SEE MAP ABOVE FOR LAB LOCATIONS

ENGINEERING EAST (BLDG.20)

100, 132—Digital Design Laboratories These labs provide instruction in computer architecture, Field Programmable Gate Arrays, microprocessor applications, and Digital Integrated Circuit design.

101, 102, 104, 150—Power Labs These four laboratory facilities provide the core experience for our electric power engineering specialization. Capability includes electric generation, distribution, photovoltaic systems, energy storage, power grid simulation, electric machines and computer aided design stations.

105—Polymer Electronics and Photonics Lab Students fabricate Light Emitting Diodes (LEDs) and photodetectors from polymer semiconductors.

113, 116—Communication Systems Vector network analyzers, spectrum analyzers, vector signal analyzers, vector signal generators, antennas and software defined radios are introduced in these labs. Advanced RF/Microwave software is available and 3D electromagnetic simulation solutions.

115, 144—IEEE Laboratory This lab provides a full set of test equipment along with a place to purchase electronic components. This is also headquarters for the student chapter of the Institute of Electrical and Electronics Engineers and the Computer Engineering Society.

121—Graduate Student Laboratory Graduate students have electronic test capability and office space to enhance their graduate experience.

111, 118, 130, 131, 145—Project Laboratories Senior project and graduate project laboratories for electrical and computer engineering students are found here. These spaces provide extended hour availability for student interaction and project development.

112—Digital and Analog Control Systems Feedback systems are designed and evaluated with all-electronic and electro-mechanical implementations.

126—Electronics The lab contains advanced logic analysis capability along with general purpose instrumentation bench. Special emphasis is on digital signal processing.

134, 135—Photonics Labs Students learn about fiber optic communication systems, light-matter interaction and classical optics. The laboratory also provides research opportunities in the photonics area.

136—Computer Aided Design Laboratory Weekly technical seminars are conducted here in addition to availability of advanced application software for the students.

146, 147, 148, 149—Basic Circuits Labs Students study the fundamentals of circuit analysis and design. Equipment includes oscilloscopes, digital multimeters, function generators and programmable power supplies.

AERO Hangar — Many student led clubs use this workshop to build and test their designs. The department’s Anechoic and Electromagnetic Compatibility Lab is located in room 113. The lab allows for measurements of antenna radiation patterns and for measuring conducted and radiated emissions from electronic systems.
Program Description

Electrical engineers study and apply the physics and mathematics of electricity, electronics, and electromagnetism to both large and small scale systems to process information and transmit energy. To do this, electrical engineers design computers, electronic devices, communication systems, test equipment, and improve systems through problem solving techniques. The department objective is to prepare students for finding engineering solutions to urgent problems by re-shaping the environment to meet human needs, while being responsibly aware of all implications. The curriculum provides a sound theoretical background along with current, practical engineering knowledge. The student begins the major in the first quarter with an orientation lecture and lab. The second half of the first year provides an introduction to computer programming and electric circuit analysis. During the sophomore year, students learn about analog and digital circuit design. Students design their own custom computer and interface hardware using Field Programmable Gate Arrays (FPGAs). They also gain foundational background on how to analyze complex electronic circuitry and power systems. During the junior year, students gain advanced knowledge in integrated circuit designs and microprocessor applications. Junior year learning also focuses on control systems, communication systems and signal processing. In the senior year, students work on their senior design project and technical electives. Example electives include utility power networks, alternative energy systems, power electronics, electronic communication systems, advanced computer design and interfacing, digital control systems, digital signal and image processing, high frequency electronic design, photonics and biomedical applications. In the required senior design project, students demonstrate their understanding of engineering knowledge and their ability to apply that knowledge creatively to solve practical problems. Involvement in faculty research is possible for graduate students and outstanding undergraduate students. Research areas include computer-aided education, automotive and transportation applications, signal and image processing, electric vehicles, computer architecture and software systems, photonics, polymer electronics, power systems, power electronics, and electric power quality.

Learn by Doing

The Electrical Engineering degree programs prepare graduates for distinguished practice in professional engineering; equipping students for pursuing solutions to urgent problems while being responsibly aware of all implications. To that end, the curriculum provides a sound theoretical background along with current, practical engineering knowledge. Cal Poly's "learn by doing" philosophy is emphasized by integrating design throughout the curriculum in numerous design-centered laboratories that provide students with hands-on experiences in design synthesis, analysis, characterization, and verification. Electrical Engineering program accredited by the Engineering Accreditation Commission of ABET http://www.abet.org.

Associated Clubs

Students are encouraged to participate in professional organizations and clubs such as: Institute of Electrical and Electronics Engineers (IEEE), Audio Engineering Society (AES), IEEE Computer Society (IEEE-CS), Power and Energy Society (PES), Eta Kappa Nu (EKN), Society of Photo-Optical Instrumentation Engineers (SPIE), Student Electrical Engineering Council (SEE), and the Amateur Radio Club. The Electric Power Institute, sponsored by the university and underwritten by major utility companies and electrical equipment manufacturers, offers advanced seminars and lectures in the electrical power field and facilitates student and faculty interaction with industry. Other clubs include Robotics, Electric Vehicle, Renewable Energy, Radio Frequency, Engineering Student Council, and the Society of Women Engineers. These clubs offer students active programs in professional and leadership activities. In addition, many students are also involved in a variety of other clubs and activities campus-wide.

