



# **Masters of Science Degree in Mechanical Engineering**

**CALIFORNIA STATE UNIVERSITY, LOS ANGELES**

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The graduate program leading to a Master of Science in Mechanical Engineering, at California State University, Los Angeles is designed for engineers who wish to further their proficiency in a particular field of specialization and/or broaden their perspective and knowledge of engineering beyond the Bachelor degree. The program offers an applied curriculum covering advanced courses in fundamental subjects, emerging areas of mechanical engineering, and state-of-the-art computer aided engineering tools with emphasis on a multidisciplinary approach. In addition to a rigorous curriculum, high achieving individuals may engage in cutting-edge applied research within a NASA University Research Center or other externally funded research projects. With a Master of Science in Mechanical Engineering, engineers will enhance the prospects of their professional career and/or be prepared to continue their education toward a doctoral degree.

The graduate program is organized especially to accommodate the needs of engineers employed full time. The classes applicable toward the graduate degree are offered during late afternoon hours or evenings. Instruction is offered year round on the quarter system. Each of the four quarters that comprise the academic year (Fall, Winter, Spring, and Summer) is 11 weeks in duration.

The University is located at the eastern edge of Los Angeles within a five mile radius of downtown and adjacent to the western part of the San Gabriel Valley. The convenient location allows easy access by freeway and major surface streets, as well as by bus and Metrolink, from all parts of the Greater Los Angeles Area.

## **Admission to the Program**

Admission to the program requires possession of a degree equivalent to CSULA's Bachelor of Science in Mechanical Engineering and a minimum 2.5 grade point average in the last 90 quarter units attempted for the baccalaureate. Applicants who do not meet the minimum 2.50 grade point average in their last 90 units may be admitted to post-baccalaureate unclassified standing with Special Action Admission until prescribed qualifying courses of at least 14 units, approved by the graduate advisor, have been completed with a minimum 3.0 grade point average.

An applicant with a Bachelor of Science degree in an allied field such as physics, chemistry, mathematics, or another area of engineering may be admitted with unclassified post-baccalaureate standing until prescribed prerequisite courses have been successfully completed.

## **Program of Study**

Upon admission, the new student should make an appointment to see the Mechanical Engineering Graduate Advisor. With the help of the advisor, the student should develop a program of study. The program of study can be changed during the course of study if the need arises, but only after the student submits a petition and the petition is approved. Courses which are not on the student's program of study will not be counted toward the M.S. degree. Upon advisor approval, a student may transfer up to 13 quarter units of classes

applicable toward a graduate degree completed at another qualifying institution of higher learning or at CSULA through Open University.

## List of Courses applicable to the M.S. Degree in Mechanical Engineering

The following courses offered by the Mechanical Engineering Department are applicable toward fulfilling the requirements for an M.S. degree in Mechanical Engineering provided they are not completed during the course of undergraduate study (i.e., the same course cannot be counted toward an undergraduate and a graduate degree).

A brief description of the courses and the necessary prerequisites are published in the CSULA General Catalog. Students should consult the Department Office and the Schedule of Classes for the quarter, date and time when a particular class is offered. For more information on each course and/or research opportunity in a particular area, students should contact faculty with expertise in that area.

<b>MACHINE DESIGN, APPLIED MECHANICS</b>		Units
ME 402	Advanced Mechanics of Materials	4
ME 411	Vibrational Analysis I	4
ME 412	Strength of Materials Laboratory II	1
ME 414	Machine Design II	4
ME 421	Dynamics of Mechanisms	4
ME 423	Introduction to Finite Element Method	4
ME 501A	Advanced Mechanics of Particles	4
ME 501B	Advanced Mechanics of Rigid Bodies	4
ME 503	Design of Mechanical Systems and Products	4
ME 511	Vibrational Analysis II	4
ME 514	Fatigue and Failure in Engineering Design	4
<b>MANUFACTURING AND MATERIALS</b>		
ME 428	Automation and Manufacturing	4
ME 430	Properties and Selection of Engineering Materials	4
ME 431	Metallography Laboratory	1
ME 481	Introduction to Robotics	4
EE/ME 491	Robotics Laboratory	1
ME 528	Metalfforming Science and Applications.	4
ME 529	Machining Science and Applications	4
ME 530	Near-Net-Shape Manufacturing and Surface Treatment	4
ME 531	Processing of and Design with Modern Engineering Materials	4
<b>THERMAL AND FLUID SCIENCES</b>		
ME 406	Heat Transfer II	4
ME 407	Design of Thermal Systems	4
ME 408	Fluid Mechanics II	4
ME 413	Fluid Mechanics Laboratory II	1
ME 415	Air Conditioning	4
ME 416	Energy Systems	4
ME 504	Thermal Radiation	4
ME 505	Heat Conduction	4
ME 506	Heat Convection	4
ME 507	Fluid Mechanics III (currently being developed)	4
ME 525	Computational Fluid Mechanics	4

