Undergraduate Program Focus Areas

The electrical engineering undergraduate program offers the following focus areas:

1. **Communications, Signal Processing and Networking**
   Fundamental and state-of-the-art theory and applications of communications, networking of devices, and related signal processing, involving information sources in the form of audio, video, image and text messages and transmission media of wire, wireless (radio frequency), fiber optics, etc.

2. **Computer Engineering**
   The Electrical Engineering department offers a Computer Engineering program in conjunction with the Computer Science and Engineering department. Example applications include embedded system design, reconfigurable systems, parallel and high performance computing, microprocessors, nanometer integrated circuit design, and computer-aided design (CAD) techniques. See detailed descriptions in the Computer Engineering Program.

3. **Control and Robotics**
   Theory and design of control of systems and robots. Example applications include control systems in automotive, satellite, aircraft, computer hard drive, robotic manufacturing, autonomous robots, cell phone signal tracking, among others.

4. **Intelligent Systems**
   Theory, design and development of systems capable of intelligent decisions. Example applications include video surveillance systems, medical imaging devices, intelligent transportation systems, and manufacturing automation.

5. **Nanotechnology, Advanced Materials and Devices**
   Synthesis and characterization of advanced materials at nanometer scale, theory, design and fabrication of electronic and optoelectronic devices. Example applications include creation of ultra-fast low-power transistors, efficient solar cells for energy generation, high-density memory for smart phones and mobile services, and tiny devices for medical applications.

6. **VLSI Design and Systems**
   Theory, design and methodologies of very large scale, nanometer integrated circuits. Example applications include microprocessors, analog and mixed signal circuits, RF circuits for cell phones and wireless networks, system-on-chip (SOC), application specific integrated circuits (ASIC).

All undergraduates in the College of Engineering must see an advisor at least annually. For details, visit student.engr.ucr.edu.