Honours Electrical Engineering Curriculum - Fall 2023

1st Term (Fall)		15 credits	Prerequisites/Co-requisites
CIVE 281	Analytical Mechanics	3	C - MATH 262, MATH 263
COMP 202	Foundations of Programming	3	
ECSE 200	Electric Circuits 1	3	P - PHYS 142 ; C - MATH 263
MATH 262	Intermediate Calculus	3	P - MATH 133 or equiv, MATH 141
MATH 263	ODEs for Engineers	3	C - MATH 262

2nd Term (Winter)		16 credits	Prerequisites/Co-requisites
ECSE 250	Fundamentals of Software Development	3	P - (COMP 202 or ECSE 202) or (COMP 250 or ECSE 250)
ECSE 206	Intro. to Signals & Systems	3	P - ECSE 200
ECSE 210	Electric Circuits 2	3	P - ECSE 200
ECSE 211	Design Principles and Methods	3	P - ECSE 200 and (COMP 202 or ECSE 202)
ECSE 251	Electric and Magnetic Fields	3	P - MATH 262, ECSE 200
FACC 100	Intro. to Engineering Profession	1	

3rd Term (Fall)		16 credits	Prerequisites/Co-requisites
COMP 206	Introduction to Software Systems	3	P - (COMP 202 or ECSE 202) or (COMP 250 or ECSE 250)
ECSE 222	Digital Logic	3	P - COMP 202 or ECSE 202
ECSE 205	Probability & Statistics for Eng.	3	
ECSE 396	Honours Research Lab Rotation 1	1	
MIME 262	Properties of Materials in EE	3	
WCOM 206	Communication in Engineering	3	

4th Term (Winter)		17 credits	Prerequisites/Co-requisites
ECSE 308	Intro. Comm. Sys. & Networks	4	P - ECSE 205, ECSE 206
ECSE 324	Computer Organization	4	P - ECSE 200 and ECSE 222 and COMP 206
ECSE 331	Electronics	4	P - ECSE 210
ECSE 397	Honours Research Lab Rotation 2	1	P - ECSE 396
ECSE 362	Fundamentals of Power Eng.	4	P - ECSE 210 and ECSE 251; C - CIVE 281
FACC 250	Resp. of the Prof. Engineer	0	P - FACC 100 or BREE 205

5th Term (Fall)		17 credits	Prerequisites/Co-requisites
ECSE 307	Linear Systems & Control	4	P - ECSE 206, ECSE 210
XXXX xxx	Technical Complementary 1	4	
ECSE 354	Electromagnetic Wave Propagation	4	P - ECSE 251
FACC 300	Engineering Economy	3	
ECSE 496	Honours Research Lab Rotation 3	1	P - ECSE 397
FACC 400	Engineering Professional Practice	1	P - FACC 250, and 60 program credits

6th Term (Winter)		17 credits	Prerequisites/Co-requisites
ECSE 478 N1	Electrical Engineering Honours Thesis	3	P - WCOM 206, at least 42 departmental credits
XXXX xxx	Technical Complementary 2	4	
XXXX xxx	Technical Complementary 3	3	
HSS 1	Humanities & Social Sciences 1*	3	
ECSE 497	Honours Research Lab Rotation 4	1	P - ECSE 496
Impact	Impact of Technology on Society **	3	

7th Term (Fall)		15 credits	Prerequisites/Co-requisites
ECSE 478 N2	Electrical Engineering Honours Thesis	3	P - ECSE 478 N1
ECSE 343	Numerical Methods in Engineering	3	
XXXX xxx	Technical Complementary 4	3	
XXXX xxx	Technical Complementary 5	3	
Elective	Elective Course	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 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).

Elective course (3 credtis) must be taken at the 200 level or higher from any depaprtment at McGill, approved by the Undergraduate Programs Office in the Department of Electrical and Computer Engineering. For approval, please contact undergrad.ece@mcgill.ca.

