### 2017 / 2018 CURRICULUM - ELECTRICAL ENGINEERING

#### EIGHT SEMESTER PROGRAM

<table>
<thead>
<tr>
<th>First Semester (Fall 2017)</th>
<th>14 credits</th>
<th>Second Semester (Winter 2018)</th>
<th>18 credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXX xxx</td>
<td>Humanities &amp; Social Sciences 1* (3 cr)</td>
<td>CHEM 120 General Chemistry 2 (4 cr)</td>
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</tr>
<tr>
<td>MATH 140</td>
<td>Calculus 1 (3 cr)</td>
<td>MATH 141 Calculus 2 (4 cr, P - MATH 140)</td>
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<tr>
<td>PHYS 131</td>
<td>Mechanics &amp; Waves (4 cr, C - MATH 140)</td>
<td>PHYS 142 Electromagnetism &amp; Optics (4 cr, P - PHYS 131; C - MATH 141)</td>
<td></td>
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<tr>
<td>MATH 133</td>
<td>Linear Algebra and Geometry (3 cr)</td>
<td>ECSE 202 Intro. to Software Development (3 cr)</td>
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<tr>
<td>FACC 100</td>
<td>Intro. to Engineering Profession (1 cr)</td>
<td>XXXX xxx Impact of Technology on Society ** (3 cr)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Third Semester (Fall 2018)</th>
<th>18 credits</th>
<th>Fourth Semester (Winter 2019)</th>
<th>18 credits</th>
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</thead>
<tbody>
<tr>
<td>CIVE 281</td>
<td>Analytical Mechanics (3 cr, C - MATH 282, MATH 283)</td>
<td>ECSE 205 Probability &amp; Statistics for Eng. (3 cr)</td>
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<tr>
<td>ECSE 200</td>
<td>Electric Circuits 1 (3 cr, P - PHYS 142 or CEGEP Equivalent; C - MATH 283)</td>
<td>ECSE 210 Electric Circuits 2 (3 cr, P - ECSE 200)</td>
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<tr>
<td>MATH 262</td>
<td>Intermediate Calculus (3 cr, P-MATH 141, MATH 133 or equiv)</td>
<td>COMP 250 Introduction to Computer Science</td>
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<tr>
<td>MATH 263</td>
<td>ODEs for Engineers (3 cr, C - MATH 262)</td>
<td>ECSE 222 Digital Logic (3 cr, P - ECSE 202)</td>
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<tr>
<td>CCOM 206</td>
<td>Communication in Engineering (3 cr)</td>
<td>MIME 262 Properties of Materials in EE (3 cr)</td>
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<tr>
<td>XXXX xxx</td>
<td>Humanities &amp; Social Sciences 2* (3 cr)</td>
<td>ECSE 206 Intro. to Signals &amp; Systems (3 cr, P - ECSE 200)</td>
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<thead>
<tr>
<th>Fifth Semester (Fall 2019)</th>
<th>18 credits</th>
<th>Sixth Semester (Winter 2020)</th>
<th>15 credits</th>
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</thead>
<tbody>
<tr>
<td>ECSE 307</td>
<td>Linear Systems &amp; Control (4 cr, P - ECSE 206, ECSE 210)</td>
<td>ECSE 308 Intro. Comm. Sys. &amp; Networks (4 cr, P - ECSE 205, ECSE 206)</td>
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<tr>
<td>ECSE 251</td>
<td>Electric and magnetic fields (3 cr, P - MATH 220, ECSE 206)</td>
<td>ECSE 354 Electromagnetic Wave Propagation (4 cr, P - ECSE 251)</td>
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<tr>
<td>ECSE 324</td>
<td>Computer Organization (4 cr, P - ECSE 200, ECSE 222)</td>
<td>ECSE 362 Fundamentals of Power Eng. (4 cr, P - ECSE 210, ECSE 251, CIVE 281)</td>
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<tr>
<td>ECSE 331</td>
<td>Electronics (4 cr, P - ECSE 210)</td>
<td>ECSE 443 Intro to Numerical Methods in EE (3 cr, P - COMP 250, ECSE 331, ECSE 286 or ECSE 383)</td>
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<tr>
<td>ECSE 211</td>
<td>Design Principles and Methods (3 cr, P - ECSE 200, ECSE 202)</td>
<td>FACC 250 Resp. of the Prof. Engineer (0 cr)</td>
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<tr>
<th>Seventh Semester (Fall 2020)</th>
<th>18 credits</th>
<th>Eighth Semester (Winter 2021)</th>
<th>15 credits</th>
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<tbody>
<tr>
<td>ECSE 456</td>
<td>ECSE Design Project 1 (3 cr, P - FACC 250, ECSE 210, ECSE 211)</td>
<td>ECSE 457 ECSE Design Project 2 (3 cr, P - ECSE 456)</td>
<td></td>
</tr>
<tr>
<td>ECSE xxx</td>
<td>Technical Complementary 1 (4 cr)</td>
<td>ECSE xxx Technical Complementary 5 (3 cr)</td>
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<tr>
<td>ECSE xxx</td>
<td>Technical Complementary 2 (4 cr)</td>
<td>ECSE xxx Technical Complementary 6 (3 cr)</td>
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<tr>
<td>ECSE xxx</td>
<td>Technical Complementary 3 (3 cr)</td>
<td>ECSE xxx Technical Complementary 7 (3 cr)</td>
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<tr>
<td>ECSE xxx</td>
<td>Technical Complementary 4 (3 cr)</td>
<td>FACC 300 Engineering Economy (3 cr)</td>
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<tr>
<td>FACC 400</td>
<td>Engineering Professional Practice (1, 2, 3 or 4 cr)</td>
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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: Programs and Courses > Undergraduate > Complementary Studies.

