



Bachelor of Science in Mechanical Engineering

College of Engineering and Computer Science

Why major in mechanical engineering?

Do you have an inquisitive nature, an eye for detail, common sense, a logical mind and mathematical aptitude? The successful mechanical engineering student possesses all of these qualities in addition to having an active interest in the design and working principles of a wide variety of products, systems and processes.

Mechanical engineers are employed in a wide range of professional activities. At one end of the spectrum, they are concerned with engineering science and research. Since research engineers encounter a wide variety of scientific and technical problems, graduate study is recommended for careers in this field. At the other end of the spectrum, the mechanical engineer is concerned with hardware development, including the design of mechanical components and systems, fabrication, manufacturing, reliability and testing. The work performed by mechanical engineers varies from general engineering to highly-specialized functions, such as design, product development, construction, maintenance, sales, research and management.

Why choose Cal State Fullerton?

Teaching is our first priority. We focus on undergraduate education and master's degree programs rather than doctoral programs. As a result, our faculty members devote more time to teaching rather than fulfilling the demands of a heavy research schedule usually required by doctoral programs. In addition to the teaching skills of the mechanical engineering faculty members, all of our classes, even at the introductory level, are small.

Distinguished faculty. Our faculty members are experienced professionals who hold degrees from prestigious universities. Although teaching is their first priority, most faculty members have active research programs in emerging engineering issues or mechanical engineering education.

Preparation for graduate work. The Bachelor of Science degree in Mechanical Engineering is designed to be flexible enough to provide excellent preparation for graduate work. Many of our students, including those who take full-time positions in industry, continue their education and obtain advanced degrees.

Student participation in research. Although the college does not require undergraduate research, many of our students participate in one or more collaborative research projects with faculty members before graduation. Most grant-supported research in the department includes funds to support undergraduate students. Several of our undergraduate students have co-authored research papers with faculty members.

Industrial partnerships. Partnerships with leading companies enable students and faculty members to collaborate on funded projects of mutual interest with the firms' engineers. Students gain invaluable practical experience and develop the skills to work effectively in an interdisciplinary environment.

Accreditation. The Bachelor of Science degree in Mechanical Engineering is accredited by the Accreditation Board for Engineering and Technology (ABET). The accreditation process includes both an internal review, as well as an external review conducted by an evaluation team with members drawn from academic institutions, government, industry and private practice.

What types of career opportunities are available?

The mechanical engineering program at Cal State Fullerton provides a foundation for professional engineering careers in private industry and government. Mechanical engineers are employed in a wide range of industries such as manufacturing, transportation, energy, food and biomedical. In general, mechanical engineers are involved with the design, research, development, manufacturing, distribution, support maintenance, and recycling of devices and products.

What courses are required?

All mechanical engineering students take 24 units of engineering core courses, 30 units of foundation courses in mathematics and the physical sciences, 33 units of general education, and 50 to 52 units of required courses in mechanical engineering and technical electives for a total of 137 to 139 units required to complete the degree.

Engineering Core Courses (24 units)

All mechanical engineering students are required to complete the following 24 units of engineering core courses: EG-ME 102, 304 and 306A; EG-CE 201 and 302; EG-EE 203; EG-GN 205, 308 and 314.

Mathematics and Physical Science Courses (30 units)

The following courses are required: Mathematics 150A and B, 250A and B; Chemistry 120A; Physics 225 and 225L, 226 and 226L, and 227.

General Education (33 units)

Students complete courses to fulfill the following categories: Core Competencies, Historical and Cultural Foundations, Disciplinary Learning and Cultural Diversity. Specific courses to meet these requirements are listed under the Division of Engineering section of the university catalog.

