

# ELECTRICAL ENGINEERING

Fall Quarter	Units	Winter Quarter	Units	Spring Quarter	Units
<b>FIRST YEAR</b>					
CS 010* <i>C++ Programming I</i>	4	CS 013 <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	CS/EE 120B <i>Embedded Systems</i>	5
MATH 046 <i>Differential Equations</i>	4	EE/CS 120A <i>Logic Design</i>	5	EE 116 <i>Engineering Electromagnetics</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 100A <i>Electronic Circuits</i>	4	EE 100B <i>Electronic Circuits</i>	4	EE 114 <i>Prob., Random Variables &amp; Processes</i>	4
EE 110A <i>Signals &amp; Systems</i>	4	EE 105 <i>Model. &amp; Simulation of Dynamic Sys.</i>	4	EE 132 <i>Automatic Control</i>	4
ENGR 180W* <i>Technical Communications</i>	4	EE 110B <i>Signals &amp; Systems</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
Technical Elective** <i>EE 128 Recommended</i>	4	Biol. Sci. Major Requirement <i>BIOL 002, 003 or 005A/05LA</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
<b>FOURTH YEAR</b>					
EE 115 <i>Intro to Communications</i>	4	EE 175B <i>Senior Design Project</i>	4	EE 175C <i>Senior Design Project</i>	1
EE 141 <i>Digital Signal Processing</i>	4	Technical Elective** _____	4	Technical Elective** _____	4
EE 175A <i>Senior Design Project</i>	3	Technical Elective** _____	4	Technical Elective** _____	4
Breadth _____ <i>Humanities/Social Sciences</i>	4			Breadth _____ <i>Humanities/Natural Sciences</i>	4

To earn a B.S., you must complete all College and University requirements. For a complete list: [www.catalog.ucr.edu](http://www.catalog.ucr.edu).

### ENGLISH COMPOSITION

A C or better is required in three quarters of English Composition courses to satisfy the graduation requirement. ENGR 180W 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: \_\_\_\_\_

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.

\* CS 010V may be used to satisfy this requirement

You must complete 5 courses (at least 20 units) of Technical Elective coursework chosen from the list below. It is recommended that at least 3 courses are chosen from one Focus Area. Courses marked with \* are required course for a focus area. Units are listed in ().

**Intelligent Systems (IS)**

*EE 146	<i>Computer Vision (4)</i>
EE 140	Computer Visualization (4)
EE 144	Introduction to Robotics (4)
EE 152	Image Processing (4)
EE 128	Data Acquis., Instrum., & Process Ctrl (4)
CS 122A	Intermediate Embedded and Real-time Systems (5)
CS 130	Computer Graphics (4)
ENGR 160	Intro to Engineering Optimization Techniques (4)

**Nanotechnology, Advanced Materials, and Devices (NMDC)**

*EE 133	<i>Solid-State Electronics (4)</i>
EE 117	Electromagnetics II (4)
EE 134	Digital Integrated Circuit Layout and Design (4)
EE 135	Analog Integrated Circuit Layout and Design (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 160	Fiber Optic Communication Systems (4)
EE 123	Power Electronics (4)
EE 162	Intro to Nanoelectronics (4)
EE 165	Design for Reliability of Integrated Circuits and Sys. (4)
EE/CS 168	Introduction to VLSI Design (5)
ENGR 160	Intro to Engineering Optimization Techniques (4)

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

*EE 150	<i>Digital Communications (4)</i>
EE 117	Electromagnetics II (4)
EE 128	Data Acquis., Instrum., & Process Ctrl (4)
EE 152	Image Processing (4)
EE 160	Fiber Optic Communication Systems (4)
EE/CS 168	Introduction to VLSI Design (5)
CS 122A	Intermediate Embedded and Real-time Systems (5)
ENGR 160	Intro to Engineering Optimization Techniques (4)

**Control and Robotics (CR)**

*EE 151	<i>Introduction to Digital Control (4)</i>
EE 144	Introduction to Robotics (4)
EE 146	Computer Vision (4)
EE 123	Power Electronics (4)
EE 128	Data Acquis., Instrum., & Process Ctrl (4)
EE 152	Image Processing (4)
EE 153	Electric Drives (4)
CS 122A	Intermediate Embedded and Real-time Systems (5)
ENGR 160	Intro to Engineering Optimization Techniques (4)

**VLSI Design and Systems (VLSI)**

*EE/CS 168	<i>Introduction to VLSI Design (5)</i>
EE 134	Digital Integrated Circuit Layout and Design (4)
EE 133	Solid-State Electronics (4)
EE 135	Analog Integrated Circuit Layout and Design (4)
EE 136	Semiconductor Device Processing (4)
EE 128	Data Acquis., Instrum., & Process Ctrl (4)
EE 137	Intro to Semiconductor Optoelectronic Devices (4)
EE 123	Power Electronics (4)
EE 165	Design for Reliability of Integrated Circuits and Sys. (4)
CS 161	Design and Architecture of Computer Systems (4)
CS 122A	Intermediate Embedded and Real-time Systems (5)
ENGR 160	Intro to Engineering Optimization Techniques (4)

**Power Engineering (PE)**

*EE 155	<i>Power System Analysis (4)</i>
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 course for the Focus Area