** For instructions on selecting valid “Impact of Technology on Society” courses, see [www.mcgill.ca/ece](http://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 2017
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 305, ECSE 308, or ECSE 316)
- ECSE 416 Telecommunications (4 cr, P - COMP 250, ECSE 305, ECSE 308, or ECSE 316)
- ECSE 433 Physical Basis of Transistor Devices (4 cr, P - MIME 262, ECSE 321, 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, or ECSE 222)
- ECSE 325 Digital Systems (3 cr, P - ECSE 324)
- ECSE 405 Antennas (3 cr, P - ECSE 206, ECSE 354)
- ECSE 412 Discrete-Time Signal Processing (3 cr, P - ECSE 206 or ECSE 306)
- ECSE 413 Communications Systems 2 (3 cr, P - ECSE 206)
- 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 324)
- ECSE 422 Fault Tolerant Computing (3 cr, P - ECSE 324, COMP 250)
- ECSE 423 Fundamentals of Photonics (3 cr, P - ECSE 324)
- ECSE 424 Human-Computer Interaction (3 cr, P - ECSE 324, COMP 250)
- ECSE 425 Computer Architecture (3 cr, P - ECSE 324)
- ECSE 427 Operating Systems (3 cr, P - ECSE 324)
- ECSE 430 Photonic Devices & Systems (3 cr, P - ECSE 324)
- ECSE 431 Introduction to VLSI CAD (3 cr, P - ECSE 324, ECSE 330)
- ECSE 435 Mixed Signal Test Techniques (3 cr, P - ECSE 206, ECSE 335)
- ECSE 436 Signal Processing Hardware (3 cr, P - ECSE 322, ECSE 323, ECSE 304 or ECSE 306)
- ECSE 440 Electromagnetic Compatibility (3 cr, P - ECSE 222, ECSE 331, ECSE 353 or ECSE 354)
- ECSE 451 EM Transmission & Radiation (3 cr, P - ECSE 354)
- ECSE 460 Appareillage électrique (3 cr, P - ECSE 464)
- ECSE 463 Electric Power Generation (3 cr, P - ECSE 362 or ECSE 461)
- ECSE 464 Power Systems Analysis (3 cr, P - ECSE 362)
- ECSE 465 Power Electronic Systems (3 cr, P - ECSE 331, ECSE 362)
- ECSE 466 Réseaux de distribution (3 cr, P - ECSE 361)
- ECSE 467 Comportement des réseaux électriques (3 cr, P - ECSE 362)
- ECSE 468 Électricité Industrielle (3 cr, P - ECSE 362)
- ECSE 469 Protection des réseaux électriques (3 cr, P - ECSE 464)
- ECSE 472 Fundamentals of Circuit Simulation and Modelling (department approval required)
- PHYS 434 Optics (3 cr, P - PHYS 342 or PHYS 352, or permission of the instructor)
- PHYS 446 Majors quantum physics (3 cr, P - 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 438 Signal Processing Hardware (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)

**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)
- ECSE 451 EM Transmission and Radiation (3)

**Power engineering**

- ECSE 403 Control Systems (4)
- ECSE 470 Electromechanical Systems (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 électriques (3)
- ECSE 468 ElectricitéIndustrielle (3)
- ECSE 469 Protection des réseaux électrique (3)