Mission Statement

Educate students to achieve excellence in the discipline of electrical engineering and to teach them to apply their education to solve practical problems in a socially responsible way. Students are prepared for careers of service, leadership, and distinction in a wide range of engineering and other related fields using a participatory, learn-by-doing, and "hands-on" laboratory, project, and design centered approach. Students are encouraged to participate in lifelong learning as it is essential in the presence of the ever-increasing pace of technological change.

Career Paths

The electrical engineering field encompasses several sub-disciplines including: power, control, electronics, micro/nano electronics, signal processing, communication, instrumentation, and design of computers. As an electrical engineer, you can work in the offices, labs, or industrial plants of various industries including: the manufacturers of electrical components and computer equipment, industrial machinery, medical and scientific instruments; transportation, communication, computer related sectors, the federal government, and utility firms. The projects you may work on can range from designing a telecommunication system or the operation of electric power stations to the lighting and wiring of buildings, the design of mobile computing appliances, and the electrical control of industry machinery.

Electrical Engineering Department
Building 20A Room 200
Office 805.756.2781
www.ee.calpoly.edu
# B.S. in ELECTRICAL ENGINEERING
## Suggested 4-Year Academic Flowchart

### 2013-15 Catalog

<table>
<thead>
<tr>
<th>FRESHMAN</th>
<th>SOPHOMORE</th>
<th>JUNIOR</th>
<th>SENIOR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td><strong>Winter</strong></td>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>Intro to EE EE 111/151 (1/1)</td>
<td>Electric Circuit Analysis I EE 112 (2) (Math 142; Recommended: EE 111/151)</td>
<td>Energy Conversion Electromagnetics EE 255/295 (3/1)</td>
<td>Dip. Electronics &amp; Intl. Circuits EE 307/347 (3/1) (Math 124, EE 212/242, MIE 156 or 157, PHYS 211)</td>
</tr>
<tr>
<td>GE (4)**</td>
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<td>GE (4)**</td>
<td>GE (4)**</td>
</tr>
<tr>
<td>Basic Electronics Manufacturing IME 156 (2) or IME 157 (4)</td>
<td>Fund. Comp. Sci. CSC/CPE 101 (4) (Math 118 with or better or instr. consent)</td>
<td>Discrete Time Signals &amp; Systems EE 328/368 (3/1) (EE 214)</td>
<td>Technical Elective (4)***</td>
</tr>
<tr>
<td>Calculus I MATH 141 (4)**</td>
<td>Calculus II MATH 142 (4) (Math 141 w/ Calc B)</td>
<td>Prob. Random Processes STAT 350 (4)</td>
<td>Electrical Design EE 409/449 (3/1) (EE 209/249, EE 249/269, CPE 325, CPE 326)</td>
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<tr>
<td>Expository Writing ENGL 133/134 (4)** (B1)</td>
<td>Linear Analysis MATH 244 (4) (Math 143)</td>
<td>Communications Systems EE 314 (3) (STAT 351)</td>
<td>Technical Elective (4)**</td>
</tr>
<tr>
<td>General Chemistry CHEM 124 (4)</td>
<td>Calculus IV MATH 241 (4) (Math 143)</td>
<td>GE (4)**</td>
<td>Technical Elective (4)**</td>
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<tr>
<td>Physics I PHYS 141 (4) (Math 141 w/ Calc B)</td>
<td>Electromagnetic Fields &amp; Waves EE 335/375 (4/1) (Math 241, EE 212/242)</td>
<td>GE (4)**</td>
<td>Technical Elective (4)**</td>
</tr>
<tr>
<td>Physics II PHYS 142 (4)</td>
<td>Modern Physics PHYS 211 (4) (Math 142, recommended: CHEM 124)</td>
<td>Approved Engineering Support Electives (3)***</td>
<td>Electromagnetic Waves EE 402 (4) (EE 501)</td>
</tr>
<tr>
<td>Expository Writing ENGL 149 (4) (B2)</td>
<td>Technical Writing ENGL 149 (4) (A3)</td>
<td>Approved Engineering Support Electives (3)***</td>
<td>GE (4)**</td>
</tr>
</tbody>
</table>

**Notes:**

- MOST GENERAL EDUCATION COURSES CAN BE TAKEN IN ANY ORDER AS LONG AS PREREQUISITES ARE MET
  - Refer to current catalog for prerequisites.
  - One course from each of the following GE areas must be completed: A1, A2, C1, C2, C3, C4, D1, D2, D3, D4, C4 should be taken only after Junior standing is reached (90 units).
  - Refer to online catalog for GE course selection. United States Cultural Plurality (USCP) and Graduation Writing Requirement (GWR).
  - USCP requirement can be satisfied by some (but not all) courses within GE categories: C3, C4, D1, D3, or D4.
  - MAJOR COURSES SHOULD BE TAKEN IN QUARTERS DESIGNATED ON THIS EE FLOWCHART
  - *** Refer to current catalog for course selection.
  - † Course can be taken previously or concurrently.

**Legend:**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course # (Units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major (87)</td>
<td>GE Area</td>
</tr>
<tr>
<td>Support (67)</td>
<td>General Ed. (40)</td>
</tr>
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**TOTAL:** 194