Mechanical Engineering

GRADUATE STUDIES AT UNIVERSITY OF CALIFORNIA, MERCED (M.S., Ph.D.)

The Mechanical Engineering (ME) Graduate Program is dedicated to educating a new generation of engineers and researchers who aim to master the fundamentals of mechanical sciences and engineering. Students use innovative and cutting-edge research techniques, methodologies, instrumentation and equipment to solve problems that are relevant to modern society.

PROGRAM AREAS

- Design, manufacturing and optimization
- Dynamics, mechanics and controls for biomechanical applications
- Electrochemical energy conversion and storage devices
- Electrokinetic and multiphase heat transport in porous media
- Energy conversion and thermal systems
- Engineering systems and machines for agriculture
- Fuel cells
- Mechanics at extreme length scales
- Mechatronics for sustainability
- Plasma science and engineering
- Scientific data-drones and unmanned systems
- Solar power and renewable energy
- Tribology: friction, wear and lubrication
- Vibrations and noise control
- Water and energy technologies

WHY CHOOSE THE ME PROGRAM AT UC MERCED? ME research affects society through the development of innovative sustainable technologies and methods that cover a variety of scientific and engineering fields.

Graduate studies in ME will enhance students' understanding of physical phenomena and provide them with modern analytical tools for the design and synthesis of mechanical components and systems. Our emphasis covers a rich field of discovery and an evolving discipline that continuously adapts to tackle challenging problems.

FUNDING OPPORTUNITIES: Students are typically supported by teaching and research assistantships, which can be supplemented by fellowships, awards and other forms of financial assistance.

TO APPLY: Applicants are encouraged to directly contact ME faculty members whose research is of interest, and include a copy of your curriculum vitae. All applicants are required to complete the General Test of the Graduate Record Examinations. The application deadline is Jan. 15.

CONTACT: For additional details, please visit our website, **me.ucmerced.edu**, or contact Program Chair Ashlie Martini | **EMAIL:** amartini@ucmerced.edu

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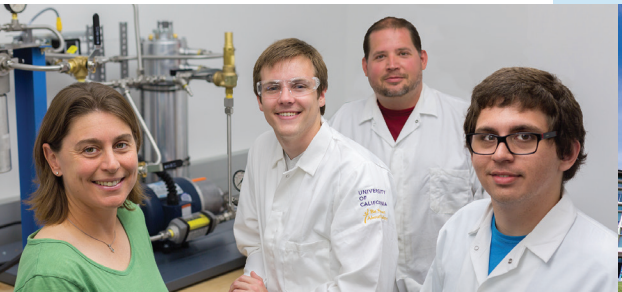
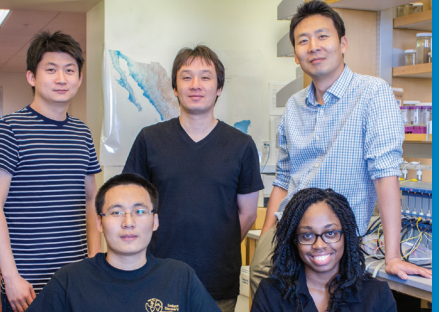
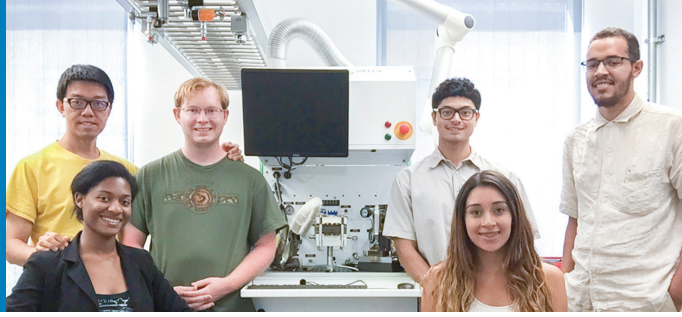
me.ucmerced.edu





Faculty

MECHANICAL ENGINEERING



VENKATTRAMAN AYYASWAMY
Plasma science and engineering; microplasmas; plasma-wave interaction; nanomaterial synthesis modeling; stochastic modeling of non-equilibrium flows; rarefied/microscale gas dynamics

MEHMET Z. BAYKARA
Mechanics on the nanometer and atomic scales; scanning probe microscopy with applications in nanotribology, biophysics, and catalysis; atomic-resolution imaging and spectroscopy of surfaces; surface science

YANGQUAN CHEN
Scientific data-drones and unmanned aircraft systems; mechatronics and control systems; cyber-physical systems; applied fractional calculus in complex phenomena characterization; complex signal analysis; complex system modeling and control

ABEL CHUANG
High- and low-temperature proton-exchange-membrane fuel cell; anion-exchange-membrane fuel cell; heat exchanger; thermal management; two-phase heat transfer and fluid flow; loop heat pipe; porous material; carbon fiber

GERARDO DIAZ
Renewable energy conversion; dynamic simulation and control of thermal systems; biomass gasification; thermal and non-thermal plasma applications to energy generation and water conservation; optimization of thermal systems; solar thermal

REZA EHSANI
Automation, robotics, and intelligent machines for agriculture; developing sensors and systems with applications in agriculture, food industry; precision agriculture and horticulture, mechanization and mechanical harvesting systems

SACHIN GOYAL
Computational dynamics, mechanics and controls with biomechanical applications such as modeling and simulation of symptoms of Parkinson's disease; continuum-dynamics- and multi-body-dynamics-based modeling and inverse modeling of DNA and proteins and their interactions; constitutive law modeling of biological filaments from their molecular dynamics simulations

MIN HWAN LEE
Electrochemical energy conversion/storage devices; nanoscale materials engineering; nanoscale electrochemistry; fuel cells; ionic batteries; resistive switching memory; scanning-probe-microscopy-based observations

YANBAO MA
Mesoscale non-diffusive heat transfer; mesoscale mass and energy transport in energy systems; thermal management of electronics and energy systems; environment-friendly water desalination systems

ASHLIE MARTINI, Program Chair
Tribology (friction, wear and lubrication) and phenomena associated with sliding interfaces and their mechanisms from atomic- to macro-scale; wear due to surface contact and sliding; use of solid coatings to minimize friction and wear in extreme environments; the role of lubricants and lubricant additives in interface efficiency and performance

JAMES PALKO
Multiphase heat transfer and electrokinetic transport in porous media; modeling heat transfer and flow in additive manufacturing; thermal management of power electronics and mobile devices; electrochemical energy storage; water purification technologies

ALA QATTAWI
Design and manufacturing with a focus on the aspects of modeling and optimization of the process and part design; intelligent manufacturing systems; sustainable design and manufacturing processes; cost modeling of manufacturing processes and conceptual product designs

JIAN-QIAO SUN
Vibrations; noise control; industrial automation; sensors; actuators; bio-mechanics and physical rehabilitation; building-energy-control systems; condition monitoring and diagnosis; energy harvesting; multi-objective optimization

ROLAND WINSTON
Solar power and renewable energy; elementary particle physics; non-imaging optics

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