

# 2019 / 2020 CURRICULUM - COMPUTER ENGINEERING

EIGHT SEMESTER PROGRAM Total credits: 133

First Semester (Fall 2019)		14 credits	Second Semester (Winter 2020)		18 credits
XXXX xxx	Humanities & Social Sciences 1*	(3 cr)	<b>CHEM 120</b>	<b>General Chemistry 2</b>	(4 cr)
<b>MATH 140</b>	<b>Calculus 1</b>	(3 cr)	<b>MATH 141</b>	<b>Calculus 2</b>	(4 cr, P - MATH 140)
<b>PHYS 131</b>	<b>Mechanics &amp; Waves</b>	(4 cr, C - MATH 140)	<b>PHYS 142</b>	<b>Electromagnetism &amp; Optics</b>	(4 cr, P - PHYS 131; C - MATH 141)
<b>MATH 133</b>	<b>Linear Algebra and Geometry</b>	(3 cr)	<b>ECSE 202</b>	<b>Intro. to Software Development</b>	(3 cr)
<b>FACC 100</b>	<b>Intro. to Engineering Profession</b>	(1 cr)	XXXX xxx	Impact of Technology on Society **	(3 cr)
Third Semester (Fall 2020)		15 credits	Fourth Semester (Winter 2021)		18 credits
<b>ECSE 200</b>	<b>Electric Circuits 1</b>	(3 cr, P - PHYS 142 or CEGEP Equivalent; C - MATH 263)	<b>COMP 250</b>	<b>Introduction to Computer Science</b>	(3 cr)
<b>ECSE 222</b>	<b>Digital Logic</b>	(3 cr, P - ECSE 202)	<b>ECSE 210</b>	<b>Electric Circuits 2</b>	(3 cr, P - ECSE 200)
<b>MATH 262</b>	<b>Intermediate Calculus</b>	(3 cr, P-MATH 141, MATH 133 or equiv)	<b>ECSE 211</b>	<b>Design Principles and Methods</b>	(3 cr, P - ECSE 200, ECSE 202)
<b>MATH 263</b>	<b>ODEs for Engineers</b>	(3 cr, C - MATH 262)	<b>FACC 300</b>	<b>Engineering Economy</b>	(3 cr)
<b>CCOM 206</b>	<b>Communication in Engineering</b>	(3 cr)	<b>ECSE 223</b>	<b>Model-based Programming</b>	(3 cr, P - ECSE 202)
<b>FACC 250</b>	<b>Resp. of the Prof. Engineer</b>	(0 cr, P - FACC 100)	XXXX xxx	Humanities & Social Sciences 2*	(3 cr)
Fifth Semester (Fall 2021)		17 credits	Sixth Semester (Winter 2022)		18 credits
<b>ECSE 206</b>	<b>Intro. to Signals &amp; Systems</b>	(3 cr, P - ECSE 200)	<b>MATH 240</b>	<b>Discrete Structures 1</b>	(3 cr, C - MATH 133)
<b>ECSE 205</b>	<b>Probability &amp; Statistics for Eng.</b>	(3 cr)	<b>ECSE 310</b>	<b>Thermodynamics of Computing</b>	(3 cr, P - ECSE 200, ECSE 205, ECSE 222)
<b>ECSE 324</b>	<b>Computer Organization</b>	(4 cr, P - ECSE 200, ECSE 222)	<b>ECSE 325</b>	<b>Digital Systems</b>	(3 cr, P - ECSE 324)
<b>ECSE 331</b>	<b>Electronics</b>	(4 cr, P - ECSE 210)	<b>ECSE 321</b>	<b>Intro. to Software Engineering</b>	(3 cr, P - ECSE 202)
<b>ECSE 353</b>	<b>Electromagnetic Fields &amp; Waves</b>	(3 cr, P - MATH 262, MATH 263, ECSE 210)	<b>ECSE 427</b>	<b>Operating Systems</b>	(3 cr, P - ECSE 324)
			<b>COMP 251</b>	<b>Algorithms and Data Structures</b>	(3 cr, P - COMP 250, C - MATH 240)
Seventh Semester (Fall 2022)		17 credits	Eighth Semester (Winter 2023)		16 credits
<b>ECSE 458 D1 Capstone Design Project</b>		(3 cr, P - CCOM 206, ECSE 211, ECSE 324, ECSE 331)	<b>ECSE 458 D2 Capstone Design Project</b>		(3 cr)
<b>ECSE 308</b>	<b>Intro. Comm. Sys. &amp; Networks</b>	(4 cr, P - ECSE 205, ECSE 206)	<b>ECSE 425</b>	<b>Computer Architecture</b>	(3 cr, P - ECSE 324)
<b>ECSE 444</b>	<b>Microprocessors</b>	(4 cr, P - ECSE 324)	XXXX xxx	<b>Technical Complementary 3</b>	(3 cr)
XXXX xxx	<b>Technical Complementary 1</b>	(3 cr)	XXXX xxx	<b>Technical Complementary 4</b>	(3 cr)
XXXX xxx	<b>Technical Complementary 2</b>	(3 cr)	XXXX xxx	<b>Elective course***</b>	(3 cr)
			<b>FACC 400</b>	<b>Engineering Professional Practice</b>	(1 cr, P - FACC100, FACC 250, and 60 program credits)

