 & 1126 | Intro Chem2 and lab | 4.5 | (CHEM 1100 or previous 1300) | CIVL 2770 | CE Materials | 5 | ENG 1440, CIVL 2800 |
| CIVL 2800 | Solid Mec 1 | 4 | MATH 1710/1700, ENG 1440 | CIVL 2780 | CE Systems | 4 | MATH 1710 or 1700 |
| CIVL 2830 | Graphics | 2 | c CIVL 2840 | CIVL 2790 | Fluid Mech | 4 | ENG 1440, MATH 1710 |
| CIVL 2840 | CE Geomatics | 3 | p or c MATH 1210, c CIVL 2830 | CIVL 3590 | Numerical Meth | 4 | COMP 1012, p or c MATH 2132 |
| ENG 2030 or ENG 2040 | Eng Communication | 3 | Written English Crs, ENG 1430 (or the former ENG 2010) | GEOL 1340 | Dynamic Earth | 3 | (formerly GEOL 2250) |
| MATH 2130 | Math Analysis 1 | 3 | MATH 1710, 1210 | MATH 2132 | Math Analysis 2 | 3 | MATH 1710, MATH 1210 |
| STAT 2220 | Eng Statistics | 3 | MATH 1710/1700 | | | | |
| THIRD YEAR (2022) (23 hrs) | | | | (2023) (23 hrs) | | | |
| CIVL 3690 | Env Eng Analysis | 4 | CHEM 1310, ENG 2030/40, STAT 2220 | CIVL 3700 | Env Eng Des | 4 | CIVL 3690 |
| CIVL 3730 | Geo Mat Analysis | 4 | CIVL 2800, 2770 GEOL 1340/2250 | CIVL 3740 | Hydraulics | 4 | CIVL 2790 |
| CIVL 3750 | Hydrology | 4 | p or c STAT 2220 | CIVL 3770 | Design of Steel Struct | 4 | CIVL 2770, 3760 |
| CIVL 3760 | Struct Analysis | 4 | CIVL 2800 | ENG 3000 | Eng Economics | 3 | TAKE IN SUMMER SESSION |
| CIVL 3790 | Transp Eng 1 | 4 | CIVL 2840, 2770, 2780 STAT 2220 | Technical Elective #1 | | 4 | |
| Indigenous Knowledge Course | Choose course from approved list. See last page | | Civil Program Only | Technical Elective #2 | | 4 | |
| PHIL 2750 | Enviro Ethics (E) | 3 | Environmental Option Only | (5 technical electives required in total) | | | |
| <i>1 Technical Elective Course may be taken this term. Move Indigenous Knowledge course to a different term.</i> | | | | | | | |
| FOURTH YEAR (2023) (20 hrs) | | | | (2024) (17 hrs) | | | |
| CIVL 4220 | Geotech Des | 4 | CIVL 3730 | ENG 3020 | Tech Soc | 3 | Written English (formerly CIVL 4460) |
| CIVL 4380 | Infrastructure | 4 | CIVL 4050 | CIVL 4590 | Design Project | 6 | ENG 2010/30/40, CIVL 2840, 3690 3730, 3740, 3750, 3770, 3790 |
| CIVL 4390 | Reinforced Con Struct | 4 | CIVL 2770, 3760 | Technical Elective #4 | | 4 | |
| CIVL 4400 | Trans Eng 2 | 4 | CIVL 3790 | Technical Elective #5 | | 4 | |
| Technical Elective #3 | | 4 | | (5 technical electives required in total) | | | |

Note: c = corequisite

Technical electives (TE) offered vary from year to year. See final page for complete TE course list or on the Civil website

Check current course schedule on Civil Engineering website for details.

Total credit hrs: 166

TECHNICAL ELECTIVES

Students are required to take 5 technical electives. 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.

Technical electives vary from year to year and may have limited enrollment. Check current course schedules on the Civil Engineering website for details. Most technical electives courses are offered every two years.

Civil Engineering Program

Group A (select 3 to 5 courses)

