

2016 / 2017 CURRICULUM - ELECTRICAL ENGINEERING

EIGHT SEMESTER PROGRAM Total credits: 134 (presently 138 cr.)

First Semester (Fall 2016)		14 credits	Second Semester (Winter 2017)		18 credits
XXXX xxx	Humanities & Social Sciences 1*	(3 cr)	CHEM 120	General Chemistry 2	(4 cr)
MATH 140	Calculus 1	(3 cr)	MATH 141	Calculus 2	(4 cr, P - MATH 140)
PHYS 131	Mechanics & Waves	(4 cr, C - MATH 140)	PHYS 142	Electromagnetism & Optics	(4 cr, P - PHYS 131; C - MATH 141)
MATH 133	Linear Algebra and Geometry	(3 cr)	ECSE 202	Intro. to Software Development	(3 cr)
FACC 100	Intro. to Engineering Profession	(1 cr)	XXXX xxx	Impact of Technology on Society **	(3 cr)
Third Semester (Fall 2017)		18 credits	Fourth Semester (Winter 2018)		18 credits
CIVE 281	Analytical Mechanics	(3 cr, C - MATH 262 & MATH 263)	ECSE 205	Probability & Statistics for Eng.	(3 cr)
ECSE 200	Electric Circuits 1	(3 cr, P - PHYS 142 or CEGEP Equivalent; C - MATH 263)	ECSE 210	Electric Circuits 2	(3 cr, P - ECSE 200)
MATH 262	Intermediate Calculus	(3 cr, P-MATH 141 & MATH 133 or equiv)	COMP 250	Introduction to Computer Science	(3 cr)
MATH 263	ODEs for Engineers	(3 cr, C - MATH 262)	ECSE 222	Digital Logic	(3 cr, P - ECSE 202)
CCOM 206	Communication in Engineering	(3 cr)	MIME 262	Properties of Materials in EE	(3 cr)
XXXX xxx	Humanities & Social Sciences 2*	(3 cr)	ECSE 206	Intro. to Signals & Systems	(3 cr, P - ECSE 200)
Fifth Semester (Fall 2018)		18 credits	Sixth Semester (Winter 2019)		15 credits
ECSE 307	Linear Systems & Control	(4 cr, P - ECSE 206, ECSE 210)	ECSE 308	Intro. Comm. Sys. & Networks	(4 cr, P - ECSE 205 & ECSE 206)
ECSE 251	Electric and magnetic fields	(3 cr, P - MATH 262 & ECSE 200)	ECSE 354	Electromag. Wave Propagation	(4 cr, P - ECSE 251)
ECSE 324	Computer Organization	(4 cr, P - ECSE 200 & ECSE 222)	ECSE 362	Fundamentals of Power Eng.	(4 cr, P - ECSE 210, ECSE 251 & CIVE 281)
ECSE 331	Electronics	(4 cr, P - ECSE 210)	ECSE 443	Intro to Numerical Methods in EE	(3 cr, P - COMP 250, ECSE 331 & ECSE 251 or ECSE 353)
ECSE 211	Design Principles and Methods	(3 cr, P - ECSE 200 & ECSE/COMP 202)			
Seventh Semester (Fall 2019)		18 credits	Eighth Semester (Winter 2020)		15 credits
ECSE 456	ECSE Design Project 1	(3 cr, P - CCOM 206 & ECSE 211 & ECSE 331)	ECSE 457	ECSE Design Project 2	(3 cr, P-ECSE 456)
ECSE 4xx 41	Technical Complementary 1	(4 cr)	ECSE 4xx t5	Technical Complementary 5	(3 cr)
ECSE 4xx 42	Technical Complementary 2	(4 cr)	ECSE 4xx t6	Technical Complementary 6	(3 cr)
ECSE 4xx t3	Technical Complementary 3	(3 cr)	ECSE 4xx t7	Technical Complementary 7	(3 cr)
ECSE 4xx t4	Technical Complementary 4	(3 cr)	FACC 300	Engineering Economy	(3 cr)
FACC 400	Engineering Professional Practice	(1 cr, P - FACC100, 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, then: Programs and Courses > Undergraduate > Complementary Studies.

** For instructions on selecting valid "Impact of Technology on Society" courses, see www.mcgill.ca/ece, then: Programs and Courses > Undergraduate > Complementary Studies.

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.

ELECTRICAL ENGINEERING

Four-credit Technical Complementaries (2 courses) 8 credits

Two courses from this list:

ECSE 335	Microelectronics	(4 cr, P - ECSE 331)
ECSE 403	Control Systems	(4 cr, P - ECSE 307)
ECSE 408	Communication Systems	(4 cr, P - ECSE 205 & ECSE 308)
ECSE 416	Telecom. Networks	(4 cr, P - COMP-250, ECSE 205 & ECSE 308 or ECSE 316)
ECSE 433	Physical Basis of Transistor Devices	(4 cr, P - MIME 262, ECSE 331, ECSE 251)
ECSE 444	Microprocessors	(4 cr, P - ECSE 324)
ECSE 470	Electromechanical Systems	(4 cr, P - ECSE 362)

