2014 / 2015 CURRICULUM - ELECTRICAL ENGINEERING

EIGHT SEMESTER PROGRAM **Total credits:** **138**

First (Fall) Semester		**15 credits**
CHEM 110	**General Chemistry 1**	(4 cr)
MATH 140	**Calculus 1**	(3 cr)
PHYS 131	**Mechanics & Waves**	(4 cr) C - MATH 140
MATH 133	**Linear Algebra and Geometry**	(3 cr)
FACC 100	**Intro. to the Engineering Profession**	(1 cr)

Second (Winter) Semester		**18 credits**
CHEM 120	**General Chemistry 2**	(4 cr)
MATH 141	**Calculus 2**	(4 cr, P - MATH 140)
PHYS 142	**Electromagnetism & Optics**	(4 cr, P - PHYS 131; C - MATH 141)
XXXX xxx	Humanities & Social Sciences 1*	(3 cr)
XXXX xxx	Impact of Technology on Society **	(3 cr)

Third (Fall) Semester		**18 credits**
CIVE 281	**Analytical Mechanics**	(3 cr, C - MATH 262 & MATH 263)
COMP 202	**Foundations of Programming**	(3 cr)
ECSE 200	**Electric Circuits 1**	(3 cr, P - PHYS 142 or CEGEP Equivalent; C - MATH 263)
CCOM 206	**Communication in Engineering**	(3 cr)
MATH 262	**Intermediate Calculus**	(3 cr, P - MATH 141, MATH 133 or equivalent)
MATH 263	**Ord. Differential Eqns. For Engineers**	(3 cr, C - MATH 262)

Fourth (Winter) Semester		**18 credits**
ECSE 210	**Electric Circuits 2**	(3 cr, P - ECSE 200)
ECSE 221	**Intro. to Computer Engineering**	(3 cr, P - COMP 202)
MATH 264	**Advanced Calculus for Engineers**	(3 cr, P - MATH 262 or equiv; C - MATH 263)
MATH 270	**Applied Linear Algebra**	(3 cr, P - MATH 263)
PHYS 271	**Introduction to Quantum Physics**	(3 cr, P - CIVE 281)
FACC 300	**Engineering Economy**	(3 cr)

Fifth (Fall) Semester		**17 credits**
ECSE 211	**Design Principles and Methods**	(3 cr, C - ECSE 291, P - ECSE 200 & COMP 202)
ECSE 291	**Electrical Measurements Lab**	(2 cr, C - ECSE 210)
ECSE 303	**Signals & Systems 1**	(3 cr, P - ECSE 210 & MATH 270; C - MATH 381)
ECSE 322	**Computer Engineering**	(3 cr, P - ECSE 221 & ECSE 200 or MECH 383)
ECSE 330	**Introduction to Electronics**	(3 cr, P - ECSE 210)
MATH 381	**Complex Variables & Transforms**	(3 cr, P - MATH 264)

Sixth (Winter) Semester		**17 credits**
ECSE 304	**Signals & Systems 2**	(3 cr, P - ECSE 303)
ECSE 305	**Probability & Random Signals 1**	(3 cr, P - ECSE 303 or ECSE 306)
ECSE 323	**Digital Systems Design**	(5 cr, P - CCOM 206, ECSE 211, ECSE 221 & ECSE 291)
ECSE 334	**Introduction to Microelectronics**	(3 cr, P - ECSE 291, ECSE 330 & ECSE 303 or ECSE 306)
ECSE 351	**Electromagnetic Fields**	(3 cr, P - MATH 264 & ECSE 200)

Seventh (Fall) Semester		**17 credits**
ECSE 352	**Electromagnetic Waves**	(3 cr, P - ECSE 351)
ECSE 361	**Power Engineering**	(3 cr, P - ECSE 210 & ECSE 351)
ECSE 434	**Microelectronics Laboratory**	(2 cr, P - CCOM 206, ECSE 334)
ECSE 456	**ECSE Design Project 1**	(3 cr, P - ECSE 211, ECSE 322, ECSE 323 & ECSE 330)
ECSE 4xx t1	**Technical Complementary 1**	(3 cr)
MIME 262	**Properties of Materials in EE**	(3 cr)

Eighth (Winter) Semester		**18 credits**
ECSE 443	**Intro to Numerical Methods in EE**	(3 cr, P - ECSE 221, ECSE 330 & ECSE 351 or ECSE 353)
ECSE 457	**ECSE Design Project 2**	(3 cr, P-ECSE 456)
FACC 400	**Engineering Professional Practice**	(1 cr, P - FACC100, 60 program credits)
ECSE 4xx t2	**Technical Complementary 2**	(3 cr)
ECSE 4xx t3	**Technical Complementary 3**	(3 cr)
ECSE 4xx	**Lab Complementary**	(2 cr or 3 cr)
XXXX xxx	Humanities & Social Sciences 2*	(3 cr)

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.

