PROGRAM REQUIREMENTS

The Electrical Engineering (B.S.E.E.) degree has a very structured curriculum. An eight-semester sequence of courses at more than a full-time load forms the core of the curricula to develop the concepts and design and analysis techniques fundamental to the various areas of specialization. This program should be initiated early while at UNC Charlotte. Beginning the program late or after transferring from another institution will likely delay completion within 4 years. Students interested in majoring in Electrical Engineering must complete all freshman level courses with a C or above and earn a minimum GPA of 2.5 before completing a Change of Major form to apply to the program.

Emphasis is placed on the utilization of computers throughout the curricula. Our graduates have a wide range of job opportunities as power engineers, communication engineers, digital design engineers, test engineers, embedded system developers, network engineers, control engineers, project engineers, robotic system engineers, optoelectronic engineers, application engineers, analog engineers, medical product engineers, and process engineers.

<table>
<thead>
<tr>
<th>Areas</th>
<th>Credit Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Major/Prerequisites</td>
<td>21</td>
<td>8 hours natural science (CHEM 1251+Lab, PHYS 2101+Lab), 6 hours mathematics (MATH 1241, MATH 1242), 4 hours of introduction to engineering (ENGR 1201, ENGR 1202), and ECSR 2103</td>
</tr>
<tr>
<td>Major</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>General Education (not satisfied by other major requirements)</td>
<td>18</td>
<td>3 or 4 hours English (UWRT 1103 or UWRT 1104), 12 hours Liberal Studies (LBST 11xx, LBST 2301, and two of LBST 2101, LBST 2102, LBST 22XX), and 3 hours Social Sciences (ECON 2101 or ECON 2102)</td>
</tr>
<tr>
<td>Related Work</td>
<td>19</td>
<td>9 hours Mathematics (MATH 2171, MATH 2241, STAT 3128), 6 hours Natural Sciences (PHYS 2102, PHYS 3141), 4 hours Engineering (ENGR 3295, MEG 3111)</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>18</td>
<td>12 hours of 4000-level ECSR courses not specified in the curriculum, 3 hour Technical Electives (3000 or above ECSR courses not specified in the curriculum, or non-ECSR courses dealing with engineering science, analysis, synthesis, or design), 3 hours Science or Math Elective (Mathematics, statistics, or natural sciences at a higher level than in Plan of Study)</td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>124</td>
<td></td>
</tr>
</tbody>
</table>
Electrical Engineering - Technical Electives

The Fall 2015 B.S.E.E. curriculum requires fifteen (15) hours of technical electives. **Twelve (12) hours of these technical electives must be chosen from 4000 level ECGR courses** while the remaining three (3) may be chosen from any 3000 level and higher ECGR courses that are not part of the degree requirements, or non-ECGR course dealing with engineering science, analysis, synthesis, or design. Co-op students may count up to three (3) hours of ECGR 3695 co-op course toward their technical elective requirements. **Individual study and Undergraduate Research courses may not be taken as technical electives.**

**Limit of One outside of the department**

Consistent with the student’s educational objectives and in consultation with their academic advisor, up to three (3) hours of the technical electives may be taken outside the ECE Department. The following process should be used in selecting this **non-ECGR technical elective course:**

1. A 3-hour 3000-level or above course that is consistent with the student’s educational objectives, and is more advanced than similar courses that are required by the student’s academic plan of study, should be selected by the student and approved by his/her academic advisor and the Department Associate Chair.
2. The student must seek the approval of his/her advisor and the Associate Chair before taking the course.
3. In cases when a student request transfer credits for the non-ECGR technical elective, the Department Associate Chair will evaluate the request to determine whether or not the requested transfer credits are consistent with the requirements in (1) above.
## Suggested Plan of Study – BSEE

### Freshman Year

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBST 110X</td>
<td>LBST 1100 Series: Arts and Society</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGR 1201</td>
<td>Introduction to Engineering Practices and Principles I</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 1251</td>
<td>Principles of Chemistry</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 1251L</td>
<td>Principles of Chemistry Lab</td>
<td>1</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ECGR 2103</td>
<td>Computer Utilization in C++</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 1241</td>
<td>Calculus</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spring Semester

