## Electrical Engineering Curriculum - Fall 2022

### 1st Term (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSS 1</td>
<td>3</td>
<td>Humanities &amp; Social Sciences 1*</td>
</tr>
<tr>
<td>MATH 140</td>
<td>3</td>
<td>Calculus 1</td>
</tr>
<tr>
<td>PHYS 131</td>
<td>4</td>
<td>Mechanics &amp; Waves</td>
</tr>
<tr>
<td>MATH 133</td>
<td>3</td>
<td>Linear Algebra and Geometry</td>
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<tr>
<td>FACC 100</td>
<td>1</td>
<td>Intro. to Engineering Profession</td>
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### 2nd Term (Winter)

<table>
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<tbody>
<tr>
<td>CHEM 120</td>
<td>4</td>
<td>General Chemistry 2</td>
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<tr>
<td>MATH 141</td>
<td>4</td>
<td>Calculus 2</td>
</tr>
<tr>
<td>PHYS 142</td>
<td>4</td>
<td>Electromagnetism &amp; Optics</td>
</tr>
<tr>
<td>COMP 202</td>
<td>3</td>
<td>Foundations of Programming</td>
</tr>
<tr>
<td>Impact</td>
<td>3</td>
<td>Impact of Technology on Society **</td>
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### 3rd Term (Fall)

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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CIVE 281</td>
<td>3</td>
<td>Analytical Mechanics</td>
</tr>
<tr>
<td>ECSE 200</td>
<td>3</td>
<td>Electric Circuits 1</td>
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<tr>
<td>MATH 262</td>
<td>3</td>
<td>Intermediate Calculus</td>
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<tr>
<td>MATH 263</td>
<td>3</td>
<td>ODEs for Engineers</td>
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<tr>
<td>ECSE 250</td>
<td>3</td>
<td>Fundamentals of Software Development</td>
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<tr>
<td>MIME 262</td>
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<td>Properties of Materials in EE</td>
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### 4th Term (Winter)

<table>
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<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
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<tbody>
<tr>
<td>ECSE 205</td>
<td>3</td>
<td>Probability &amp; Statistics for Eng.</td>
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<tr>
<td>ECSE 210</td>
<td>3</td>
<td>Electric Circuits 2</td>
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<tr>
<td>COMP 206</td>
<td>3</td>
<td>Introduction to Software Systems</td>
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<tr>
<td>ECSE 222</td>
<td>3</td>
<td>Digital Logic</td>
</tr>
<tr>
<td>CCOM 206</td>
<td>3</td>
<td>Communication in Engineering</td>
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<tr>
<td>ECSE 206</td>
<td>3</td>
<td>Intro. to Signals &amp; Systems</td>
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### 5th Term (Fall)

<table>
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<th>Course</th>
<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
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<tbody>
<tr>
<td>CIVE 281</td>
<td>3</td>
<td>Analytical Mechanics</td>
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<tr>
<td>ECSE 300</td>
<td>3</td>
<td>Electric Circuits 1</td>
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<td>MATH 262</td>
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<tr>
<td>MATH 263</td>
<td>3</td>
<td>ODEs for Engineers</td>
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<tr>
<td>ECSE 324</td>
<td>3</td>
<td>Computer Organization</td>
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<tr>
<td>ECSE 331</td>
<td>3</td>
<td>Electronics</td>
</tr>
<tr>
<td>ECSE 211</td>
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<td>Design Principles and Methods</td>
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### 6th Term (Winter)

