Introduction to the Department of Mechanical and Aerospace Engineering
Outline of this Orientation

• Introduction to MAE
• Research and Courses
• MAE Graduate Student Organization
• HSSoE Graduate Affairs Office
• Faculty Profiles

Roger Rangel
Department Chair and Professor of Mechanical and Aerospace Engineering

Research Interests:
Heat transfer, spray combustion, two-phase flows, fluid instability and atomization.

Marc Madou
Distinguished Professor of Mechanical and Aerospace Engineering; Biomedical Engineering; Chemical and Biomolecular Engineering

Research Interests:
Miniaturization science (MEMS and NEMS) with emphasis on chemical and biological applications, C-MEMS and CD based fluidics.
Mission Statement

Our mission is to educate students, at all levels, to be the best engineers and leaders in the nation and world by engaging them in a stimulating community dedicated to the discovery of knowledge, creation of new technologies, and service to society.
# Highlights of MAE Department

<table>
<thead>
<tr>
<th>Department History</th>
<th>Student Population and Degrees Offered</th>
<th>Research</th>
<th>Faculty and Recognition</th>
<th>Affiliated Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1983</strong></td>
<td>1223 Undergrads</td>
<td>$11.2 M Research Expenditures</td>
<td>33 Full-time faculty</td>
<td>7 World-Class Center and Institute Affiliations</td>
</tr>
<tr>
<td>Department of Mechanical Engineering founded</td>
<td>177 Graduate Students</td>
<td>5 Research Thrusts</td>
<td>15 Adjuncts and joint appointees</td>
<td>- Advanced Power and Energy Program (APEP)</td>
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<tr>
<td><strong>1990</strong></td>
<td>Degree offered:</td>
<td></td>
<td>Honors:</td>
<td>- UCI Combustion Laboratory</td>
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<tr>
<td>Department expands to include Aerospace Engineering</td>
<td>- Master of Science (M.S.)</td>
<td></td>
<td>3 National Academy of Engineering</td>
<td>- Integrated Nanosystems Research Facility (INRF)</td>
</tr>
<tr>
<td></td>
<td>- Doctor of Philosophy (Ph.D.)</td>
<td></td>
<td>2 Fellows AAAS</td>
<td>- National Fuel Cell Research Center (NFCRC)</td>
</tr>
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<td></td>
<td>- Master of Engineering (M.Eng.)</td>
<td></td>
<td>4 Fellows ASME</td>
<td>- UCI Irvine Materials Research Institute (IMRI)</td>
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<tr>
<td></td>
<td>- Systems Engineering and Design</td>
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<td>4 Fellows AIAA</td>
<td>- Center for Complex and Active Materials (CCAM)</td>
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<td>2 Fellows IEEE</td>
<td>- Beckman Laser Institute</td>
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<td>2 Fellow APS</td>
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<td></td>
<td>1 Mexican Academy of Science Foreign Member</td>
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<td>1 Swedish National Academy of Engineering Foreign Member</td>
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<td>1 Office of Naval Research Young Investigator Award</td>
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<td></td>
<td>7 NSF Career Awards</td>
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<td>1 National Academy of Inventors</td>
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<td>5 Distinguished Professors</td>
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<td>1 Chancellor’s Professor</td>
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</tbody>
</table>
Difference between Graduate and Undergraduate Studies

• Courses
  – Classes dig deeper, assume you learned undergrad course material
  – More initiative in learning is expected from you
  – Multiple references rather than one textbook
  – Smart, hardworking classmates the norm

• Research and Teaching
  – Participate in creating new knowledge, i.e., research
  – Work individually with faculty research advisor
  – Opportunities to teach, e.g., informal, TA
Goals, Expectation, and Advice for Graduate Students

- Make academics your first priority
- Take initiative in your educational development, recognize knowledge gaps and fill them in
- Develop broader impact perspective
- Engage with, and benefit from, the intellectual community – classmates, labmates, faculty
- Attend seminars
- Develop excellent writing and presentation skills
MAE Department Seminars

**Why we want you to attend:**
Exposure to leading researchers, what they are doing, how they are doing it

**What is your role?**
Develop researcher mentality. What is the research problem? Why is it important? What methods are used to solve the problem? What is novel about the work? What are the most significant results and what is the next step?