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

Technical Complementaries

17 - 20 credits (5 courses) must be taken, chosen as follows:

8 credits (2 courses) from List A
6-8 credits (2 courses) from 500-level ECSE courses
3-4 credits (1 course) from List A, List B, List C or from 500-level ECSE courses

List A
8 - 12 credits from the following list

		Credits	Prerequisites/Co-requisites
ECSE 335	Microelectronics	4	P - ECSE 331
ECSE 403*	Control	4	P - ECSE 307
ECSE 408**	Communication Systems	4	P - ECSE 205, ECSE 308
ECSE 416	Telecom. Networks	4	P - (ECSE 250 or COMP 250) and ECSE 205 and (ECSE 308 or ECSE 316)
ECSE 433	Physical Basis of Transistor Devices	4	P - MIME 262, ECSE 331, ECSE 251
ECSE 444	Microprocessors	4	P - ECSE 324
ECSE 470	Electromechanical and Static Conversion Systems	4	P - ECSE 362

List B
0 - 3 credits from the following list:

ECSE 310	Thermodynamics of Computing	3	P - ECSE 200, ECSE 205, ECSE 222
ECSE 325	Digital Systems	3	P - ECSE 324
ECSE 415	Intro. to Computer Vision	3	P - ECSE 205, (ECSE 206 or ECSE 316)
ECSE 420	Parallel Computing	3	P - ECSE 427
ECSE 421	Embedded Systems	3	P - ECSE 324
ECSE 422	Fault Tolerant Computing	3	P - ECSE 324 and (ECSE 250 or COMP 250)
ECSE 424	Human-Computer Interaction	3	P - (ECSE 324 and ECSE 250) or (ECSE 324 and COMP 250) or (COMP 251 and COMP 273)
ECSE 425	Computer Architecture	3	P - ECSE 324
ECSE 427	Operating Systems	3	P - (ECSE 324 or COMP 273)
ECSE 431	Introduction to VLSI CAD.	3	P - ECSE 324, ECSE 331
ECSE 435	Mixed Signal Test Techniques	3	P - ECSE 206, ECSE 335
ECSE 436	Signal Processing Hardware	3	P - ECSE 206, ECSE 324, ECSE 325
ECSE 446	Realistic Image Synthesis	3	P - (ECSE 205 and ECSE 250) or (ECSE 202 and ECSE 205 and COMP 250)
ECSE 451	EM Transmission & Radiation	3	P - ECSE 354
ECSE 460***	Appareillage électrique	3	P - ECSE 464
ECSE 464	Power Systems Analysis	3	P - ECSE 362
ECSE 467***	Comportement des réseaux électriques	3	P - ECSE 464
ECSE 468***	Electricité Industrielle	3	P - ECSE 362
ECSE 469***	Protection des réseaux électriques	3	P - ECSE 464

List C
0 - 4 credits from the following list:

COMP 445	Computational Linguistics	3	P- COMP 250 and MATH 240 or permission of instructor
COMP 549	Brain-Inspired Artificial Intelligence	3	P - MATH 222, MATH 223, and MATH 323; or equivalents.
COMP 550	Natural Language Processing	3	P - (MATH 323 or ECSE 205) and (COMP 251 or COMP 252)
COMP 551****	Applied Machine Learning	4	P - MATH 323 or ECSE 205 or equivalent
COMP 562	Theory of Machine Learning	4	P - MATH 462 or COMP 451 or (COMP 551, MATH 222, MATH 223 and MATH 324) or ECSE 551.
COMP 579	Reinforcement Learning	4	P - A university level course in machine learning such as COMP 451 or COMP 551. Background in calculus, linear algebra, probability at the level of MATH 222, MATH 223, MATH 323, respectively.
MATH 247	Honours Applied Linear Algebra	3	P - MATH 133 or equiv.
MATH 249	Honours Complex Variables	3	P - MATH 248 or MATH 358 or equiv.
MATH 547	Stochastic Processes	4	P - MATH 356 and either MATH 247 or MATH 251
MATH 559	Bayesian Theory and Methods	4	P - MATH 324, MATH 357, MATH 557, or equivalent, and MATH 208 or equivalent.
PHYS 357	Honours Quantum Physics 1	3	P - MATH 223 or equiv., and one of PHYS 230, PHYS 251, or CIVE 281
PHYS 434	Optics	3	C - PHYS 342 or PHYS 352, or permission of the instructor
PHYS 457	Honours Quantum Physics 2	3	P - PHYS 357
PHYS 558	Solid State Physics	3	

* ECSE 403 and ECSE 501 cannot both be taken
** ECSE 408 and ECSE 511 cannot both be taken
*** Courses taught in French
**** ECSE 551 and COMP 551 cannot both be taken

Last update: February 2023
For the official program listing, see the *Programs, Courses and University Regulations* publication (www.mcgill.ca/study).