California State University, Fresno

Undergraduate Program
Mechanical Engineering

Overview
The Mechanical Engineering undergraduate program is student-centered, providing high-quality instruction in engineering theory and the latest engineering developments as well as “hands-on” laboratory applications and optional internship training. Faculty hold doctorates in engineering, and most bring significant industrial, professional and academic experience to the classroom. Because of our optional, but highly regarded, internship program (Valley Industry Partnership (VIP) for cooperative education) CSU, Fresno engineering students “learn better” through two six-month internships terms in industry while enrolled in school during their undergraduate program. In addition, students can also earn internship salaries that help defray educational expenses all while graduating with one-year of engineering experience, thereby making them more employable. Finally, qualified students can participate in our “special” five-year Bachelors/Masters blended program.

Concentration Areas

Advanced Materials
The study of advanced materials enables the students to make substantive contributions in the areas of analytical, computational, and experimental methods in the development, characterization and application of advanced materials such as monolithic and composite structural ceramics, graphene, nanomaterials, semiconductors, magnetorheological fluids, polymer composites, etc. Analytical problem solving skills combined computational methods and sound technical fundamentals can form the basis for either direct application to engineering practice or to graduate work in mechanical engineering/engineering mechanics.

Alternative Energy and Sustainable Systems
The application of mechanical engineering to alternative energy and sustainable systems has taken new directions as critical technologies are incorporated into high-technology energy conversion devices (e.g. combined cycle power generation, thermal/environmental controls, photovoltaics, wind turbine, geothermal, fuel cells, etc.) as well as water purification, reclamation, etc. The concentration in alternative energy and sustainable systems and engineering prepares graduates to design quality products in this highly competitive international market.

Mechatronics Systems and Controls
The mechatronics systems concentration provides students with modern training in the rapidly evolving and technically relevant topic of mechatronics engineering. Because mechatronics represents the melding of mechanical engineering, electrical/electronic engineering, and computers, career opportunities are excellent. Students are educated to deal effectively with the complex synergism of sensors, mechanisms and embedded intelligence that are increasingly prevalent in consumer and commercial products.

Degree Program
The Bachelor of Science in Mechanical Engineering (BSME) requires a minimum of 123 semester credits. Since 1965, the BSME program has been continuously accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Qualified students can earn their Bachelors and Masters degrees in five years through a blended 150 unit plan of study.

Why California State University, Fresno?
• The People: A distinguished and multidisciplinary faculty, within a scintillating academic environment.
• The Program: The Department of Mechanical Engineering houses one of six undergraduate degree programs in the Lyles College of Engineering. Leading edge, inter- and multi-disciplinary educational and research programs (including undergraduate research) with close ties to the College of Science and Mathematics, Jordan College of Agricultural Science and Technology, and Lyles Center for Entrepreneurship and Innovation as well as centers such as UCAM (University Center for Advanced Manufacturing), CMAEM (Center for Micro Analysis & Electron Microscopy) and other intramural centers are noteworthy aspects of the program.
• The Place: California State University, Fresno traces its roots to 1911 as Fresno State Normal School. The Lyles College of Engineering is the oldest, publicly-supported engineering college in the Central Valley of California. While engineering courses were first taught at “Fresno State” in 1922, the Department of Engineering was established in 1946, followed by a School of Engineering in 1963, and culminating in its renaming to Lyles College of Engineering in 2008 in recognition of a major financial gift to the College that was intended to enhance and grow engineering education in the Central Valley.
Primary Faculty

Sankha Banerjee, PhD (Assistant Professor) Teaching: materials, intro to design, advanced materials, mechanics, design, nanomaterials/technology. Research: development and characterization of hybrid energy systems, nanotechnology/materials, piezomaterials. Education: PhD (ME) & MSME - Rutgers, The State Univ. of New Jersey, New Brunswick; BTech ME - Motilal Nehru Natl. Inst. of Technology, Allahabad, India.

