## 2018 / 2019 CURRICULUM - ELECTRICAL ENGINEERING

### ENTRY FROM CEGEP

**Total credits:** 109

<table>
<thead>
<tr>
<th>First Semester (Fall 2018)</th>
<th>15 credits</th>
<th>Second Semester (Winter 2019)</th>
<th>16 credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 281 Analytical Mechanics</td>
<td>(3 cr, C - MATH 262, MATH 263)</td>
<td>ECSE 205 Probability &amp; Statistics for Eng.</td>
<td>(3 cr)</td>
</tr>
<tr>
<td>ECSE 202 Intro. to Software Development</td>
<td>(3 cr)</td>
<td>ECSE 206 Intro. to Signals &amp; Systems</td>
<td>(3 cr, P - ECSE 200)</td>
</tr>
<tr>
<td>ECSE 200 Electric Circuits 1</td>
<td>(3 cr, P - PHYS 142 or CEGEP Equivalent, C - MATH 263)</td>
<td>ECSE 210 Electric Circuits 2</td>
<td>(3 cr, P - ECSE 200)</td>
</tr>
<tr>
<td>MATH 262 Intermediate Calculus</td>
<td>(3 cr, P-MATH 141, MATH 133 or equiv)</td>
<td>ECSE 211 Design Principles and Methods</td>
<td>(3 cr, P - ECSE 200, ECSE 202)</td>
</tr>
<tr>
<td>MATH 263 ODEs for Engineers</td>
<td>(3 cr, C - MATH 262)</td>
<td>ECSE 251 Electric and magnetic fields</td>
<td>(3 cr, P - MATH 262, ECSE 200)</td>
</tr>
<tr>
<td>FACC 100 Intro. to Engineering Profession</td>
<td>(1 cr)</td>
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</table>

### Third Semester (Fall 2019)

**16 credits**

| COMP 250 Introduction to Computer Science | (3 cr) | ECSE 307 Linear Systems & Control | (4 cr, P - ECSE 200, ECSE 210) |
| ECSE 222 Digital Logic | (3 cr, P - ECSE 202) | 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) |
| MIME 262 Properties of Materials in EE | (3 cr) | XXXX xxx Humanities & Social Sciences * | (3 cr) |
| CCOM 206 Communication in Engineering | (3 cr) | FACC 250 Resp. of the Prof. Engineer | (5 cr) |

### Fifth Semester (Fall 2020)

**15 credits**

| ECSE xxx Intro. Comm. Sys. & Networks | (4 cr, P - ECSE 200, ECSE 206) | ECSE 456 ECSE Design Project 1 | (3 cr, P - CCOM 200, ECSE 211, ECSE 324, ECSE 331) |
| ECSE xxx Technical Complementary 1 | (4 cr) | ECSE xxx Technical Complementary 2 | (4 cr) |
| ECSE 354 Electromagnetic Wave Propagation | (4 cr, P - ECSE 251) | ECSE xxx Technical Complementary 3 | (3 cr) |
| FACC 300 Engineering Economy | (3 cr) | ECSE 443 Intro to Numerical Methods in EE | (3 cr, P - COMP 290, ECSE 331 and (ECSE 251 or ECSE 353)) |
| XXXX xxx Impact of Technology on Society ** | (3 cr) |

### Seventh Semester (Fall 2021)

**16 credits**

| ECSE 457 ECSE Design Project 2 | (3 cr, P - ECSE 456) | |
| ECSE xxx Technical Complementary 4 | (3 cr) | |
| ECSE xxx Technical Complementary 5 | (3 cr) | |
| ECSE xxx Technical Complementary 6 | (3 cr) | |
| XXXX xxx Elective Course*** | (3 cr) | |
| FACC 400 Engineering Professional Practice | (1 cr, P - FACC 100, 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](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.

*** One 3-credit course at the 200-level or higher from any department at McGill, approved by the Undergraduate Programs Office in the Department of Electrical and Computer Engineering. For approval, please contact undergrad.ece@mcgill.ca.

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.

Revised April 2018
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 308, ECSE 406)
- ECSE 416 Telecom. Networks (4 cr, P - COMP 250, ECSE 205 and 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 (4 courses) 12 credits

The remaining four 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 208, 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 411)
- ECSE 415 Intro. to Computer Vision (3 cr, P - ECSE 205)
- ECSE 420 Parallel Computing (3 cr, P - ECSE 427)
- ECSE 421 Embedded Systems (3 cr, P - ECSE 324, COMP 250)
- ECSE 422 Fault Tolerant Computing (3 cr, P - ECSE 354)
- ECSE 423 Fundamentals of Photonics (3 cr, P - ECSE 354, MIME 262)
- ECSE 424 Human-Computer Interaction (3 cr, P - ECSE 324, COMP 250)
- ECSE 425 Computer Architecture (3 cr, P - ECSE 324)
- ECSE 430 Photonic Devices and Systems (3 cr, P - ECSE 354, MIME 262)
- ECSE 433 Physical Basis of Transistor Devices (4 cr, P - MIME 262, ECSE 331, ECSE 251)
- ECSE 435 Mixed Signal Test Techniques (3 cr, P - COMP 250)
- ECSE 444 Microprocessors (4 cr, P - ECSE 324)
- ECSE 460 Appareillage électrique (3 cr, P - ECSE 362 or ECSE 461)
- ECSE 461 Electric Power Generation (3 cr, P - ECSE 324)
- ECSE 462 Power Systems Analysis (3 cr, P - ECSE 331, ECSE 362)
- ECSE 463 Power Electronic Systems (3 cr, P - ECSE 331, ECSE 362)
- ECSE 464 Réseaux de distribution (3 cr, P - ECSE 362)
- ECSE 465 Power Electronic Systems (3 cr, P - ECSE 331, ECSE 362)
- ECSE 466 Electricité industrielle (3 cr, P - ECSE 362)
- ECSE 467 Comportement des réseaux électriques (3 cr, P - ECSE 362)
- ECSE 468 Protection des réseaux électriques (3 cr, P - ECSE 362)
- 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 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)
- 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 Electric Power Generation (3)
- ECSE 464 Power System Analysis (3)
- ECSE 466 Réseaux de distribution (3)
- ECSE 467 Comportement des réseaux électriques (3)
- ECSE 468 Electricité Industrrielle (3)
- ECSE 469 Protection des réseaux électriques (3)
- ECSE 450 Electromagnetic Compatibility (3)