The mission of the Computer Engineering Program (CPE) is to provide students with a well-rounded education encompassing the theory and practice of selected, balanced topics in electrical engineering and computer science, to enable students to contribute and continue their education in a wide range of computer-related engineering careers. The program seeks to emphasize “hands-on” experience, problem-solving skills, and knowledge creatively to practical problems.

Four educational objectives inspire alumni of the Cal Poly Computer Engineering program to excel professionally:

1. Make positive contributions to society and the practice of computer engineering by applying foundational knowledge and the engineering process to solve engineering problems.
2. Work in an individual or team environment in a socially responsible manner.
3. Engage in lifelong learning through continued professional development or graduate studies.
4. Communicate effectively and demonstrate leadership.

The program prepares graduates for professional practice in industry, as well as continued study in graduate school. Cal Poly’s “learn by doing” philosophy is emphasized by integrating design throughout the curriculum, especially in the numerous design-centered laboratories. In the required senior capstone experience, which is a group-project based course completed over two quarters, students demonstrate their understanding of engineering knowledge and their ability to apply that knowledge creatively to practical problems.

This integrated approach allows students to work effectively in such diverse areas as digital systems simulation and digital control systems. Knowledge and laboratory experience in computer architecture and structures provide the understanding necessary to design and build computer systems, computer networks, and digital communications systems. A thorough knowledge of modern microprocessors and microcontrollers enables the graduate to apply these technologies in applications such as robotics, medical and data acquisition. Twelve units of technical electives allow students the option to specialize in an area of special interest. Current areas of special interest include:

- robotics
- embedded systems
- computer architecture
- computer networks
- computer based controls
- software systems
- graphics and multimedia
- electronics implementation and VLSI

In addition to a sound theoretical background in computer engineering concepts, students experience practical design courses intended to build problem-solving skills. Laboratory courses supplement the program to develop “hands on” skills in all areas of study. Students are exposed to a wide variety of computing equipment: microprocessor development systems, workstations and personal computers, and advanced network hardware and software.

Active student groups of interest to computer engineering majors include the Computer Engineering Society, the IEEE Student Branch, the Association for Computing Machinery, the Society of Women Engineers, Women Involved in Software and Hardware, and many other project-oriented student clubs and activities.

For more information about the CPE program, please visit http://eadvise.calpoly.edu.

Undergraduate Program
BS Computer Engineering

The Bachelor of Science in Computer Engineering prepares students interested in the design and application of computers and computer-based systems. The program incorporates a firm foundation in both electrical engineering and computer science, with a focus on the integration of hardware and software systems.

Blended and Graduate Programs

Graduates of the Computer Engineering Program are qualified for admission to Cal Poly master’s degree programs in electrical engineering, computer science, general engineering, and biomedical engineering.

The opportunity also exists for advanced students to begin graduate study in these areas prior to completion of the BS degree, via a blended program. This provides a number of advantages to qualified students, and makes it possible for completion of both the BS and MS degrees in as little as five years. Computer engineering students participating in a blended program are permitted to fulfill the computer engineering senior project requirement with the master’s degree thesis. Students must be prepared for engineering practice via the curriculum which culminates in a major design experience based on the knowledge and skills acquired in earlier coursework and incorporating engineering standards and realistic constraints, as listed in the ABET Engineering Criteria. Further details are provided in the graduate study sections for each of these programs.