# Civil Engineering Curriculum - Fall 2020

## Non-CEGEP Entry

| 1st Term (Fall) | | 15 credits | Prerequisites/Co-requisites |
|---|---|---|---|
| CHEM 110 | General Chemistry 1 | 4 | P - College level mathematics and physics or permission of instructor |
| FACC 100 | Introduction to the Engineering Profession | 1 | - |
| MATH 133 | Linear Algebra and Geometry | 3 | P - A course in functions |
| MATH 140 | Calculus 1 | 3 | P - High school calculus |
| PHYS 131 | Mechanics and Waves | 4 | C - Calculus course [MATH 140] |
| **2nd Term (Winter)** | | **18 credits** | **Prerequisites/Co-requisites** |
| CHEM 120 | General Chemistry 2 | 4 | P - College level mathematics and physics or permission of instructor |
| MATH 141 | Calculus 2 | 4 | P - MATH 140 |
| PHYS 142 | Electromagnetism and Optics | 4 | P - PHYS 131 / C - MATH 141 |
| CS | Complementary Studies Group A (Impact)* | 3 | - |
| CS | Complementary Studies Group B (HSSML) - 1* | 3 | - |
| **3rd Term (Fall)** | | **18 credits** | **Prerequisites/Co-requisites** |
| CCOM 206 | Communication in Engineering | 3 | - |
| CIVE 205 | Statics | 3 | - |
| CIVE 290 | Thermodynamics and Heat Transfer | 3 | - |
| EPSC 221 | General Geology | 3 | - |
| MATH 262 | Intermediate Calculus | 3 | P - MATH 133, MATH 141 |
| MECH 289 | Design Graphics | 3 | - |
| **4th Term (Winter)** | | **17 credits** | **Prerequisites/Co-requisites** |
| CIVE 202 | Construction Materials | 4 | P - CIVE 290 |
| CIVE 206 | Dynamics | 3 | P - CIVE 205 / C - MATH 262, MATH 263 |
| CIVE 207 | Solid Mechanics | 4 | P - CIVE 205 (or MECH 210 in special circumstances) |
| COMP 208 | Computers in Engineering | 3 | P - differential and integral calculus [MATH 140 and MATH 141] / C - linear algebra [MATH 133] |
| FACC 250 | Responsibilities of the Professional Engineer | 0 | P - FACC 100 or BREE 250 |
| MATH 263 | Ordinary Differential Equations for Engineers | 3 | C - MATH 262 |
| **Summer Term** | | **2 credits** | **Prerequisites/Co-requisites** |
| CIVE 210 | Surveying | 2 | P - MECH 289 |
| **5th Term (Fall)** | | **18 credits** | **Prerequisites/Co-requisites** |
| CIVE 208 | Civil Engineering System Analysis | 3 | P - COMP 208 / C - MATH 264 |
| CIVE 311 | Geotechnical Mechanics | 4 | P - CIVE 207 |
| CIVE 317 | Structural Engineering 1 | 3 | P - CIVE 202, CIVE 207, MECH 289 |
| FACC 300 | Engineering Economy | 3 | - |
| MATH 264 | Advanced Calculus for Engineers | 3 | P - MATH 262 / C - MATH 263 |
| MECH 261 | Measurement Laboratory | 2 | - |
| **6th Term (Winter)** | | **17 credits** | **Prerequisites/Co-requisites** |
| CIVE 225 | Environmental Engineering | 4 | P - CIVE 290 / C - MATH 263 |
| CIVE 302 | Probabilistic Systems | 3 | P - COMP 208, MATH 262 |
| CIVE 318 | Structural Engineering 2 | 3 | P - CIVE 317 |
| CIVE 319 | Transportation Engineering | 3 | P - CIVE 208, COMP 208 / C - CIVE 302 |
| CIVE 327 | Fluid Mechanics and Hydraulics | 4 | P - CIVE 206, MATH 264 |
| **7th Term (Fall)** | | **17 credits** | **Prerequisites/Co-requisites** |
| CIVE 320 | Numerical Methods | 4 | P - COMP 208, MATH 264 |
| CIVE 323 | Hydrology and Water Resources | 3 | P - CIVE 302 |
| CIVE 432 | Technical Paper | 1 | P - CCOM 206 |
| CIVE xxx | Technical Complementary | 3 | - |
| CIVE xxx | Technical Complementary | 3 | - |
| CS | Complementary Studies Group B (HSSML) - 2* | 3 | - |
| **8th Term (Winter)** | | **17 credits** | **Prerequisites/Co-requisites** |
| CIVE 324 | Sustainable Project Management | 3 | P - CIVE 208, FACC 300 |
| CIVE 418 | Design Project | 4 | P - Completion of an approved set of required and complementary courses |
| FACC 400 | Engineering Professional Practice | 1 | P - FACC 100, FACC 250**, and 60 program credits |
| CIVE xxx | Technical Complementary | 3 | - |
| CIVE xxx | Technical Complementary | 3 | - |
| CIVE xxx | Technical Complementary | 3 | - |

Technical Complementary courses are selected from an approved list given on the next page.