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<th>Course</th>
<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
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<tbody>
<tr>
<td>ECSE 354</td>
<td>4</td>
<td>Electromagnetic Wave Propagation</td>
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<tr>
<td>ECSE 362</td>
<td>4</td>
<td>Fundamentals of Power Eng.</td>
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<tr>
<td>ECSE 343</td>
<td>3</td>
<td>Numerical Methods in Engineering</td>
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<tr>
<td>FACC 400</td>
<td>3</td>
<td>Resp. of the Prof. Engineer</td>
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### 7th Term (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
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<tbody>
<tr>
<td>ECSE 458 D1</td>
<td>3</td>
<td>Capstone Design Project, ECSE 211, ECSE 324, CCOM 206, ECSE 331</td>
</tr>
<tr>
<td>XXXX XXX</td>
<td>4</td>
<td>Technical Complementary 1</td>
</tr>
<tr>
<td>XXXX XXX</td>
<td>4</td>
<td>Technical Complementary 2</td>
</tr>
<tr>
<td>XXXX XXX</td>
<td>3</td>
<td>Technical Complementary 3</td>
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<tr>
<td>HSS 2</td>
<td>3</td>
<td>Humanities &amp; Social Sciences 2*</td>
</tr>
<tr>
<td>FACC 400</td>
<td>1</td>
<td>Engineering Professional Practice</td>
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### 8th Term (Winter)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
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<tbody>
<tr>
<td>ECSE 458 D2</td>
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<td>Capstone Design Project</td>
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<tr>
<td>XXXX XXX</td>
<td>3</td>
<td>Technical Complementary 4</td>
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<td>XXXX XXX</td>
<td>3</td>
<td>Technical Complementary 5</td>
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<tr>
<td>Elective</td>
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<td>Elective Course</td>
</tr>
<tr>
<td>FACC 300</td>
<td>3</td>
<td>Engineering Economy</td>
</tr>
</tbody>
</table>

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

*The Complementary Studies (CS) courses are Impact of Technology courses (Group A) and Humanities & Social Sciences, Management Studies and Law courses (Group B). Students must take one course (3 credits) from Group A and one course (3 credits) from Group B. The curriculum above includes suggested terms during which these courses can be taken. These must be chosen from an approved list of courses/Departments, found in the program list under "Complementary Studies" in the Faculty of Engineering Undergraduate section of the Programs, Courses and University Regulations publication (www.mcgill.ca/study) (see your program listing in the "Browse Academic Units & Programs" section).

Elective course (3 credits) must be taken 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.

Students are responsible for satisfying pre/co-requisites and verifying with their department that they are meeting the requirements of their program.
Technical Complementary Courses - Electrical Engineering

Technical Complementaries
17 - 20 credits (5 courses) must be taken, chosen as follows:

- 8 credits (2 courses) from List A
- 9 - 12 credits (3 courses) from List A or List B

List A
8 - 20 credits from the following list:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
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</thead>
<tbody>
<tr>
<td>ECSE 335</td>
<td>Microelectronics</td>
<td>4</td>
</tr>
<tr>
<td>ECSE 403</td>
<td>Control</td>
<td>4</td>
</tr>
<tr>
<td>ECSE 408</td>
<td>Communication Systems</td>
<td>4</td>
</tr>
<tr>
<td>ECSE 416</td>
<td>Telecom. Networks</td>
<td>4</td>
</tr>
<tr>
<td>ECSE 433</td>
<td>Physical Basis of Transistor Devices</td>
<td>4</td>
</tr>
<tr>
<td>ECSE 444</td>
<td>Microprocessors</td>
<td>4</td>
</tr>
<tr>
<td>ECSE 470</td>
<td>Electromechanical &amp; Static Conversion Systems</td>
<td>4</td>
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</table>

