

Mechanical Engineering

The Field of Mechanical Engineering

Mechanical engineering deals with machines, structures, energy, and fluid systems. Mechanical engineers are also involved in the exploration of space, in military defense, and in the development of alternative energy resources as well as activities that include the design and development of jet propulsion engines, space vehicles and platforms, laser tools and weapons, nuclear and fusion energy plants, and transportation systems. The major technical subdisciplines of mechanical engineering encompass the mechanics and materials, systems dynamic controls, thermal fluids, and manufacturing and design.

The Program

The Mechanical Engineering Program is accredited by the Engineering Accreditation Commission to give the student a firm understanding of the applications and practice as well as the principles and science of the mechanical engineering profession.

The program maintains laboratories equipped with electronic data acquisition systems and test apparatuses that enable engineering students to study the effect of different parameters on the operation and performance of energy flow, air conditioning, heat-power systems, advanced materials, and complex machines.

The program recognizes the importance of the use of computers, controllers, and data acquisition for design, analysis, experimentation, automation, and manufacturing. The major offers courses and facilities for the instruction of computer-aided design engineering (CAE) and manufacturing (CAM).

Careers in Mechanical Engineering

Opportunities exist in aerospace, conventional alternative energy power production, manufacturing and fabrication, machine and tool design, public transportation systems, electronics, and a host of other industries that rely on engineers for concept formulation, component and system design, and technical management. Mechanical engineers are employed by agencies of the state and federal government and by all types of industries as program managers, project engineers, design engineers, and line engineering managers.

Future Education

In order to become a registered professional engineer (PE), an individual must pass the Fundamentals of Engineering (FE) Examination to become an engineer in training (EIT). After several years of job experience in engineering, professional engineering candidates must pass the Professional Engineer-

ing (PE) Examination. The bachelor's degree in mechanical engineering prepares students for graduate work (e.g., M.S., Ph.D.) at any university.

General Preparation

Success for students majoring in mechanical engineering requires skills and knowledge in mathematics, physics, and chemistry, as well as the self-discipline to study and the ability to solve analytical problems. Those who wish to become mechanical engineers must be highly-motivated self-starters and continue to pursue knowledge throughout their careers.

High School Preparation

Students should meet California State University's admission requirements, grade point average, and test scores. Additional recommended courses are advanced mathematics (1/2 year), chemistry and physics (1 year), engineering graphics (1/2 year), and computer programming (1/2 year).

College Program

Students should consult the university's *General Catalog* for specific major and university requirements, General Education requirements, and approved technical electives.

General Education

Students should follow the program of the mechanical engineering major. For specific requirements, see the program outline for the mechanical

California State
University, Fresno

Department
of Mechanical
Engineering

559.278.2368

B.S. in Mechanical
Engineering

M.S. in Engineering

FRESNO STATE

Discovery. Diversity. Distinction.

Mechanical Engineering

Course Requirements

Since program changes occur, students should consult the *General Catalog* and a Fresno State adviser prior to registering for courses.

Lower Division

Freshman-Sophomore level courses (may be taken at a community college, if offered)

Engineering Graphics (ME 26)
Engineering Materials (ME 31)
Engineering Mechanics: Statics (CE 20)
Engineering Computations (ECE 71)
Manufacturing Processes (ME 95)
Chemistry, Mathematics, and Physics
(see Catalog)
Introduction to Electrical Engineering
(ECE 91)

Upper Division

Junior-Senior level courses
(to be taken at Fresno State)

Advanced Engineering Analysis
Advanced Thermo-Fluid Mechanics
Design of Machine Elements
Kinetics of Machinery
Engineering Mechanics: Dynamics
Engineering Writing
Fluid Mechanics
Fluid Mechanics Lab
Heat and Mass Transfer
Instrumentation and Measurements Lab
Mechanics of Materials
Engineering Stat & Experimentation
Thermodynamics
Advanced Thermodynamics

Courses in Design Applications

Energy Systems Design
Mechanical Systems Design
Mechanical Engineering Lab
Intro to Design
Senior Capstone Design I
Senior Capstone Design II

Technical Area Courses

Group A:

Turbomachinery
Air Conditioning
Advanced Mechanics of Materials
Mechanical Vibration
Computer-Aided Design

Group B:

Dynamic Systems and Controls
Design and Applications of Robotic Systems
Design of Automated Systems
Electromechanical Systems
and Energy Conversion

**For additional
information, write**

**California State
University, Fresno
Department
of Mechanical
Engineering**

2320 East San Ramon
M/S EE94
Fresno, California
93740-8030

Visit or call

**Department
of Mechanical
Engineering**

Engineering East
Building, Room 154
559.278.2368
559.278.4269

FRESNO
STATE

Discovery. Diversity. Distinction.

PLEASE NOTE: This document is for general informational purposes only. The information is subject to change; consult the appropriate department or an academic adviser. Entering freshmen must follow the revised General Education program effective fall 1999 and thereafter. The university catalog and schedule of courses are available online at www.fresnostate.edu/ClassSchedule and www.fresnostate.edu/catalog.

Revised 5/15