Courses shown in boldface above must be passed with a grade "C" or better. A "D" is *only* acceptable in the courses *not* in boldface. Also, a grade of "C" is required in all prerequisites in order to proceed with the follow-on courses. (Exception: A student who fails a course with a grade of D may take an ECSE course that has it as a prerequisite, provided that the failed course is retaken at the same time. Students thinking of doing this should meet with a Departmental advisor).

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

\* For instructions on selecting valid "Humanities and Social Sciences" courses, see [www.mcgill.ca/ece](http://www.mcgill.ca/ece), then: Undergraduate Studies > Program Information > Complementary Studies.

\*\* For instructions on selecting valid "Impact of Technology on Society" courses, see [www.mcgill.ca/ece](http://www.mcgill.ca/ece), then: Undergraduate Studies > Program Information > Complementary Studies.

\*\*\* One 3-credit course at the 200-level or higher from any department at McGill, approved by the Undergraduate Programs Office in the Department of Electrical and Computer Engineering. For approval, please contact our office at [undergrad.ece@mcgill.ca](mailto:undergrad.ece@mcgill.ca).

ECSE 458, Capstone Design Project course is a spanned course given in both the fall and winter terms. A course that spans across two semesters may be taken in Fall-Winter or Winter-Fall. Students wishing to take the Fall-Winter sequence will need to register for ECSE 458 D1/D2. For a Winter-Fall sequence, students need to register for ECSE 458 N1/N2.

This sample curriculum is for students who wish to complete their degree requirements in 8 semesters. Students may, at any time, deviate from this structure. However, it is the student's responsibility to devise a study plan that has no course conflicts or prerequisite/corequisite violations. Academic advisors are available for help with course selection.

Revised May 2019

# COMPUTER ENGINEERING

## A: Technical Complementaries (3 courses) 9 credits (minimum)

Three technical complementary courses must be chosen from this list:

COMP 424	Artificial Intelligence	(3 cr, P - ECSE 205, COMP 251 & (COMP 206 or ECSE 321))
ECSE 335	Microelectronics	(4 cr, P - ECSE 331)
ECSE 412	Discrete-Time Signal Processing	(3 cr, P - ECSE 206 or ECSE 306)
ECSE 416	Telecom. Networks	(4 cr, P - COMP 250, ECSE 205 and (ECSE 308 or ECSE 316))
ECSE 420	Parallel Computing	(3 cr, P - ECSE 427)
ECSE 421	Embedded Systems	(3 cr, P - ECSE 324)
ECSE 422	Fault Tolerant Computing	(3 cr, P - ECSE 324, COMP 250)
ECSE 424	Human-Computer Interaction	(3 cr, P - ECSE 324, COMP 250)
ECSE 428	Software Engineering Practice	(3 cr, P - ECSE 321)
ECSE 429	Software Validation	(3 cr, P - ECSE 321 or COMP 303)
ECSE 439	Software Language Engineering	(3 cr, P - ECSE 321 or COMP 303)

## B: Technical Complementaries (1 course) 3 credits (minimum)

One other technical complementary course must be chosen from list A or from list B:

ECSE 307	Linear Systems & Control	(4 cr, P - ECSE 206, ECSE 210)
ECSE 403	Control Systems	(4 cr, P - ECSE 307)
ECSE 408	Communication Systems	(4 cr, P - ECSE 205, ECSE 308)
ECSE 415	Intro. to Computer Vision	(3 cr, P - ECSE 206 and ECSE 205)
ECSE 435	Mixed Signal Test Techniques	(3 cr, P - ECSE 206, ECSE 335)
ECSE 436	Signal Processing Hardware	(3 cr, P - ECSE 324, ECSE 325, ECSE 206)
ECSE 446	Realistic Image Synthesis	(3 cr, P - ECSE 202, ECSE 205, COMP 250)
ECSE 450	Electromagnetic Compatability	(3 cr, P - ECSE 222, ECSE 331 and (ECSE 353 or ECSE 354))
ECSE 472	Fundamentals of Circuit Simulation and Modelling	(3 cr, P - ECSE 206, ECSE 331, ECSE 251)
ECSE 532	Computer Graphics	(3 cr, P - ECSE 322) *
COMP 551	Applied Machine Learning	(4 cr, MATH 323 or ECSE 205 or ECSE 305 or equivalent)
COMP 559	Fundamentals of Computer Animation	(4 cr)