Remaining Technical Complementaries (5 courses) 15 credits

The remaining five technical complementary courses can be chosen from the previous list or the following:

ECSE 310	Thermodynamics of Computing	(3 cr, P - ECSE 200, ECSE 205 & ECSE 222)
ECSE 325	Digital Systems	(3 cr, P - ECSE 324)
ECSE 405	Antennas	(3 cr, P - ECSE 303 & ECSE 352)
ECSE 412	Discrete-Time Signal Processing	(3 cr, P - ECSE 304 or ECSE 306)
ECSE 413	Communications Systems 2	(3 cr, P - ECSE 411)
ECSE 415	Introduction to Computer Vision	(3 cr, P - ECSE 304 or ECSE 306)
ECSE 420	Parallel Computing	(3 cr, P - ECSE 427)
ECSE 421	Embedded Systems	(3 cr, P - ECSE 322 & ECSE 323)
ECSE 422	Fault Tolerant Computing	(3 cr, P - ECSE 322)
ECSE 423	Fundamentals of Photonics	(3 cr, P - ECSE 352)
ECSE 424	Human-Computer Interaction	(3 cr, P - ECSE 322)
ECSE 425	Computer Architecture	(3 cr, P - ECSE 324)
ECSE 427	Operating Systems	(3 cr, P - ECSE 324 or COMP 273)
ECSE 430	Photonic Devices & Systems	(3 cr, P - ECSE 352 & PHYS 271)
ECSE 431	Introduction to VLSI CAD.	(3 cr, P - ECSE 323 & ECSE 330)
ECSE 435	Mixed Signal Test Techniques	(3 cr, P - ECSE 304 & ECSE 334)
ECSE 436	Signal Processing Hardware	(3 cr, P - ECSE 322, ECSE 323 & ECSE 304 or ECSE 306)
ECSE 450	Electromagnetic Compatability	(3 cr, P - ECSE 221, ECSE 334 & ECSE 352 or ECSE 353)
ECSE 451	EM Transmission & Radiation	(3 cr, P - ECSE 352)
ECSE 460	Appareillage électrique	(3 cr, P - ECSE 464)
ECSE 463	Matériaux de l'électrotechnique	(3 cr, P - ECSE 361)
ECSE 464	Power Systems Analysis	(3 cr, P - ECSE 361)
ECSE 465	Power Electronic Systems	(3 cr, P - ECSE 334 & ECSE 361)
ECSE 466	Réseaux de distribution	(3 cr, P - ECSE 361)
ECSE 467	Comportement des réseaux électriques	(3 cr, P - ECSE 462 or ECSE 464)
ECSE 468	Electricité Industrielle	(3 cr, P - ECSE 361)
ECSE 469	Protection des réseaux électriques	(3 cr, P - ECSE 464)
PHYS 434	Optics	(3 cr, P - PHYS 342 or PHYS 352, or permission of the instructor)
PHYS 446	Majors quantum physics	(3 cr, PHYS 230 & PHYS 232, or PHYS 251)

It is recommended that the technical complementary courses be chosen according to a specialization area. Suggested courses appropriate to the primary specialization areas are given in the following lists.

Intelligent systems: control and automation

- ECSE 325 Digital Systems (3)
- ECSE 403 Control Systems (4)
- ECSE 415 Intro to Computer Vision (3)
- ECSE 444 Microprocessor Systems (4)
- ECSE 421 Embedded Systems (3)
- ECSE 422 Fault-Tolerant Computing (3)
- ECSE 424 Human-Computer Interaction (3)
- ECSE 425 Computer Architecture (3)
- ECSE 427 Operating Systems (3)
- ECSE 436 Signal Processing Hardware (3)

Telecommunications

- ECSE 408 Communication Systems 1 (4)
- ECSE 413 Communication Systems 2 (3)
- ECSE 416 Intro. to Telecommunication Networks (4)
- ECSE 405 Antennas (3)
- ECSE 412 Discrete Time Signal Processing (3)
- ECSE 423 Fundamentals of Photonics (3)
- ECSE 436 Signal Processing Hardware (3)
- ECSE 450 Electromagnetic Compatibility (3)

Integrated circuits, electronics and photonics

- ECSE 335 Introduction to Microelectronics (4)
- ECSE 430 Photonic Devices and Systems (3)
- ECSE 433 Physical Basis of Transistor Devices (4)
- ECSE 325 Digital Systems (3)
- ECSE 423 Fundamentals of Photonics (3)
- ECSE 431 Introduction to VLSI CAD (3)
- ECSE 435 Mixed Signal Test Techniques (3)
- ECSE 450 Electromagnetic Compatibility (3)
- ECSE 451 EM Transmission and Radiation (3)

Power engineering

- ECSE 403 Control Systems (4)
- ECSE 470 Electromechanical Energy Conversion (4)
- ECSE 460 Appareillage électrique (3)
- ECSE 463 Matériaux de l'électrotechnique (3)
- ECSE 464 Power System Analysis (3)
- ECSE 465 Power Electronic Systems (3)
- ECSE 466 Réseaux de distribution (3)
- ECSE 467 Comportement des réseaux électrique (3)
- ECSE 468 Electricité Industrielle (3)