

## Suggested Course Plan for a UC Riverside Major in **ELECTRICAL ENGINEERING**

Catalog Year: 2020

Fall Quarter	Units	Winter Quarter	Units	Spring Quarter	Units
<b>FIRST YEAR</b>					
CS 010A <i>C++ Programming I</i>	4	CS 010B <i>Introduction to CS for Engineers</i>	4	CS 061 <i>Machine Org. &amp; Assembly Lang. Prog.</i>	4
EE 010 <i>Intro to Electrical Engineering</i>	1	ENGL 001B <i>Intermediate Composition</i>	4	EE 020 <i>Linear Methods for Engr. Analysis</i>	4
ENGL 001A <i>Beginning Composition</i>	4	MATH 009B <i>First Year Calculus</i>	4	MATH 009C <i>First Year Calculus</i>	4
MATH 009A <i>First Year Calculus</i>	4	PHYS 040A <i>Physics (Mechanics)</i>	5	PHYS 040B <i>Physics (Heat/Waves/Sound)</i>	5
<b>SECOND YEAR</b>					
EE 001A & EE 01LA <i>Engineering Circuit Analysis I &amp; Lab</i>	4	EE 001B <i>Engineering Circuit Analysis II</i>	4	EE 100A <i>Electronic Circuits</i>	4
MATH 046 <i>Differential Equations</i>	4	EE/CS 120A <i>Logic Design</i>	5	CS/EE 120B <i>Embedded Systems</i>	4
PHYS 040C <i>Physics (Electricity/Magnetism)</i>	5	MATH 010A <i>Multivariable Calculus</i>	4	MATH 010B <i>Multivariable Calculus</i>	4
CHEM 001A & CHEM 01LA <i>General Chemistry and Lab</i>	5	Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
<b>THIRD YEAR</b>					
EE 100B <i>Electronic Circuits</i>	4	EE 105 <i>Model. &amp; Simulation of Dynamic Sys.</i>	4	EE 128 or EE 155 or EE 142 <i>(Lead)</i>	4
EE 110A <i>Signals &amp; Systems</i>	4	EE 110B <i>Signals &amp; Systems</i>	4	EE 132 (Lead) <i>Automatic Control</i>	4
EE 116 <i>Engineering Electromagnetics</i>	4	EE 114 <i>Prob., Random Variables &amp; Processes</i>	4	EE 133 (Lead) <i>Solid-State Electronics</i>	4
Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>BIOL 002, 003 or 005A/05LA</i>	4	EE 141 (Lead) <i>Digital Signal Processing</i>	4
<b>FOURTH YEAR</b>					
EE 175A <i>Senior Design Project</i>	4	EE 175B <i>Senior Design Project</i>	4	ENGR 181W <i>Technical Communications</i>	4
Technical Elective** _____	4	Technical Elective** _____	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
Breadth _____ <i>Humanities/Social Sciences</i>	4	Technical Elective** _____	4	Technical Elective** _____	4
Breadth _____ <i>Humanities/Social Sciences</i>	4				

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>.

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 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.

Total Units: 186

Maximum Units: 224

# 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 sequence courses in one focus area of electrical engineering as defined below and two additional technical electives. In total, you must complete 4 unique courses (at least 16 units) as described below - 2 Sequence Courses & 2 additional Technical Electives

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

<b><u>EE 141 - Lead Course*</u></b>	<b><u>Digital Signal Processing (4)</u></b>
EE 115	Intro to Communications (4)
EE 117	Electromagnetics II (4)
EE 118	Radio Frequency Circuit Design (4)
EE 128	Sensing and Actuation for Embed. Sys. (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)**

<b><u>EE 132 - Lead Course*</u></b>	<b><u>Automatic Control (4)</u></b>
EE 128	Sensing and Actuation for Embed. Sys. (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**

<b><u>EE 128 - Lead Course*</u></b>	<b><u>Sensing and Actuation for Embed. Sys. (4)</u></b>
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) Intelligent Systems (IS)**

<b><u>EE 142 - Lead Course*</u></b>	<b><u>Patter Rec. &amp; An. Sensor Data (4)</u></b>
EE 144	Introduction to Robotics (4)
EE/ME 145	Robotic Planning & Kinematics (4)
EE 146	Computer Vision (4)
EE 152	Image Processing (4)
ENGR 160	Intro to Engineering Optimization Techniques (4)

## **(5) Nanotechnology, Advanced Materials, and Devices (NMD)**

<b><u>EE 133 - Lead Course*</u></b>	<b><u>Solid-State Electronics (4)</u></b>
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)

## **(6) Power Systems and Smart Grid (PSSM)**

<b><u>EE 155 - Lead Course*</u></b>	<b><u>Power System Analysis (4)</u></b>
EE 117	Electromagnetics II (4)
EE 123	Power Electronics (4)
EE 128	Sensing and Actuation for Embed. Sys. (4)
EE 153	Electric Drives (4)
ENGR 160	Intro to Engineering Optimization Techniques (4)

\*Required Lead Course for the Focus Area