Required Courses in Mechanical Engineering (39 units)

- EG-EE 303 Electronics (3 units)
- EG-EE 303L Electronics Laboratory (1 unit)
- EG-ME 306B Fluids and Thermal Laboratory (1 unit)
- EG-ME 322L Introduction to Computer-Aided Design (3 units)
- EG-ME 331 Mechanical Behavior of Materials (3 units)
- EG-ME 333 Fluid Mechanics & Aerodynamics (3 units)
- EG-ME 335 Introduction to Mechanical Design (3 units)
- EG-ME 370 Seminar in Engineering (1 unit)
- EG-ME 376A Dynamic Systems and Controls Laboratory (2 units)
- EG-ME 376B Energy and Power Laboratory (2 units)
- EG-ME 407 Heat Transfer (3 units)
- EG-ME 414 Design Project I (3 units)
- EG-ME 419 Design Project II (2 units)
- EG-ME 421 Mechanical Design (3 units)
- EG-ME 426 Design of Thermal and Fluid Systems (3 units)
- EG-ME 431 Mechanical Vibrations (3 units)

Technical Electives in Mechanical Engineering (11 units)

Students choose elective courses with the approval of their adviser from the following areas. Please refer the “Mechanical Engineering” section of the university catalog for specific courses.

- Design and Materials for Manufacturing
- Robotics, Controls and Automated Manufacturing
- Thermal and Fluids Engineering
- Power and Energy

Emphasis in Manufacturing Engineering

Required courses include Engineering Core (24 units), Mathematics and Physical Science (30 units), General Education (33), Mechanical Engineering Core (34 units – EG-ME 376B and EG-ME 431 are not required for the manufacturing engineering emphasis) and the following courses for the emphasis:

Required Courses for the Manufacturing Engineering Emphasis (9 units)

EG-ME 461 Fabrication Methods (3 units)

EG-ME 463 Introduction to Robotics (3 units)

EG-ME 483 Computer-Aided Manufacturing (3 units)

Technical Electives (9 units)

Students choose from the following courses with the approval of their adviser:

EG-ME 410, 411, 454, 459, 460, 462 or 480; EG-CE 408; EG-EE 323, 404, 404L, 445, 445L or 465.

Are there special programs or internships available?

Mechanical engineering majors may take advantage of the opportunities provided by the Center for Internships and Cooperative Education. Internships provide students with opportunities to gain work experience, network and develop industry contacts, solidify academic and career goals,

earn money while learning, and explore various career options within the major.

The MESA Engineering Program (MEP) provides services that help educationally-disadvantaged students achieve a higher level of academic success in engineering and computer science. For additional information, please call (714) 278-3879.

What types of financial aid and scholarships are available?

The Floyd Thomas Memorial Scholarship, Emmett D. Burnett Scholarship and Eugene Birnbaum Award are awarded to eligible students in the College of Engineering and Computer Science. Additional scholarships are available to students in the major from off-campus sources such as professional societies, civic foundations and corporations..

For financial aid consideration, please call the Office of Financial Aid at (714) 278-3125 for additional details and information.

How can I get involved?

Students can choose from a roster of award-winning professional student organizations including: American Society of Mechanical Engineers (ASME), Society of Manufacturing Engineers (SME), Society of Automotive Engineers (SAE), Society for the Advancement of Material and Process Engineering (SAMPE), National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), Society of Mexican-American Engineers and Scientists (MAES), Society of Women Engineers (SWE) and Tau Beta Pi, the engineering honor society.

Who advises me?

Mechanical engineering students are advised by department faculty. Students may make an appointment by calling (714) 278-3014. The department requires that each student be advised at least once per year to ensure that degree requirements are being met.

How can I learn more?

Additional information is available on the College of Engineering and Computer Science Web site at: www.ecs.fullerton.edu. You can ask us questions via e-mail at ecsinfo@fullerton.edu. You are also welcome to write to us by fax or mail:

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P.O. Box 6870
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The most complete and authoritative information is found in the Department of Mechanical Engineering Undergraduate Handbook. Contact us by e-mail, phone, FAX or mail to request your copy.