## AEROSPACE AND CONTROL ENGINEERING

ME 403	Aerodynamics	4
ME 404	Aircraft Design (currently being developed)	4
ME 410	Control of Mechanical Systems	4
ME 418	Flight Mechanics II (currently being developed)	4
ME 422	Optimization of Engineering Systems	4
ME 508	Compressible Fluids (soon to be renamed to high speed aerodynamics)	4
ME 509	Advanced Combustion and Propulsion (currently being developed)	4
ME 515	Air Quality and Pollution (currently being developed)	4
ME 518	Flight Dynamics and Control (currently being developed)	4
ME 521	Dynamic Systems Analysis	4
ME 522	Optimal Control of Mechanical Systems	4
ME 524	Nonlinear Control (currently being developed)	4

## ADDITIONAL COURSES

ME 454	Special Topics in Mechanical Engineering	1-4
ME 409	Mechanical Engineering Analysis (required for all MS students)	4
ME 419	Computer Aided Mechanical Engineering	4
ME 554	Special Graduate Topics in Mechanical Engineering	4
ME 595	Directed Student Teaching (currently under development)	1
ME 596	Comprehensive Examination	0
ME 597	Graduate Research	1-5
ME 598	Graduate Directed Study	1-4
ME 599	Thesis	4

In addition to the above courses, the graduate advisor may allow a student to select a limited number of courses in other engineering disciplines or outside of engineering with consistent with an approved plan of study.

## Faculty and Areas of Specialization

**Neda S. Fabris, Professor of Mechanical Engineering** (Ph.D., Illinois Institute of Technology)  
Manufacturing; Material Science; Mechanics; Design

**Darrell W. Guillaume, Associate Professor of Mechanical Engineering** (Ph.D. University of California, Irvine)  
Registered Professional Mechanical Engineer  
Fluid Mechanics; Thermodynamics; Heat Transfer; Combustion

**Lih-Min Hsia, Professor of Mechanical Engineering** (Ph.D., University of California, Davis)  
Registered Professional Mechanical Engineer  
Kinematics of Mechanisms; Computer-Aided Design; Robotics

**Samuel Landsberger, Professor of Mechanical Engineering and Kinesiology** (Sc.D., Massachusetts Institute of Technology, Cambridge, MA)  
Design; Kinematics; Rehabilitation Engineering

**Maj Dean Mirmirani, Chair, Professor of Mechanical Engineering** (Ph.D., University of California, Berkeley)  
Dynamic Systems and Control; Applied Mechanics; Flight Mechanics

**Adel Sharif, Assistant Professor of Mechanical Engineering** (Ph.D., University of California, Irvine)  
Machine Design, Structural Materials

**Chivey Wu, Professor of Mechanical Engineering** (Ph.D., University of Illinois)  
Aerodynamics; Computer-Aided Engineering

**Emeriti Professors:**

**Stephen F. Felszeghy, Professor of Mechanical Engineering** (Ph.D., University of California, Berkeley)  
Solid Mechanics; Finite Element Methods; Mechanical Vibrations; Dynamics

**Philip Gold, Emeritus Professor of Mechanical Engineering** (Ph.D., University of California, Los Angeles)  
Energy Systems; Thermodynamics

**Raymond B. Landis Dean Emeritus,** (Ph.D., University of California, Los Angeles)  
Thermal Sciences and Fluid Mechanics

**Ram Manvi, Emeritus Professor of Mechanical Engineering** (Ph.D., Washington State University)  
Registered Professional Mechanical Engineer  
Energy Conversion; Thermal and Environmental Engineering

**Michael, M. Maurer, Emeritus Professor of Mechanical Engineering** (Ph.D. Tulane University)  
Thermodynamics; Turbomachinery

**Richard D. Roberto, Emeritus Professor of Mechanical Engineering** (M.S., University of California, Los Angeles)  
Registered Professional Mechanical Engineer  
Machine Design; Dynamics; Vibrations

**FURTHER INFORMATION**

Further information about the M.S. program may be obtained from the Department of Mechanical Engineering (323) 343-4490 and at the Department's Website:

<http://www.calstatela.edu/academic/ecst/me/index.htm>

Admission information and application forms may be obtained by writing to: Office of Admissions, CALIFORNIA STATE UNIVERSITY, LOS ANGELES, 5151 State University Drive, Los Angeles, CA 90032-8530 or online at the University's websites.