How does the speaker present the work? What would you do the same? What would you do differently?

**Help us create a positive impression on influential seminar guests.**

**Seminar Etiquette**
Be the audience member you would like to have at a seminar you give. Be attentive. Think of a question and ask it. Don’t talk, text, check email, facebook, etc.

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Sasha Voloshina: Assistant Professor of Mechanical and Aerospace Engineering

Research Interests: Rehabilitation robotics, prosthetics, exoskeletons, locomotion biomechanics.

Jacqueline Thomas: Assistant Professor of Mechanical and Aerospace Engineering

Research Interests: Design of aircraft systems and operations, aviation environmental impacts, aeroacoustics.
Graduate Program Logistics

**PEOPLE**

**Prof. Marc Madou**
Graduate Studies Advisor

**Tenley Dunn**
Graduate Coordinator

**Mark Banderas**
Graduate Counselor, Graduate and Professional Studies, HSSoE

**RESOURCES**

**Website:** mae.eng.uci.edu/graduate

- 90% of your questions can be answered

**Your faculty advisor**

- Course selection, timelines, focus area

**Graduate Coordinator:** Ms. Tenley Dunn
tdunn@uci.edu

- All forms and formalities

**Graduate Advisor:** Prof. Marc Madou

- Questions that have not been answered
- Office hours Wed. afternoons and 949-981 5672 – contact him with questions
Understand and Follow the Degree Requirements

• Master of Science Degree Requirements
  - MS Plan of Study Form is due during the first Quarter of your MS program

• Ph.D. Degree Requirements

Consult https://engineering.uci.edu/dept/mae/graduate
For Students in the Doctoral Program

- Converge on your faculty advisor as soon as possible
- Define your research topic
- Preliminary Exam: establishes whether the Ph.D. Candidate has command of specified fundamental material in Applied Mathematics and one of five Topic Areas of mechanical and aerospace engineering. The candidate must demonstrate capability to synthesize different elements of knowledge in the formulation and solution of open-ended problems and to exercise sound scientific scrutiny and judgment.
- PhD Course Requirement
- Qualifying Examination: the last step towards your Advancement to Candidacy in the doctoral program. The Qualifying Examination, and subsequent Advancement to Candidacy, are expected to occur in the third year (second year for students who entered with a master’s degree) of your graduate enrollment.

Consult https://engineering.uci.edu/dept/mae/graduate
Main Disciplinary Areas

https://engineering.uci.edu/dept/mae/research

- Dynamics and Controls
  - Athanasios Sideris

- Fluid Dynamics and Propulsion
  - Feng Liu

- Mechanics of Materials and Structures
  - Mark Walter

- Systems and Design
  - J. Michael McCarthy

- Thermal and Transport Sciences
  - Jaeho Lee

- Aerospace Engineering
  - Dimitri Papamoschou
Dynamics and Controls - Research

Areas of Interest

• Control Theory and Algorithms
• Autonomous and Distributed systems
• Navigation and Flight systems
• Machine Learning

Geometric Nonlinear Control

Unsteady Nonlinear Aerodynamics

Unconventional Flight Concepts

Beidou Broadband LEO Galileo Iridium GPS GLONASS

UAV Self-Driving Car SDR

FM Wi-Fi 5G HDTV LTE

Stage 1: Distributed target density distribution estimation

Stage 2: Distributed deployment of service agents
Dynamics and Controls - Faculty

David Copp
Assistant Professor of Teaching of Mechanical and Aerospace Engineering
Research Interests: Optimal control and estimation, hybrid dynamical systems, energy storage, pedagogy.

Tryphon Georgiou
Distinguished Professor of Mechanical and Aerospace Engineering
Research Interests: Dynamical systems and control, mathematical physics, applied mathematics.

Faryar Jabbari
Professor of Mechanical and Aerospace Engineering

Zak Kassas
Associate Professor of Mechanical and Aerospace Engineering
Research Interests: Cyber-physical systems (CPS), autonomous vehicles (aerial, ground, underwater), satellite-based navigation, intelligent transportation systems (ITS), cognitive and software-defined radio (SDR), sensor fusion.

