## Suggested Course Plan for a UC Riverside Major in Electrical Engineering

<table>
<thead>
<tr>
<th>Fall Quarter</th>
<th>Units</th>
<th>Winter Quarter</th>
<th>Units</th>
<th>Spring Quarter</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS 010</td>
<td>4</td>
<td>CS 013</td>
<td>4</td>
<td>CS 061</td>
<td>4</td>
</tr>
<tr>
<td>C++ Programming I</td>
<td></td>
<td>Introduction to CS for Engineers</td>
<td></td>
<td>Machine Org. &amp; Assembly Lang. Prog.</td>
<td></td>
</tr>
<tr>
<td>EE 010</td>
<td>1</td>
<td>ENGL 001B</td>
<td>4</td>
<td>EE 020</td>
<td>4</td>
</tr>
<tr>
<td>Intro to Electrical Engineering</td>
<td></td>
<td>Intermediate Composition</td>
<td></td>
<td>Linear Methods for Engr. Analysis</td>
<td></td>
</tr>
<tr>
<td>ENGL 001A</td>
<td>4</td>
<td>MATH 009B</td>
<td>4</td>
<td>MATH 009C</td>
<td>4</td>
</tr>
<tr>
<td>Beginning Composition</td>
<td></td>
<td>First Year Calculus</td>
<td></td>
<td>First Year Calculus</td>
<td></td>
</tr>
<tr>
<td>MATH 009A</td>
<td>4</td>
<td>PHYS 040A</td>
<td>5</td>
<td>PHYS 040B</td>
<td>5</td>
</tr>
<tr>
<td>First Year Calculus</td>
<td></td>
<td>Physics (Mechanics)</td>
<td></td>
<td>Physics (Heat/Waves/Sound)</td>
<td></td>
</tr>
</tbody>
</table>

### Second Year

| EE 001A & EE 011A | 4     |
| Engineering Circuit Analysis I & Lab | |
| MATH 046       | 4     | EE/CS 120A    | 5     |
| Differential Equations | Logic Design | |
| PHYS 040C     | 5     | MATH 010A     | 4     |
| Physics (Electricity/Magnetism) | Multivariable Calculus | Multivariable Calculus | |
| CHEM 001A & CHEM 011A | 5     |
| General Chemistry and Lab | Breadth | Humanities/Social Sciences | |

### Third Year

| EE 100A       | 4     | EE 100B       | 4     | EE 114        | 4     |
| Electronic Circuits | Electronic Circuits | | Prob., Random Variables & Processes | |
| EE 110A       | 4     | EE 105        | 4     | EE 132        | 4     |
| Signals & Systems | Model. & Simulation of Dynamic Sys. | Automtatic Control | |
| Breadth _______ | 4     | EE 110B       | 4     | Breadth _______ | 4     |
| Humanities/Social Sciences | | Signals & Systems | Humanities/Social Sciences | |
| EE 128 or EE 155 | 4     |
| Breadth _______ | 4     |
| BIOL 002, 003 or 005A/05LA | |

### Fourth Year

| EE 133       | 4     | EE 175B       | 4     | ENGR 181W     | 4     |
| Solid-State Electronics | Senior Design Project | Technical Communications | |
| EE 141       | 4     | Technical Elective** | 4 | Breadth _______ | 4 |
| Digital Signal Processing | | | Humanities/Social Sciences | |
| EE 175A      | 4     | Technical Elective** | 4 | Technical Elective** | 4 |
| Breadth _______ | | | | |
| Humanities/Social Sciences | | | | |

**Total Units: 182**  
**Maximum Units: 224**

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**ENGLISH COMPOSITION**  
A "C" or better is required in three quarters of English Composition courses to satisfy the graduation requirement. ENGR 181W fulfills the third quarter of English Composition.

**BREADTH REQUIREMENTS**  
For an approved list of Breadth courses: http://student.engr.ucr.edu/policies/requirements/breadth.html.

- Humanities: (3 courses)  
- Biological Science  
- BiOL 002, 003, or 005A/05LA  
- Ethnicity: (1 course)  
  1. **Upper Division: (2 courses)**  
  2. **TECHNICAL ELECTIVES**  

**To earn a B.S., you must complete all College and University requirements. For a complete list:** www.catalog.ucr.edu.

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**Course Plan is subject to change.**
**Electrical Engineering Technical Electives and Focus Areas**

To ensure depth, the choice of technical electives must include at least one coherent sequence of at least three (3) electrical engineering courses (lead course plus two additional) in one focus area of electrical engineering as defined below. In total, you must complete 4 courses (at least 16 units) of Technical Elective coursework.

### (1) Communications, Signal Processing and Networking (CSPN)

- **EE 141 - Lead Course**
  - Digital Signal Processing (4)
- EE 115
  - Intro to Communications (4)
- EE 117
  - Electromagnetics II (4)
- EE 118
  - Radio Frequency Circuit Design (4)
- EE 128
  - Data Acquis., Instrum., & Process Ctrl (4)
- EE 146
  - Computer Vision (4)
- EE 150
  - Digital Communications (4)
- EE 152
  - Image Processing (4)
- ENGR 160
  - Intro to Engineering Optimization Techniques (4)

### (2) Control and Robotics (CR)

- **EE 132 - Lead Course**
  - Automatic Control (4)
- EE 128
  - Data Acquis., Instrum., & Process Ctrl (4)
- EE 142
  - Pattern Recognition and Analysis for Sensor Data (4)
- EE 144
  - Introduction to Robotics (4)
- EE/ME 145
  - Robotic Planning & Kinematics (4)
- EE 146
  - Computer Vision (4)
- EE 151
  - Introduction to Digital Control (4)
- EE 152
  - Image Processing (4)
- ENGR 160
  - Intro to Engineering Optimization Techniques (4)

### (3) Embedded Systems and VLSI

- **EE 128 - Lead Course**
  - Data Acquis., Instrum., & Process Ctrl (4)
- EE 135
  - Analog Integrated Circuit Layout and Design (4)
- EE 147
  - Graphics Processing Unit Computing and Programming (4)
- EE 165
  - Design for Reliability of Integrated Circuits and Sys. (4)
- EE/CS 168
  - Introduction to VLSI Design (5)
- CS 161
  - Design and Architecture of Computer Systems (4)
- ENGR 160
  - Intro to Engineering Optimization Techniques (4)

### (4) Nanotechnology, Advanced Materials, and Devices (NMDC)

- **EE 133 - Lead Course**
  - Solid-State Electronics (4)
- EE 117
  - Electromagnetics II (4)
- EE 136
  - Semiconductor Device Processing (4)
- EE 137
  - Intro to Semiconductor Optoelectronic Devices (4)
- EE 138
  - Electronic Properties of Materials (4)
- EE 139
  - Magnetic Materials (4)
- EE 162
  - Intro to Nanoelectronics (4)

### (5) Power Engineering (PE)

- **EE 155 - Lead Course**
  - Power System Analysis (4)
- EE 117
  - Electromagnetics II (4)
- EE 123
  - Power Electronics (4)
- EE 128
  - Data Acquis., Instrum., & Process Ctrl (4)
- EE 153
  - Electric Drives (4)
- ENGR 160
  - Intro to Engineering Optimization Techniques (4)

*Required Lead Course for the Focus Area*