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

The Lab Complementary course is normally taken in conjunction with a technical complementary. The courses ECSE 426 - Microprocessor Systems, ECSE 431 - Intro. to VLSI CAD, ECSE 435 - Mixed Signal Test Techniques, ECSE 436 - Signal Processing Hardware and ECSE 450 - Electromagnetic Compatibility, can be taken as a technical complementary or a lab complementary. If taken as a lab, they are still 3 credit courses.

* 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.

Revised April 2014

TECHNICAL AND LAB COMPLEMENTARY COURSES - ELECTRICAL ENGINEERING PROGRAM

Technical Complementaries (3 courses) 9 credits

Students following the regular Electrical Engineering program must take 3 courses (9 credits) from the following list. It is possible that not all the courses listed will be offered in any given year. Please refer to the up-to-date course assignments before selecting any course. Permission will not be granted to take Technical Complementary courses that are not on this list.

Course	Course Title	Pre-Requisites and Co-Requisites
ECSE 404	Control Systems	(3 cr, C - ECSE 304 or ECSE 306)
ECSE 405	Antennas	(3 cr, P - ECSE 303 & ECSE 352)
ECSE 411	Communications Systems 1	(3 cr, P - ECSE 305 & ECSE 304 or ECSE 306)
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 414	Intro. to Telecom Networks	(3 cr, P - ECSE 304 or ECSE 306 & ECSE 322)
ECSE 415	Introduction to Computer Visions	(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 Org. & Architecture	(3 cr, P - ECSE 322 & ECSE 323)
ECSE 426	Microprocessor Systems	(3 cr, P - ECSE 323 & CCOM 206)
ECSE 427	Operating Systems	(3 cr, P - ECSE 322 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 432	Physical Basis: Transistor Devices	(3 cr, P - ECSE 212 or MIME 262, ECSE 330, ECSE 351)
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 462	Electromechanical Energy Conversion	(3 cr, P - ECSE 361)
ECSE 463	Electric Power Generation	(3 cr, P - ECSE 361 or ECSE 461)
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)

Laboratory Complementary (one course) 2 or 3 credits

Students following the regular Electrical Engineering program must take one (1) course (2 or 3 credits) from the following list. It is possible that not all the courses listed will be offered in any given year. Please refer to the up-to-date course assignments before selecting any course. Permission will not be granted to take Laboratory Complementary courses that are not on this list.

Course	Course Title	Pre-Requisites and Co-Requisites
ECSE 426	Microprocessor Systems	(3 cr, P - ECSE 323 & CCOM 206)
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 485	IC Fabrication Laboratory	(2 cr, P - ECSE 334 & CCOM 206; C - ECSE 432 or ECSE 533)
ECSE 486	Power Laboratory	(2 cr, P - ECSE 330, ECSE 361 & CCOM 206)
ECSE 487	Computer Architecture Laboratory	(2 cr, P - CCOM 206; C - ECSE 425)
ECSE 488	High Frequency Laboratory	(2 cr, P - CCOM 206 & ECSE 291; C - ECSE 451)
ECSE 489	Telecommunication Network Laboratory	(2 cr, P - CCOM 206; C - ECSE 414 or ECSE 528)
ECSE 490	Digital Signal Processing Lab	(2 cr, P - ECSE 291 & CCOM 206; C - ECSE 412 or ECSE 512)
ECSE 491	Communications Systems Lab	(2 cr, P - CCOM 206 & ECSE 291; C - ECSE 411 or ECSE 511)
ECSE 492	Optical Communications Lab	(2 cr, P - CCOM 206; C - ECSE 423 or ECSE 430 or ECSE 527 or ECSE 571)
ECSE 493	Control & Robotics Lab	(2 cr, P - CCOM 206 & ECSE 291;C - ECSE 404 or ECSE 501)