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

**Fall Quarter** | **Units** | **Winter Quarter** | **Units** | **Spring Quarter** | **Units**
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**FIRST YEAR**
CS 010A | 4 | CS 010B | 4 | CS 061 | 4
*C++ Programming I* | Introduction to CS for Engineers | Machine Org. & Assembly Lang. Prog.
EE 010 | 2 | ENGL 001B | 4 | MATH 045/EE 020A | 4
Intro to Electrical Engineering | Intermediate Composition | Intro Ordinary Differential Equations
ENGL 001A | 4 | MATH 009B | 4 | MATH 009C | 4
Beginning Composition | First Year Calculus | First Year Calculus
MATH 009A | 4 | PHYS 040A | 5 | PHYS 040B | 5
First Year Calculus | Physics (Mechanics) | Physics (Heat/Waves/Sound)

**SECOND YEAR**
EE 030A & EE 030LA | 4 | EE 030B | 4 | EE 100A | 4
*Fund Electric Circuits I & Lab* | *Fund Electric Circuits II* | Electronic Circuits
EE 020B | 4 | EE/CS 120A | 5 | CS/EE 120B | 4
Linear Methods for Engr. Analysis | Logic Design | Embedded Systems
PHYS 040C | 5 | MATH 010A | 4 | MATH 010B | 4
Physics (Electricity/Magnetism) | Multivariable Calculus | Multivariable Calculus
Breadth | 4 | Breadth | 4 | Breadth | 4
Humanities/Social Sciences | Humanities/Social Sciences |

**THIRD YEAR**
EE 016 | 4 | EE 110B | 4 | Tech Elective** | 4
Data Analysis for Engr. Applications | Signals & Systems |
EE 110A | 4 | EE 132 | 4 | Tech Elective** | 4
Signals & Systems | Automatic Control |
EE 114 | 4 | EE 133 | 4 | Breadth | 4
Prob., Random Variables & Processes | Solid-State Electronics | Humanities/Social Sciences
EE 116 | 4 | Breadth | 4 | Breadth | 4
Engineering Electromagnetics | BIOL 002, 003 or 005A/05LA | Humanities/Social Sciences

**FOURTH YEAR**
EE 175A | 4 | EE 175B | 4 | ENGR 181W | 4
Senior Design Project | Senior Design Project | Technical Communications
EE 142 | 4 | Tech Elective** | 4 | Tech Elective** | 4
Intro Machine Learn & Data Mining | | |
Tech Elective** | 4 | Tech Elective** | 4 | Breadth | 4
| | | | | Humanities/Social Sciences |

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**Minimum Units to Graduate:** 180
**Maximum Units to Graduate:** 216

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To earn a B.S., you must complete all College and University requirements. For a complete list: [catalog.ucr.edu](http://catalog.ucr.edu). **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](http://student.engr.ucr.edu/policies/requirements/breadth.html).

Humanities: (3 courses)
A. World History:
B. Fine Arts, Lit., Phil. or Rlst:
C. Human Persp. on Science:
Social Sciences: (3 courses)
A. Econ. or Posc.:
B. Anth., Psyc, or Soc.:
C. General Social Science:
Biological Science
BIOL 002, 003, or 005A/05LA
Ethnicity: (1 course)
1. 
Upper Division: (2 courses)
1. 
2. 
**TECHNICAL ELECTIVES**

Please note that Technical Electives or required course in the focus area may be offered throughout the Academic Year. Consult with your Academic Advisor about potential offerings. See approved technical electives on back.

Course Plan is subject to change.
### 1) Communications, Signal Processing and Networking (CSPN)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 115</td>
<td>Intro to Communications (4)</td>
</tr>
<tr>
<td>EE 141</td>
<td>Digital Signal Processing (4)</td>
</tr>
<tr>
<td>EE 100B</td>
<td>Electronic Circuits II (4)</td>
</tr>
<tr>
<td>EE 117</td>
<td>Electromagnetics II (4)</td>
</tr>
<tr>
<td>EE 118</td>
<td>Radio Frequency Circuit Design (4)</td>
</tr>
<tr>
<td>EE 146</td>
<td>Computer Vision (4)</td>
</tr>
<tr>
<td>EE 150</td>
<td>Digital Communications (4)</td>
</tr>
<tr>
<td>EE 152</td>
<td>Image Processing (4)</td>
</tr>
<tr>
<td>ENGR 160</td>
<td>Intro to Engineering Optimization Techniques (4)</td>
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</tbody>
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### 2) Control and Robotics (CR)