Mazen A. Eldeeb, PhD (Assistant Professor) Teaching: thermodynamics, heat transfer, transport phenomena. Research: biofuel combustion, combustion chemistry, chemical kinetic modeling, combustion laser diagnostics. Education: PhD (ME)- Syracuse Univ.; MSME & BSME - Cairo Univ., Giza.

Gemunu S. Happawana, PhD (Professor and Chair of Mechanical Engineering) Teaching: dynamics, controls, instrumentation, vibrations, adv. mathematics, vehicle dynamics. Research: photodiode lasers, vibrations, systems, dynamics, controls and wind energy. Education: PhD (ME) & MS Applied Math - Purdue Univ.; West Lafayette; BSc Math.- Univ. of Colombo, Sri Lanka.

Aaron B. Hoskins, PhD (Assistant Professor) Teaching: programming, numerical methods, optimization. Research: satellite orbits/maneuvers, remote sensing, disaster preparedness, stochastic programming. Education: PhD (ISE)-Mississippi State Univ.; MS & BS Aerospace E - Univ. of Maryland, College Park.

Michael G. Jenkins, PhD, PE (Professor), Teaching: mechanics of materials, materials, machine element analysis, probabilistic design, manufacturing processes. Research: brittle materials, standards/codes, thermo-mechanical behavior, damage mechanics. Education: PhD (ME) - Univ. of Washington-Seattle; MSME - Purdue Univ., W. Lafayette; BSME - Marquette Univ.

Ho-Lung Li, PhD. (Full Time Lecturer), Teaching: machine element analysis, kinematics of machinery, manufacturing processes. Research: additive manufacturing (3D printing), embedded control systems, unmanned aerial vehicles. Education: PhD (ME) and MSME – Drexel Univ.; BSEE - Tamkang Univ., Taiwan

Deify Law, PhD (Associate Professor) Teaching: fluid mechanics, thermodynamics, and CFD. Research: multiscale modeling, two-phase flows, CFD, energy design. Education: PhD (ME) - Virginia Polytechnic Institute & State Univ.; MSME & BSME - Iowa State Univ.

Zhi Liang, PhD (Assistant Professor). Teaching: thermodynamics, heat transfer, fluid mechanics. Research: computational micro/nanoscale heat/mass transfer, nanofluidic devices, molecular dynamics. Education: PhD (ME) - Missouri Univ. of Science and Technology; MSMSE & BSMSE -Shanghai Jiaotong Univ.

Walter V. Loscutoff, PhD (Professor-emeritus) Teaching: design, dynamics, applied mathematics, technical communication. Research: controls, instrumentation, emissions, mechanics, energy systems. Education: PhD (ME) - MS Applied Math & BSME – Univ. of California, Berkeley.

The M. Nguyen, PhD (Associate Professor) Teaching: computational methods, eng. graphics, kinematics of machinery, instrumentation /measurements, senior design. Research: advanced materials (e.g., magnetorheological), advanced design, numerical techniques, mechatronics, instrumentation/controls. Education: PhD (ME) & MSME – The Univ. of Toledo; BSME - The Univ. of Oklahoma, Norman.


Yuanyuan Xie, PhD (Assistant Professor) Teaching: design, numerical methods, computer aided design. Research: energy storage, fuel cells, electrolysis cells. Education: PhD (ME) – Univ. of South Carolina; MSME – Univ. of Science & Technology of China; BSME – Hefei Univ. of Technology (China)

For More Information
For more information about courses, degree requirements, research opportunities, or financial support visit our website at http://www.fresnostate.edu/engineering/mechanical-engineering/ or send us an e-mail at ghappawana@csufresno.edu. (Professor Gemunu Happawana, Department Chair) or jenkinsm@csufresno.edu (Professor Michael Jenkins, Assessment Coordinator)

An on-line undergraduate application is available at CSU Mentor: http://www.csumentor.edu/admissionapp/undergrad_apply.asp

Contact Us
Department of Mechanical Engineering
Attn: Undergraduate Program
Lyles College of Engineering
California State University, Fresno
2320 E. San Ramon Ave, M/S EE94
Fresno, CA 93740-8030
Tel: (559) 278-2368; Fax: (559) 278-6521

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