

# 2012 / 2013 CURRICULUM - ELECTRICAL ENGINEERING

ENTRY FROM CEGEP Total credits: 109

First ( Fall ) Semester		15 credits	Second ( Winter ) Semester		15 credits
<b>CIVE 281</b>	<b>Analytical Mechanics</b>	(3 cr, C - MATH 262 & MATH 263)	<b>ECSE 210</b>	<b>Electric Circuits 2</b>	(3 cr, P - ECSE 200)
<b>COMP 202</b>	<b>Foundations of Programming</b>	(3 cr)	<b>ECSE 211</b>	<b>Design Principles and Methods</b>	(3 cr, C - ECSE 291, P - ECSE 200 & COMP 202)
<b>ECSE 200</b>	<b>Electric Circuits 1</b>	(3 cr, P - PHYS 142 or CEGEP Equivalent; C - MATH 263)	<b>ECSE 221</b>	<b>Intro. to Computer Engineering</b>	(3 cr, P - COMP 202)
<b>MATH 262</b>	<b>Intermediate Calculus</b>	(3 cr, P-MATH 141 & MATH 133 or equiv)	<b>ECSE 291</b>	<b>Electrical Measurements Lab</b>	(2 cr, C - ECSE 210)
<b>MATH 263</b>	<b>Ord. Differential Eqns. For Engineers</b>	(3 cr, C - MATH 262)	<b>FACC 100</b>	<b>Intro. to the Engineering Profession</b>	(1 cr)
			<b>MATH 264</b>	<b>Advanced Calculus for Engineers</b>	(3 cr, P - MATH 262 or MATH 151 or MATH 152 or equiv; C - MATH 263)
Third ( Fall ) Semester		15 credits	Fourth ( Winter ) Semester		15 credits
<b>ECSE 322</b>	<b>Computer Engineering</b>	(3 cr, P - ECSE 221 & ECSE 200 or MECH 383)	<b>ECSE 303</b>	<b>Signals &amp; Systems 1</b>	(3 cr, P - ECSE 210 & MATH 270; C - MATH 381)
<b>ECSE 351</b>	<b>Electromagnetic Fields</b>	(3 cr, P - MATH 264 & ECSE 200)	<b>ECSE 330</b>	<b>Introduction to Electronics</b>	(3 cr, P - ECSE 210)
<b>CCOM 206</b>	<b>Communication in Engineering</b>	(3 cr)	<b>ECSE 361</b>	<b>Power Engineering</b>	(3 cr, P - ECSE 210 & ECSE 351)
<b>MATH 270</b>	<b>Applied Linear Algebra</b>	(3 cr, P - MATH 263)	<b>PHYS 271</b>	<b>Quantum Physics</b>	(3 cr, P - CIVE 281)
<b>MATH 381</b>	<b>Complex Variables &amp; Transforms</b>	(3 cr, P - MATH 264)	<b>MIME 262</b>	<b>Properties of Materials in EE</b>	(3 cr)
Fifth ( Fall ) Semester		17 credits	Sixth ( Winter ) Semester		17 credits
<b>ECSE 304</b>	<b>Signals &amp; Systems 2</b>	(3 cr, P - ECSE 303)	<b>ECSE 434</b>	<b>Microelectronics Laboratory</b>	(2 cr, P - CCOM 206, ECSE 334)
<b>ECSE 305</b>	<b>Probability &amp; Random Signals 1</b>	(3 cr, P - ECSE 303 or ECSE 306)	<b>ECSE 443</b>	<b>Numerical Methods in Elect. Eng.</b>	(3 cr, P - ECSE 221, ECSE 330 & ECSE 351 or ECSE 353)
<b>ECSE 323</b>	<b>Digital Systems Design</b>	(5 cr, P - CCOM 206, ECSE 211, ECSE 221 & ECSE 291)	<b>ECSE 456</b>	<b>ECSE Design Project 1</b>	(3 cr, P - ECSE 211, ECSE 322, ECSE 323 & ECSE 330)
<b>ECSE 334</b>	<b>Introduction to Microelectronics</b>	(3 cr, P - ECSE 291, ECSE 330 & ECSE 303 or ECSE 306)	<b>ECSE 4xx t1</b>	<b>Technical Complementary 1</b>	(3 cr)
<b>ECSE 352</b>	<b>Electromagnetic Waves</b>	(3 cr, P - ECSE 351)	<b>ECSE 4xx t2</b>	<b>Technical Complementary 2</b>	(3 cr)
			<b>XXXX xxx</b>	<b>Humanities &amp; Social Sciences *</b>	(3 cr)
Seventh ( Fall ) Semester		15 credits			
<b>ECSE 457</b>	<b>ECSE Design Project 2</b>	(3 cr, P-ECSE 456)			
<b>FACC 300</b>	<b>Engineering Economy</b>	(3 cr)			
<b>ECSE 4xx t3</b>	<b>Technical Complementary 3</b>	(3 cr)			
<b>ECSE 4xx</b>	<b>Lab Complementary</b>	(2 cr or 3 cr)			
<b>XXXX xxx</b>	<b>Impact of Technology on Society **</b>	(3 cr)			
<b>FACC 400</b>	<b>Engineering Professional Practice</b>	(1 cr, P - FACC100)			

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](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).

This sample curriculum is for students who wish to complete their degree requirements in 7 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.

## 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.

<b>Course</b>	<b>Course Title</b>	<b>Pre-Requisites and Co-Requisites</b>
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 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 & PHYS 271)
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 361)
ECSE 462	Electromechanical Energy Conversion	(3 cr, P - ECSE 361)
ECSE 464	Power System Analysis 1	(3 cr, P - ECSE 361)
ECSE 465	Power Electronic Systems	(3 cr, P - ECSE 334 & ECSE 361)
ECSE 467	Comportement des réseaux électriques	(3 cr, P - ECSE 361)
ECSE 468	Electricité Industrielle	(3 cr, P - ECSE 361)
ECSE 469	Protection des réseaux électriques	(3 cr, P - ECSE 361)

### 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.

<b>Course</b>	<b>Course Title</b>	<b>Pre-Requisites and Co-Requisites</b>
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)