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 1202</td>
<td>Introduction to Engineering Practices and Principles II</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 2101</td>
<td>Physics for Science and Engineering I</td>
<td>3</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>PHYS 2101L</td>
<td>Physics for Science and Engineering I Lab</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBST 2XXX</td>
<td>Liberal Studies Course (LBST 2101, LBST 2102, or LBST 22XX)</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UWRT 1103</td>
<td>Writing and Inquiry in Academic Contexts I &amp; II (Or UWRT 1104)</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 1242</td>
<td>Calculus</td>
<td>3</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**30 Credit Hours for Year**

### Sophomore Year

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECGR 2111</td>
<td>Network Theory I</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 2155</td>
<td>Instrumentation and Networks Laboratory</td>
<td>1</td>
<td></td>
<td>X</td>
<td>W</td>
</tr>
<tr>
<td>ECGR 2181</td>
<td>Logic Systems Design I</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 2171</td>
<td>Differential Equations</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 2102</td>
<td>Physics for Science and Engineering II</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBST 2XXX</td>
<td>Liberal Studies Course (LBST 2101, LBST 2102, or LBST 22XX)</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spring Semester

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECGR 2112</td>
<td>Network Theory II</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 2156</td>
<td>Logic and Networks Laboratory</td>
<td>1</td>
<td></td>
<td>X</td>
<td>W</td>
</tr>
<tr>
<td>ECGR 2252</td>
<td>Electrical Engineering Design I</td>
<td>2</td>
<td></td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>MATH 2241</td>
<td>Calculus</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 3141</td>
<td>Introduction to Modern Physics</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 2164</td>
<td>Matrices and Linear Algebra</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**31 Credit Hours for Year**

### Junior Year

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECGR 3111</td>
<td>Signals and Systems</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 3121</td>
<td>Introduction to Electromagnetic Fields</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 3131</td>
<td>Fundamentals of Electronics and Semiconductors</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 3155</td>
<td>Systems and Electronics Lab</td>
<td>1</td>
<td></td>
<td>X</td>
<td>W</td>
</tr>
<tr>
<td>STAT 3128</td>
<td>Probability &amp; Statistics for Engineers</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBST 2XXX</td>
<td>Liberal Studies Course (LBST 2101, LBST 2102, or LBST 22XX)</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spring Semester

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECGR 3122</td>
<td>Electromagnetic Waves</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 3132</td>
<td>Electronics</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 3142</td>
<td>Electromagnetic Devices or ECGR 3133 Solid State Microelectronics</td>
<td>3</td>
<td>3142 or 3133</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 3156</td>
<td>Electromagnetic and Electronic Devices Laboratory</td>
<td>1</td>
<td></td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>ECGR 3112</td>
<td>System Analysis II or ECGR 3181 Logic System Design II</td>
<td>3</td>
<td>3112 or 3181</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 3157</td>
<td>Electrical Engineering Design II</td>
<td>2</td>
<td></td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>ENGR 3295</td>
<td>Professional Development</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**31 Credit Hours for Year**

### Senior Year

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECGR 3159</td>
<td>Professional Practice</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 4241</td>
<td>Electrical Engineering Senior Design I</td>
<td>2</td>
<td></td>
<td>W.O</td>
<td></td>
</tr>
<tr>
<td>ECGR 4123</td>
<td>Analog and Digital Comm. or ECGR 4124 Digital Signal Processing</td>
<td>3</td>
<td>4123 or 4124</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 4XXX</td>
<td>4000 Level ECGR Course</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 4XXX</td>
<td>4000 Level ECGR Course</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XXXX XXXX</td>
<td>Technical Elective</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spring Semester

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>General Education</th>
<th>W/O Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECGR 4242</td>
<td>Electrical Engineering Senior Design II</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEGR 3111</td>
<td>Thermodynamics I</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 4XXX</td>
<td>4000 Level ECGR Course</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECGR 4XXX</td>
<td>4000 Level ECGR Course</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 2101</td>
<td>Principles of Econ. Macro or ECON 2102 Principles of Econ. Macro</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**31 Credit Hours for Year**
ADVISING RESOURCES

- General Education Requirements for ALL Students: ucol.uncc.edu/general-education
- Undergraduate Catalog: catalog.uncc.edu
- Central Advising website: advising.uncc.edu
- William States Lee College of Engineering advising website: coe.uncc.edu/current-students/advising.html
- University Advising Center website: advisingcenter.uncc.edu