| | | hr | Prerequisites |
|-----------|----------------------|----|--|
| CIVL 3710 | Finite Element | 4 | CIVL 2790, 2800, 3590 |
| CIVL 4020 | Masonry Des | 4 | CIVL 3760 |
| CIVL 4022 | Des of Concrete Mix | 4 | CIVL 2770 |
| CIVL 4024 | Sustainable Bldg Des | 4 | p or c CIVL 3770 |
| CIVL 4030 | Advanced Struc Des | 4 | p or c 3770 |
| CIVL 4032 | Bridge Engineering | 4 | CIVL 3760 |
| CIVL 4040 | Structural Dynamics | 4 | CIVL 3760 |
| CIVL 4100 | Eng Mngmnt & Enviro | 4 | p or c CIVL 3700 |
| CIVL 4120 | Water Treat Plnt Des | 4 | CIVL 3690 |
| CIVL 4130 | Solid Waste | 4 | p or c CIVL 3700 |
| CIVL 4180 | Enviro Systems | 4 | CIVL 2780,3690, 3750 |
| CIVL 4200 | Grndwater Contam | 4 | GEOL 1340/2250,CIVL 2790, or c CIVL 3690 |
| CIVL 4230 | Geotech Eng | 4 | CIVL 3730 |
| CIVL 4232 | Geotech Earthqk Eng | 4 | CIVL 3730 |
| CIVL 4250 | Grndwater Hydrology | 4 | GEOL 2250, CIVL 2790 MATH 2130, 2132 |
| CIVL 4300 | Urban Water System | 4 | CIVL 2790, p or c CIVL 3750 |
| CIVL 4350 | Haz Waste | 4 | CIVL 3690 |
| CIVL 4360 | Water Res Plan & Mgt | 4 | CIVL 2780, 3590, p or c 3750 |
| CIVL 4410 | Transp Systems | 4 | CIVL 3790 |
| CIVL 4420 | Hwy Pave Des | 4 | p or c CIVL 3790 |
| CIVL 4470 | Watershed Proc | 4 | CIVL 3750, p or c CIVL 3740 |

Group B (Up to 2 courses, only 1 from outside of Civil Dept.)

| | | | |
|-----------|----------------------|---|---------------------------------|
| BIOE 4560 | Struct Des Wood | 4 | CIVL 3770 |
| CIVL 4000 | Uncertainty Analysis | 4 | CIVL 3590, MATH 2130, STAT 2220 |
| CIVL 4332 | Thesis Project | 4 | ENG 2010/30/40 & 120 cr hrs |
| CIVL 4500 | Topics Course | 4 | Varies |

Environmental Option Program

Group A (select 3 to 5 courses)

| | | hr | Prerequisites |
|-----------|----------------------|----|---|
| CIVL 3710 | Finite Element | 4 | CIVL 2790, 2800, 3590 |
| CIVL 4100 | Eng Mngmnt & Enviro | 4 | p or c CIVL 3700 |
| CIVL 4120 | Water Treat Plnt Des | 4 | CIVL 3690 |
| CIVL 4130 | Solid Waste | 4 | p or c CIVL 3700 |
| CIVL 4180 | Enviro Systems | 4 | CIVL 2780,3690, 3750 |
| CIVL 4200 | Grndwater Contam | 4 | GEOL 2250,CIVL 2790, p or c CIVL 3690 |
| CIVL 4250 | Grndwater Hydrology | 4 | GEOL 2250, CIVL 2790 MATH 2130, 2132 |
| CIVL 4300 | Urban Water Syst | 4 | CIVL 3750, p or c CIVL 3740 |
| CIVL 4350 | Haz Waste | 4 | CIVL 3690 |
| CIVL 4360 | Water Res Plan & Mgt | 4 | CIVL 2780, 3590, p or c 3750 |
| CIVL 4470 | Watershed Proc | 4 | CIVL 3750, p or c CIVL 3740 |

Group B (Up to 2 courses, only 1 from outside of Civil Dept.)

| | | | |
|------------|----------------------|---|---------------------------------|
| CIVL 4000 | Uncertainty Analysis | 4 | CIVL 3590, MATH 2130, STAT 2220 |
| CIVL 4332 | Thesis Project | 4 | ENG 2010/30/40 & 120 cr hrs |
| BIOE 4460 | Air Pollution | 4 | p or c CIVL 2790 |
| SOIL 4500 | Remed Cont Soil | 3 | instructor consent |
| CIVL 4500* | Topics Course | 4 | Varies |

*Dependant on course topic. Confirm with a student advisor.

INDIGENOUS KNOWLEDGE COURSE

Students are required to take at least one of the courses from the list of Indigenous Knowledges 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. Prerequisites must be met for all courses.

| | |
|-------------------------|---|
| ENG 4100* | Contemporary Topics in Eng. Practice (4) (see note above) |
| NATV 1200 | Indigenous Peoples in Canada (6) |
| NATV 1220 | Indigenous Peoples in Canada Part 1 (3) |
| NATV 1240 | Indigenous Peoples in Canada Part 2 (3) |
| NATV 2012/ HIST 2010 | Indigenous History in Canada (3) |
| NATV 2020/ HIST 2020 | The Metis in Canada (3) |
| POLS 2802 | Introduction to Indigenous Politics (3) |
| POLS 3870 | Politics of Indigenous-Settler Relations (3) |

ENVIRONMENTAL OPTION - COMPLEMENTARY STUDIES COURSE

Students in the Environmental Option, must take PHIL 2750 - Environmental Ethics as the complementary elective in place of the Indigenous knowledge course.