# Software Engineering Curriculum - Fall 2018

## CEGEP Entry

| **1st Term (Fall)** | | 15 credits | Prerequisites/Co-requisites |
|---|---|---|---|
| ECSE 202 | Introduction to Software Development | 3 | - |
| ECSE 205 | Probability and Statistics for Engineers | 3 | - |
| MATH 262 | Intermediate Calculus | 3 | P - MATH 133 or equivalent, MATH 141 or equivalent |
| MATH 263 | Ordinary Differential Equations for Engineers | 3 | C - MATH 262 |
| CS | Complementary Studies Group B (HSSML)* | 3 | - |
| **2nd Term (Winter)** | | 16 credits | Prerequisites/Co-requisites |
| COMP 250 | Introduction to Computer Science | 3 | P - Familiarity with a high level programming language and CEGEP level Math |
| ECSE 200 | Electric Circuits 1 | 3 | P - PHYS 142 or CEGEP equivalent / C - MATH 263 |
| ECSE 222 | Digital Logic | 3 | P - ECSE 202 |
| ECSE 223 | Model-Based Programming | 3 | P - ECSE 202 |
| FACC 100 | Introduction to the Engineering Profession | 1 | - |
| CS | Complementary Studies Group A (Impact)* | 3 | - |
| **3rd Term (Fall)** | | 16 credits | Prerequisites/Co-requisites |
| COMP 206 | Introduction to Software Systems | 3 | P - ECSE 202 or COMP 250 |
| ECSE 211 | Design Principles and Methods | 3 | P - ECSE 200, ECSE 202 |
| ECSE 321 | Introduction to Software Engineering | 3 | P - ECSE 202 |
| ECSE 324 | Computer Organization | 4 | P - ECSE 200, ECSE 222 |
| Science | Natural Science Complementary 1 | 3 | - |
| **4th Term (Winter)** | | 15 credits | Prerequisites/Co-requisites |
| CCOM 206 | Communication in Engineering | 3 | - |
| COMP 251 | Algorithms and Data Structures | 3 | C - MATH 240 |
| ECSE 310 | Thermodynamics of Computing | 3 | P - ECSE 200, ECSE 205, ECSE 222 |
| ECSE 428 | Software Engineering Practice | 3 | P - ECSE 321 or COMP 335 |
| MATH 240 | Discrete Structures 1 | 3 | C - MATH 133 |
| FACC 250 | Resp. of the Prod. Engineer | 0 | |
| **5th Term (Fall)** | | 18 credits | Prerequisites/Co-requisites |
| COMP 302 | Programming Languages and Paradigms | 3 | P - COMP 250 |
| COMP 360 | Algorithm Design | 3 | P - COMP 251, MATH 363 |
| ECSE 326 | Software Requirements Engineering | 3 | P - ECSE 223 or COMP 303 |
| ECSE 427 | Operating Systems | 3 | P - ECSE 322 or ECSE 324 or COMP 273 |
| ECSE 429 | Software Validation | 3 | P - ECSE 321 or COMP 303 |
| FACC 300 | Engineering Economy | 3 | - |
| **6th Term (Winter)** | | 16 credits | Prerequisites/Co-requisites |
| COMP 421 | Database Systems | 3 | P - COMP 206, COMP 251, COMP 302 |
| ECSE 316 | Signals and Networks | 3 | P - COMP 251, ECSE 200, MATH 263 |
| ECSE 456 | ECSE Design Project 1 | 3 | P - ECSE 211 and (ECSE 323 or ECSE 324) and CCOM 206 and (ECSE 330 or ECSE 331 or COMP 302) |
| FACC 400 | Engineering Professional Practice | 1 | P - FACC 100, FACC 250**, and 60 program credits |
| ECSE xxx | Technical Complementary | 3 | - |
| ECSE xxx | Technical Complementary | 3 | - |
| **7th Term (Fall)** | | 18 credits | Prerequisites/Co-requisites |
| ECSE 420 | Parallel Computing | 3 | P - ECSE 427 |
| ECSE 457 | ECSE Design Project 2 | 3 | P - ECSE 456 |
| ECSE xxx | Technical Complementary | 3 | - |
| ECSE xxx | Technical Complementary | 3 | - |
| XXXX xxx | Elective Course**** | 3 | - |
| Science | Natural Science Complementary 2 | 3 | - |

Technical and Natural Science 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 one course (3 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 - Software Engineering

**Technical Complementaries**

Note: 500-level courses are restricted to students with a minimum CGPA of 3.0 and B+ or better in prerequisite courses.

