104, 105—Electronic Manufacturing Lab First year students and advanced students design and build electronic circuits to specifications. The lab has computers to design circuits and electronic manufacturing equipment to make them.

222—Undergraduate Student Lab Students work on projects, homework or club activities in this lab. It is open 24 hours and sometimes students just spend time here enjoying time together.

237—Human Factors and Ergonomics Laboratory In this lab students learn how to measure various aspects of human performance such as reaction time, hand-eye coordination, usability (ease of use) and human-machine interaction. This knowledge is used to design products or processes that are more intuitive to use and safer for people.

101, 102, 103, 106—Netshape Students experience “Netshape” manufacturing, which refers to processes to make things by melting materials and shaping them into a final form (or very close to it). These processes include casting, injection molding, and 3-D printing (additive manufacturing). In this lab, freshman students design products on a computer, process those designs to create molds, and produce unique parts by molding and casting.

103, 106—Material Joining (Welding) Students gain hands-on experience in various manufacturing processes to join materials, such as electric arc welding, TIG and MIG welding, spot welding and brazing.

107, 109—Material Removal (Machining) Provides the space and tools for students to experience various manufacturing processes in which material is removed in controlled ways to shape a product. These processes include turning on a lathe, milling, and drilling. Each student produces all the parts required to build a small air motor which they get to take home at the end of the class.

110—Metrology This lab contains various precision instruments to measure manufactured parts to verify that their geometry and dimensions meet desired tolerance limits. It is temperature controlled because variations in temperature affect the accuracy of the measurements.

111—Advanced Machining Lab Advanced manufacturing courses take place in this lab space. It houses several computer Numerical Controlled (CNC) machines.
Industrial Engineering

Mission Statement

Educate students for successful and distinguished careers in industrial engineering and related fields using a learn-by-doing approach that stresses integrated processes, appropriate technologies, and enterprise competitive advantage.

Program Description

Industrial Engineering is the profession concerned with solving integrated engineering and management problems. The definition by the Institute of Industrial Engineers is as follows: "Industrial Engineering is concerned with the design, installation, and improvement of integrated systems of people, material, information, equipment, and energy by drawing upon specialized knowledge and skills in the mathematical, physical, and social sciences, together with the principles and methods of engineering analysis and design to specify, predict, and evaluate the results to be obtained from such systems." Key objectives for IE’s are to improve the quality and productivity of creating and delivering goods and services and to act as the interface between technology and humans. Engineering methods and practical knowledge are used in formulating decision models for the optimum application of engineering and management principles.

Industrial Engineers analyze the operations of organizations to improve efficiency, reduce wasted time and effort, identify bottlenecks and improve quality. Industrial Engineers are the only engineers who design and improve systems that include people; both employees and customers. When designing systems that include people, IE’s use knowledge from ergonomics (the study of human performance – physical, cognitive, and mental), safety, psychology, and management.

Typically when industrial engineers improve systems, it results in employees being able to accomplish more while at the same time reducing the effort and fatigue, making the workplace safer by reducing the possibility of injuries. Industrial Engineers consider the impact of improvements as systems thinkers. This means that when we recommend an improvement in the business operations we consider the implications to people, community, and the environment.

Learn by Doing

Our main focus is to prepare graduates for practice in professional engineering. Thus, our “learn by doing” philosophy is emphasized in the curriculum by the large number of design-centered laboratories, integrating design throughout the curriculum, and the senior design project capstone design experience. In the required senior design project, which is completed in a two-quarter set of capstone courses, students demonstrate their understanding of engineering knowledge and their ability to apply that knowledge creatively to practical problems. Graduates can choose from a challenging range of career activities: operations research and analysis, production planning and scheduling, plant design, management, human factors engineering design, data processing and analysis, measurement, quality control and reliability assurance, economical chemical planning, resource conservation, productivity measurement, increasing productivity, robotics, and, in general, systems analysis and design. The physical, engineering, and social sciences form the broad base for these endeavors. Industrial Engineering program accredited by the Engineering Accreditation Commission of ABET http://www.abet.org.

Career Paths

Since every organization has to get things done in an efficient manner, job opportunities for industrial engineering exist in a wide variety of companies. Some of our recent graduates work in consulting, manufacturing, food industry, medical devices, entertainment, health care, transportation, government organizations, and some have even started their own companies. The program is oriented to provide graduates with the capability of producing results with minimum additional training. Graduates also are well prepared for successful graduate study.

From the Faculty

We see our mission as to educate the best engineers for California, the country, and the world. Our students have a strong foundation in theory – many of them go on to graduate schools but the education we provide our students makes them sound, practicing engineers from the moment they graduate. In fact, our industrial partners tell us that they seek out our graduates because, in their words, they hit the ground running. How do we do it?

We offer one of the most practical, hands-on programs available. Our curriculum is laboratory-intensive and we encourage our students to take internships and/or cooperative education opportunities to get real industry experience. Student clubs give the students the opportunity to get involved in leadership positions as well as network with industries who visit the campus. Finally, the size of the department allows students the ability to get to know each other and the faculty.

Above all, we have the most dedicated, student-focused faculty anywhere. Most of our faculty have spent years in industry, or have other significant industrial experience (what better way to learn engineering than to learn it from engineers?). And yet, our first love is to be educators. Labs and lectures are taught by our faculty; graduateTA’s are rare. Faculty are involved in our clubs and team projects. Finally, students have a rapport with professors that is hard to find elsewhere, with plentiful office hours and open doors. We know (most of) our students by name! We believe that the reputation of our program is built on the accomplishments of our students and alumni. Come visit us, and see what IE is all about!

Associated Clubs

There are several clubs associated with the Industrial Engineering major. These are the student chapters of Institute of Industrial Engineers (IIIE), Alpha Pi Mu honor society, and the American Society of Engineers (ASE). These clubs offer students active educational opportunities to gain real industry experience. Student clubs give the students the opportunity to get involved in leadership positions as well as network with industries who visit the campus. Finally, the size of the department allows students the ability to get to know each other and the faculty.

Career Development Services

Graduates also are well prepared for successful graduate study.