EE students must take at least 27 hours of electives. Of those 27 hours of electives, 21 elective hours must be advanced ECE classes. To complete the requirement, students may either take additional ECE elective classes or take up to six (6) credit hours of non-ECE classes selected from the list on the back of this page.

Be sure prerequisites are complete for any classes selected. No class may be counted for both a B.S. degree and a graduate degree. Requirements include the following:

**Electrical Engineering Breadth Electives**

**Breadth Requirement.** Take at least one class in three of the five following areas. Approved classes for each area are listed below. All breadth classes also count as technical electives. (F, S indicates which semester the course is offered)

**Electronics and Semiconductor Devices**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Credits</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ECE 3110</td>
<td>F</td>
<td>4.0</td>
<td>Engineering Electronics II</td>
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**Microwaves and Optics**

<table>
<thead>
<tr>
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<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 5320</td>
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<td>4.0</td>
<td>Microwave Engineering I</td>
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<tr>
<td>ECE 5324</td>
<td>S</td>
<td>3.0</td>
<td>Antenna Theory and Design</td>
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<tr>
<td>ECE 5325</td>
<td>S</td>
<td>3.0</td>
<td>Wireless Communication Systems</td>
</tr>
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<td>ECE 5340</td>
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<td>3.0</td>
<td>Numerical Techniques in Electromagnetics</td>
</tr>
<tr>
<td>ECE 5410</td>
<td>F</td>
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<td>Lasers and Their Applications</td>
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**Signals and Systems**

<table>
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<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>ECE 3510</td>
<td>S</td>
<td>4.0</td>
<td>Introduction to Feedback Systems</td>
</tr>
<tr>
<td>ECE 5510</td>
<td>F</td>
<td>3.0</td>
<td>Random Processes</td>
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<tr>
<td>ECE 5530</td>
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<td>Digital Signal Processing</td>
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**Computer and Digital Design**

<table>
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<tbody>
<tr>
<td>ECE 3810</td>
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**Power Engineering**

<table>
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<th>Credits</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ECE 3600</td>
<td>F</td>
<td>3.0</td>
<td>Introduction to Electric Power Engineering</td>
</tr>
</tbody>
</table>

**Additional Electrical Engineering Electives**

EE students are required to take additional advanced Electrical Engineering classes, making ECE electives (including breadth classes) total 21 hours or more.

- ECE classes numbered 5xxx or higher, including special topics courses with numbers 5960, 5961, and 5962, are usually ECE electives.
- Some ECE electives are numbered 3xxx, although most 3xxx classes are required.
- Classes with both 5xxx and 6xxx numbers should be taken as 5xxx classes by undergraduates.

New electives being taught for the first time are given temporary special topics numbers, usually 5960, 5961, and 5962 for higher level classes, or 3960, 3961, and 3962 for lower level classes.

Most electives are numbered in accordance with the following system:

- Classes in the Microelectronics area are x1xx and x2xx
- Classes in the Microwaves and Optics area are x3xx and x4xx
- Classes in the Signal Processing, Communications, and Control Systems area are x5xx
- Classes in the Computer and Digital Design area are x7xx and x8xx
- Classes in the Power area are x6xx.

**Non-ECE Electives**

Students are allowed to take up to 6 credit hours outside the major.
Taking non-ECE electives is optional, NOT required. Do not take two classes covering similar material.

<table>
<thead>
<tr>
<th>Class No.</th>
<th>Hours</th>
<th>Class Name</th>
<th>Class No.</th>
<th>Hours</th>
<th>Class Name</th>
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<td>BIOEN 5090</td>
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<td>MATH 3210</td>
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<td>4</td>
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<td>MATH 3220</td>
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<td>Foundations of Analysis II</td>
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<td>MATH 4200</td>
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<tr>
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<td>Principles of Biology</td>
<td>MATH 4510</td>
<td>3</td>
<td>Introduction to Topology</td>
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<td>Principles of Biology I: Cell Biology and Genetics</td>
<td>MATH 5030</td>
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<td>Actuarial Mathematics</td>
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<tr>
<td>BIOL 2010</td>
<td>3</td>
<td>Evolution &amp; Diversity of Life</td>
<td>MATH 5040</td>
<td>3</td>
<td>Stochastic Processes &amp; Simulation I</td>
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<td>3</td>
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<td>MATH 5080</td>
<td>3</td>
<td>Statistical Inference I</td>
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<tr>
<td>BIOL 2030</td>
<td>3</td>
<td>Genetics</td>
<td>MATH 5210</td>
<td>4</td>
<td>Introduction to Real Analysis</td>
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<td>Engineering Principles in Bioinstrumentation</td>
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<td>Introduction to Modern Algebra I</td>
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<td>ME EN 6960</td>
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<td>MSE 3210</td>
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<td>NUCL 3100</td>
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<td>Introduction to Neutron-Based Engineering</td>
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<td>NUCL 3200</td>
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<td>Radiochemistry with Laboratory I</td>
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<tr>
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<td>PHYS 5110</td>
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<td>Optical Measurement Tech &amp; Instruments</td>
<td>PHYS 5520</td>
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<td>Introduction to Astrophysics</td>
<td>PHYS 5590</td>
<td>3</td>
<td>Solid-State Physics II</td>
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</tbody>
</table>

*DARS catalog year 2011-2012 and later.