4 courses (12-16 credits) from the following:

| | | Credits | Prerequisites/Co-requisites |
|---|---|---|---|
| COMP 330 | Theory of Computation | 3 | P - COMP 251, MATH 240 |
| COMP 350 | Numerical Computing | 3 | P - MATH 222/262, MATH 223, and COMP 202 / COMP 208 / COMP 250, or equivalents |
| COMP 409 | Concurrent Programming | 3 | P - COMP 251, COMP 302, COMP 310 / ECSE 427 |
| COMP 417 | Introduction Robotics and Intelligent Systems | 3 | P - COMP 251, MATH 223, ECSE 321 / COMP 206 |
| COMP 424 | Artificial Intelligence | 3 | P - COMP 206 / ECSE 321, MATH 323 or equivalent, and COMP 251 |
| COMP 512 | Distributed Systems | 4 | P- COMP 310, COMP 251 or equivalent |
| COMP 520 | Compiler Design | 4 | P - COMP 273, COMP 302 |
| COMP 521 | Modern Computer Games | 4 | P - COMP 251, MATH 223, COMP 303 / COMP 361 |
| COMP 525 | Formal Verification | 3 | P - COMP 251, COMP 330 |
| COMP 529 | Software Architecture | 4 | P - COMP 303 |
| COMP 533 | Model-Driven Software Development | 3 | P - ECSE 321 or COMP 303 or COMP 361 |
| COMP 551 | Applied Machine Learning | 4 | P - MATH 323 or ECSE 205 or ECSE 305 or equivalent |
| COMP 557 | Fundamentals of Computer Graphics | 3 | P - COMP 206, COMP 250, MATH 222/262, MATH 223 |
| COMP 575 | Fundamentals of Distributed Algorithms | 3 | P - COMP 310 |
| ECSE 325 | Digital Systems | 3 | P - ECSE 324 |
| ECSE 415 | Introduction to Computer Vision | 3 | P - ECSE 304 or ECSE 306 or ECSE 206 |
| ECSE 416 | Telecommunication Networks | 4 | P - COMP 250, ECSE 205, ECSE 308 / ECSE 316 |
| ECSE 421 | Embedded Systems | 3 | P - ECSE 322, ECSE 323 |
| ECSE 422 | Fault Tolerant Computing | 3 | P - ECSE 322 |
| ECSE 424 | Human-Computer Interaction | 3 | P - ECSE 322 or (ECSE 324 and COMP250) or (COMP 251 and COMP 273) |
| ECSE 425 | Computer Architecture | 3 | P - (ECSE 322 and ECSE 323) or ECSE 324 |
| ECSE 437 | Software Delivery | 3 | P - ECSE 321 or COMP 303 |
| ECSE 439 | Software Language Engineering | 3 | P- ECSE 321 or COMP 303 |
| ECSE 444 | Microprocessors | 4 | P- ECSE 324 |
| ECSE 446 | Realistic Image Synthesis | 3 | P- ECSE 202, ECSE 205, and COMP 250 |

# Natural Science Complementary Courses - Software Engineering

Students from CEGEP are required to complete two 3-credit courses at the 200-level or higher, chosen from the following science departments, approved by the Undergraduate Programs Office in the Department of Electrical and Computer Engineering:

Atmospheric and Oceanic Sciences (ATOC)
Biology (BIOL)
Chemistry (CHEM)
Environment (ENVR)
Earth and Planetary Sciences (EPSC)
Earth System Science (ESYS)
Microbiology (MIMM)
Physics (PHYS)

**Last update: May 25, 2018**

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