*The Complementary Studies (CS) courses are Impact of Technology courses (Group A) and Humanities & Social Sciences, Management Studies and Law courses (Group B). Students must take one course (3 credits) from Group A and two courses (6 credits) from Group B. The curriculum above includes suggested terms during which these courses can be taken. These must be chosen from an approved list of courses/departments, found in the program list under "Complementary Studies" in the Faculty of Engineering Undergraduate section of the Programs, Courses and University Regulations publication (www.mcgill.ca/study) (see your program listing in the "Browse Academic Units & Programs" section).

**FACC 250 is not yet indicated as a prerequisite in the eCalendar course information (www.mcgill.ca/study) but it will be before FACC 400 is taken.

Students are responsible for satisfying pre-/co-requisites and verifying with their department that they are meeting the requirements of their program.

# Technical Complementary Courses - Civil Engineering

A minimum of six credits to be selected from List A and the remaining nine credits to be selected from List A and/or B or from other suitable undergraduate or 500-level courses.

**List A - Design Technical Complementaries**

6-15 credits from the following:

| | | Credits | Prerequisites/Co-requisites |
|---|---|---|---|
| CIVE 416 | Geotechnical Engineering | 3 | P - CIVE 311 |
| CIVE 421 | Municipal Systems | 3 | P - CIVE 327 |
| CIVE 428 | Water Resources and Hydraulic Engineering | 3 | P - CIVE 327 |
| CIVE 430 | Water Treatment and Pollution Control | 3 | P - CIVE 225, CIVE 327 |
| CIVE 440 | Traffic Engineering and Simulation | 3 | P - CIVE 319 |
| CIVE 462 | Design of Steel Structures | 3 | P - CIVE 318 |
| CIVE 463 | Design of Concrete Structures | 3 | P - CIVE 318 |

**List B - General Technical Complementaries**

0-9 credits from the following:

| | | Credits | Prerequisites/Co-requisites |
|---|---|---|---|
| CIVE 433 | Urban Planning | 3 | - |
| CIVE 446 | Construction Engineering | 3 | P - CIVE 208, FACC 300 |
| CIVE 451 | Geoenvironmental Engineering | 3 | P - CIVE 225, CIVE 311 |
| CIVE 460 | Matrix Structural Analysis | 3 | P - CIVE 206, CIVE 317 |
| CIVE 470 | Undergraduate Research Project | 3 | P - 60 program credits |
| CIVE 512 | Advanced Civil Engineering Materials | 3 | P - CIVE 202 |
| CIVE 514 | Structural Mechanics | 3 | P - CIVE 207 and instructor permission |
| CIVE 520 | Groundwater Hydrology | 3 | P - CIVE 311, CIVE 323 |
| CIVE 521 | Nanomaterials and the Aquatic Environment | 3 | P - (CHEE 315 or CIVE 225 or MIME 356), (CHEE 310 or CIVE 430 or CHEM 233) or permission of instructor |
| **or** CHEE 521 | Nanomaterials and the Aquatic Environment | 3 | |
| CIVE 527 | Renovation and Preservation: Infrastructure | 3 | P - CIVE 202, CIVE 318 |
| CIVE 540 | Urban Transportation Planning | 3 | P - CIVE 319 or instructor permission |
| CIVE 542 | Transportation Network Analysis | 3 | P - CIVE 208 |
| CIVE 546 | Selected Topics in Civil Engineering 1 | 3 | P - Permission of instructor |
| CIVE 550 | Water Resources Management | 3 | P - CIVE 323 or equivalent |
| CIVE 551 | Environmental Transport Processes | 3 | P - CIVE 225 or instructor permission |
| CIVE 555 | Environmental Data Analysis | 3 | P - CIVE 302 or instructor permission |
| CIVE 557 | Microbiology for Environmental Engineering | 3 | P - CIVE 225 or instructor permission |
| CIVE 558 | Biomolecular Techniques for Environmental Engineering | 3 | P - Permission of instructor |
| CIVE 560 | Transportation Safety and Design | 3 | P - CIVE 319 |
| CIVE 561 | Urban Activity, Air Pollution, and Health | 3 | - |
| CIVE 572 | Computational Hydraulics | 3 | P - CIVE 327 or equivalent |
| CIVE 573 | Hydraulic Structures | 3 | P - CIVE 323, CIVE 327 |
| CIVE 574 | Fluid Mechanics of Water Pollution | 3 | P - CIVE 327 or equivalent |
| CIVE 577 | River Engineering | 3 | P - CIVE 428 or instructor permission |
| CIVE 584 | Mechanics of Groundwater Flow | 3 | P - CIVE 311 or instructor permission |

**Last update: March 10, 2020**

For the official program listing, see the *Programs, Courses and University Regulations* publication (www.mcgill.ca/study).