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<tbody>
<tr>
<td>EE 151</td>
<td>Introduction to Digital Control (4)</td>
</tr>
<tr>
<td>EE 105</td>
<td>Modeling &amp; Simulation of Dynamic Sys (4)</td>
</tr>
<tr>
<td>EE 146</td>
<td>Computer Vision (4)</td>
</tr>
<tr>
<td>EE 106</td>
<td>Programming Practical Robots (4)</td>
</tr>
<tr>
<td>EE 141</td>
<td>Digital Signal Processing (4)</td>
</tr>
<tr>
<td>EE 152</td>
<td>Image Processing (4)</td>
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### 3) Embedded Systems and VLSI

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<tbody>
<tr>
<td>EE 128</td>
<td>Sensing and Actuation for Embed. Sys. (4)</td>
</tr>
<tr>
<td>EE/CS 168</td>
<td>Introduction to VLSI Design (4)</td>
</tr>
<tr>
<td>EE 100B</td>
<td>Electronic Circuits II (4)</td>
</tr>
<tr>
<td>EE 117</td>
<td>Electromagnetics II (4)</td>
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<tr>
<td>EE 118</td>
<td>Radio Frequency Circuit Design (4)</td>
</tr>
<tr>
<td>EE 135</td>
<td>Analog Integrated Circuit Layout and Design (4)</td>
</tr>
<tr>
<td>EE 147</td>
<td>GPU Computing and Programming (4)</td>
</tr>
<tr>
<td>EE 165</td>
<td>Design for Reliability of Integrated Circuits and Sys. (4)</td>
</tr>
<tr>
<td>CS 161</td>
<td>Design and Architecture of Computer Systems (4)</td>
</tr>
<tr>
<td>CS 162</td>
<td>Computer Architecture (4)</td>
</tr>
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### 4) Intelligent Systems (IS)

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<tbody>
<tr>
<td>EE 144</td>
<td>Introduction to Robotics (4)</td>
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<tr>
<td>EE 146</td>
<td>Computer Vision (4)</td>
</tr>
<tr>
<td>EE 105</td>
<td>Modeling &amp; Simulation of Dynamic Sys (4)</td>
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<td>EE 106</td>
<td>Programming Practical Robots (4)</td>
</tr>
<tr>
<td>EE 115</td>
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<tr>
<td>EE 128</td>
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<td>EE 141</td>
<td>Digital Signal Processing (4)</td>
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<tr>
<td>EE/ME 145</td>
<td>Robotic Planning &amp; Kinematics (4)</td>
</tr>
<tr>
<td>EE 147</td>
<td>GPU Computing and Programming (4)</td>
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<tr>
<td>EE 150</td>
<td>Digital Communications (4)</td>
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<td>EE 151</td>
<td>Introduction to Digital Control (4)</td>
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<td>Image Processing (4)</td>
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### 5) Nanotechnology, Advanced Materials, and Devices (NMD)

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<tbody>
<tr>
<td>EE 136</td>
<td>Introduction to Semiconductor Device Processing (4)</td>
</tr>
<tr>
<td>EE 137</td>
<td>Intro to Semiconductor Optoelectronic Devices (4)</td>
</tr>
<tr>
<td>EE 100B</td>
<td>Electronic Circuits II (4)</td>
</tr>
<tr>
<td>EE 117</td>
<td>Electromagnetics II (4)</td>
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<td>EE 118</td>
<td>Radio Frequency Circuit Design (4)</td>
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<tr>
<td>EE 135</td>
<td>Analog Integrated Circuit Layout and Design (4)</td>
</tr>
<tr>
<td>EE 138</td>
<td>Electronic Properties of Materials (4)</td>
</tr>
<tr>
<td>EE 139</td>
<td>Magnetic Materials (4)</td>
</tr>
<tr>
<td>EE 162</td>
<td>Intro to Nanoelectronics (4)</td>
</tr>
<tr>
<td>EE/CS 168</td>
<td>Introduction to VLSI Design (4)</td>
</tr>
</tbody>
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### 6) Power Systems and Smart Grid (PSSM)

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<tbody>
<tr>
<td>EE 123</td>
<td>Power Electronics (4)</td>
</tr>
<tr>
<td>EE 155</td>
<td>Power System Analysis (4)</td>
</tr>
<tr>
<td>EE 100B</td>
<td>Electronic Circuits II (4)</td>
</tr>
<tr>
<td>EE 117</td>
<td>Electromagnetics II (4)</td>
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<tr>
<td>EE 128</td>
<td>Sensing and Actuation for Embed. Sys. (4)</td>
</tr>
<tr>
<td>EE 153</td>
<td>Electric Drives (4)</td>
</tr>
<tr>
<td>ENGR 160</td>
<td>Intro to Engineering Optimization Techniques (4)</td>
</tr>
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</table>

*Required Course for the Focus Area