List B
0 - 12 credits from the following list:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites/Co-requisites</th>
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</thead>
<tbody>
<tr>
<td>COMP 551***</td>
<td>Applied Machine Learning</td>
<td>4</td>
</tr>
<tr>
<td>COMP 559</td>
<td>Fundamentals of Computer Animation</td>
<td>4</td>
</tr>
<tr>
<td>ECSE 310</td>
<td>Thermodynamics of Computing</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 325</td>
<td>Digital Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 405</td>
<td>Antennas</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 412</td>
<td>Discrete-Time Signal Processing</td>
<td>3</td>
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<tr>
<td>ECSE 415</td>
<td>Intro. to Computer Vision</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 420</td>
<td>Parallel Computing</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 421</td>
<td>Embedded Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 422</td>
<td>Fault Tolerant Computing</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 423</td>
<td>Fundamentals of Photonics</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 424</td>
<td>Human-Computer Interaction</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 425</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 427</td>
<td>Operating Systems</td>
<td>3</td>
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<tr>
<td>ECSE 430</td>
<td>Photonic Devices &amp; Systems</td>
<td>3</td>
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<tr>
<td>ECSE 431</td>
<td>Introduction to VLSI CAD.</td>
<td>3</td>
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<tr>
<td>ECSE 435</td>
<td>Mixed Signal Test Techniques</td>
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<tr>
<td>ECSE 436</td>
<td>Signal Processing Hardware</td>
<td>3</td>
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<tr>
<td>ECSE 446</td>
<td>Realistic Image Synthesis</td>
<td>3</td>
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<tr>
<td>ECSE 450</td>
<td>Electromagnetic Compatibility</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 464</td>
<td>EM Transmission &amp; Radiation</td>
<td>3</td>
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<tr>
<td>ECSE 460</td>
<td>Appareillage électrique</td>
<td>3</td>
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<tr>
<td>ECSE 463*</td>
<td>Electric Power Generation</td>
<td>3</td>
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<tr>
<td>ECSE 464</td>
<td>Power Systems Analysis</td>
<td>3</td>
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<tr>
<td>ECSE 465**</td>
<td>Power Electronic Systems</td>
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<td>ECSE 466</td>
<td>Réseaux de distribution</td>
<td>3</td>
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<td>ECSE 467</td>
<td>Comportement des réseaux électriques</td>
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<td>ECSE 468</td>
<td>Electricité Industrielle</td>
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<tr>
<td>ECSE 469</td>
<td>Protection des réseaux électriques</td>
<td>3</td>
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<tr>
<td>ECSE 472</td>
<td>Fundamentals of Circuit Simulation &amp; Modelling</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 500</td>
<td>Mathematical Foundations of Systems</td>
<td>3</td>
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<tr>
<td>ECSE 501</td>
<td>Linear Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECSE 507</td>
<td>Optimization &amp; Optimal Control</td>
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<td>ECSE 508</td>
<td>Multi-Agent Systems</td>
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<td>ECSE 509</td>
<td>Probability &amp; Random Signals 2</td>
<td>3</td>
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<tr>
<td>ECSE 511</td>
<td>Filtering &amp; Prediction for Stochastic Systems</td>
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<tr>
<td>ECSE 516</td>
<td>Nonlinear and Hybrid Control Systems</td>
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<tr>
<td>ECSE 519</td>
<td>Semiconductor Nanstructures &amp; Nanophotonic Devices</td>
<td>3</td>
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<tr>
<td>ECSE 521</td>
<td>Digital Communications 1</td>
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<td>ECSE 526</td>
<td>Artificial Intelligence</td>
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<td>ECSE 532</td>
<td>Computer Graphics</td>
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<td>ECSE 543</td>
<td>Numerical Methods in EE</td>
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<tr>
<td>ECSE 544</td>
<td>Computational Photography</td>
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<td>ECSE 551***</td>
<td>Machine Learning for Engineers</td>
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<tr>
<td>ECSE 552</td>
<td>Deep Learning</td>
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<tr>
<td>ECSE 562*</td>
<td>Low-Carbon Power Generation Engineering</td>
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<td>ECSE 565**</td>
<td>Power Systems Operation &amp; Planning</td>
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<tr>
<td>ECSE 575</td>
<td>Heterogeneous Integration Systems</td>
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<td>PHYS 434</td>
<td>Optics</td>
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<tr>
<td>PHYS 446</td>
<td>Majors quantum physics</td>
<td>3</td>
</tr>
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</table>

* ECSE 463 and ECSE 562 cannot both be taken.
** ECSE 465 and ECSE 565 cannot both be taken.
*** ECSE 551 and COMP 551 cannot both be taken.

Last update: March 4, 2021

For the official program listing, see the Programs, Courses and University Regulations publication (www.mcgill.ca/study).