Graduate Program Curriculum Outline  
Cooperative Education Option in Electrical & Computer Engineering  
Master of Science in Electrical Engineering

**Major Required (Core) Courses (Total # of courses required = 3)**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Semesters Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fall, Spring, Summer, Other</td>
</tr>
<tr>
<td>Choose any three of the following:</td>
<td></td>
<td>9</td>
<td>O’ S F F, Sum S F</td>
</tr>
<tr>
<td>EECE.5070</td>
<td>Electromagnetic Waves and Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5080</td>
<td>Quantum Electronics for Engineers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5090</td>
<td>Linear Systems Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5130</td>
<td>Control Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5150</td>
<td>Power Electronics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5200</td>
<td>Computer-Aided Engineering Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5430</td>
<td>Introduction to Communications Theory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5840</td>
<td>Probability and Random Processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EECE.5950</td>
<td>Solid State Electronics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SubTotal # Core Credits Required 9

**Elective Course Choices (Total # of courses required = 7)**

| Choose seven from one concentration | See Attached List | 21 |

SubTotal # Elective Credits Required 21

**Professional Co-op Option Courses (Total # of courses required = 3)**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Semesters Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fall, Spring, Other</td>
</tr>
<tr>
<td>ENGN.6020</td>
<td>Graduate Professional Development for Engineers</td>
<td>1</td>
<td>F, S</td>
</tr>
<tr>
<td>ENGN.6030</td>
<td>Graduate Cooperative Experience</td>
<td>1</td>
<td>F, S</td>
</tr>
<tr>
<td>ENGN.6040</td>
<td>Workforce Development</td>
<td>1</td>
<td>F, S</td>
</tr>
</tbody>
</table>

SubTotal # Co-op Credits Required 3

**Curriculum Summary**

| Total number of courses required for the degree | 13 |
| Total credit hours required for degree         | 33 |

**Prerequisite, Concentration or Other Requirements:**

*Electives for the Master’s in Electrical Engineering: All courses are 3 credits unless otherwise indicated. Course availability is subject to change.

Notes:

(1) Last offered Fall 2016
## Concentration Courses in Electrical Engineering

### Information Systems (Telecommunications) Concentration
- EECE.5100 Digital Signal Processing  
- EECE.5110 Medical Imaging Diagnosis  
- EECE.5460 Computer Telecommunications  
- EECE.5480 Coding and Information Theory  
- EECE.5820 Wireless Communications  
- EECE.5860 Stochastic Modeling in Telecommunications  
- EECE.6170 Modeling and Simulation Techniques for Communication Networks  
- EECE.6180 Performance of Wireless Communications Networks  
- EECE.6610 Local Area /Computer Networking  
- EECE.6850 Statistical Theory of Communications  
- EECE.6870 Stochastic Estimation  
- EECE.6880 Theoretical Acoustics

### Information Systems (Communications Engineering) Concentration
- EECE.5330 Microwave Engineering  
- EECE.5460 Computer Telecommunications  
- EECE.5480 Coding and Information Theory  
- EECE.5710 Radar Systems  
- EECE.5820 Wireless Communications  
- EECE.5860 Stochastic Modeling in Telecommunications  
- EECE.6170 Modeling and Simulation Techniques for Communication Networks  
- EECE.6180 Performance of Wireless Communications Networks  
- EECE.6610 Local Area/Computer Networking  
- EECE.6840 Time Series Analysis  
- EECE.6850 Statistical Theory of Communications  
- EECE.6870 Stochastic Estimation  
- EECE.6880 Theoretical Acoustics

### Power and Energy Engineering Concentration
- EECE.5140 Power Systems Transmission  
- EECE.5150 Power Electronics  
- EECE.5160 Advanced Machine Theory  
- EECE.5250 Power Systems Distribution  
- EECE.5280 Alternative Energy Sources  
- EECE.5290 Electric Vehicle Technology  
- EECE.6150 Solid State Drives Systems  
- EECE.6160 Computational Power Analysis

### Opto-Electronics Concentration (students in this concentration must also take EECE.5680 Electro-Optics and Integrated Optics)
- EECE.5080 Quantum Electronics for Engineers  
- EECE.5180 Electromagnetic Materials for Optical Engineering  
- EECE.5190 Engineering of Submicron Machines  
- EECE.5230/4230 Introduction to Solid State Electronics  
- EECE.5320 Computational Electromagnetics  
- EECE.5830 Wave Propagation in Plasmas  
- EECE.5900 Fiber Optic Communications  
- EECE.5950 Solid State Electronics  
- EECE.6070 Electromagnetics of Complex Media  
- EECE.6080 Scattering and Diffraction of EM Waves  
- EECE.6100 Optics for Information Processing  
- PHYS.6310 Non-Linear Optics

### EECE.5680 Electro-Optics and Integrated Optics

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*Sum S 17*  
*Sum S 17*  
*Not listed*  
*Not listed*  
*Not listed*  
*Not listed*  
*Not listed*  
*Sum S 17*  
*Not listed*  
*F*  
*F*  
*Not listed*  
*S*  
*Not listed*  
*S*  
*Not listed*  
*F*  
*S*  
*Not listed*  
*F*  
*S*  
*Not listed*  
*Not listed*  
*Not listed*
### Plan of Study – Fall Start + 6-month Co-op

**Cooperative Education Option in Electrical & Computer Engineering**

**Master of Science in Electrical Engineering**

<table>
<thead>
<tr>
<th>Fall Start with 6-month Co-op</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 credits</td>
<td>12 credits + 1-credit Grad. Devel. for Engin. Course</td>
<td>1-credit Co-op Experience</td>
<td>9 credits + 1-credit Workforce Devel. Course</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Required**: choose 1 required
  - ENGN.6020
  - choose 1 or 2 required
  - ENGN.6030

- **Electives**: choose 2 electives
  - choose 3 electives if 1 required selected above or choose 2 electives if 2 required selected above

### Plan of Study – Spring Start + 6-month Co-op

**Cooperative Education Option in Electrical & Computer Engineering**

**Master of Science in Electrical Engineering**

<table>
<thead>
<tr>
<th>Spring Start with 6-month Co-op</th>
<th>Spring</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 credits</td>
<td>12 credits + 1-credit Grad. Devel. for Engin. course</td>
<td>1-credit Co-op Experience</td>
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<td></td>
</tr>
</tbody>
</table>

- **Required**: choose 1 required
  - ENGN.6020
  - choose 1 or 2 required
  - ENGN.6030

- **Electives**: choose 2 electives
  - choose 3 electives if 1 required selected above or choose 2 electives if 2 required selected above

- **Electives**: choose 2 electives
  - choose 3 electives if 1 required selected above or choose 2 electives if 2 required selected above
  - choose 3 electives if 2 electives selected in fall