Solmaz Kia
Associate Professor of Mechanical and Aerospace Engineering
Research Interests: Systems and control; decentralized/distributed algorithm design for multi-agent systems; cooperative navigation; sensor fusion; fault detection.

Haithem Taha
Associate Professor of Mechanical and Aerospace Engineering
Research Interests: Geometric nonlinear control theory; unsteady aerodynamics and aeroelasticity; optimization, calculus of variations and optimal control; flight dynamics and autopilot design; airplane performance and configuration aerodynamics.

Zak Kassas
Associate Professor of Mechanical and Aerospace Engineering
Research Interests: Machine learning, Neural network control, Robust control.
Dynamics and Controls - **Courses**

- **MAE206 Nonlinear Optimization Methods**
- **MAE241 Dynamics**
- **MAE270A Linear Systems I**
- **MAE 239 Dynamics of Unsteady Flow**
- **MAE 270B Linear Systems II**
- **MAE 272 Robust Control**
- **MAE 273 Robot Control**
- **MAE 274 Optimal Control**
- **MAE 275 Nonlinear Feedback**
- **MAE 276 Geometric Nonlinear Control**
- **MAE 277 Learning Control Systems**
- **MAE 278 Estimation/Filtering**
- **MAE 295 Inertial Navigation**
- **MAE 295 Networks & Control**
- **MAE 295 Stochastic Control**
- **MAE 295 Satellite Systems**

**ENGRMAE 275. Nonlinear Feedback Systems.** 4 Units.

Advanced tools for feedback control system analysis and synthesis. Norms, operators, Lp spaces, contraction mapping theorems, Lyapunov techniques along with their extensions. Circle criterion positivity and passivity. Applications to nonlinear control methods, such as sliding mode or adaptive techniques.

Prerequisite: ENGRMAE 270B

Restriction: Graduate students only.
Fluid Dynamics and Propulsion - Research

Areas of Interest
- Aeroacoustics
- Aeroelasticity
- Biomedical Flows
- Combustion Theory
- Computational Fluid Dynamics
- Electrosprays
- Jet & Rocket Propulsion
- Multiphase Flow
- Turbomachinery
- Turbulence
Fluid Dynamics and Propulsion - Faculty

Said Elghobashi
Distinguished Professor Emeritus of Mechanical and Aerospace Engineering

Research Interests:
Direct numerical simulation of turbulent chemically reacting and dispersed two-phase flows.

Manuel-Gamero
Professor of Mechanical and Aerospace Engineering

Research Interests:
Electric propulsion, colloidal thrusters, electrosprays.

Perry Johnson
Assistant Professor of Mechanical and Aerospace Engineering

Research Interests:
Turbulent flows, particle-laden and multiphase flows, turbulent boundary layers, large-eddy simulations, scientific computing.

John LaRue
Professor Emeritus of Mechanical and Aerospace Engineering

Research Interests:
Fluid mechanics, heat transfer, turbulence.

Feng Liu
Professor of Mechanical and Aerospace Engineering

Research Interests:
Computational fluid dynamics, turbomachinery, propulsion.

Bihter Padak
Assistant Professor of Mechanical and Aerospace Engineering

Research Interests:
Combustion, reaction kinetics, and emissions control technologies.

Xian Shi
Assistant Professor of Mechanical and Aerospace Engineering

Research Interests:
Next-generation energy conversion and propulsion technologies through studying the fundamental physics and chemistry of reacting flows and materials.
Fluid Dynamics and Propulsion - Faculty

Dimitri Papamoschou
Professor of Mechanical and Aerospace Engineering
Research Interests:
Aeroacoustics, compressible turbulence.

Roger Rangel
Department Chair and Professor of Mechanical and Aerospace Engineering
Research Interests:
Heat transfer, spray combustion, two-phase flows, fluid instability and atomization.

William Strigannano
Distinguished Professor of Mechanical and Aerospace Engineering
Research Interests:
Combustion theory, multiphase flows, turbulent reacting flows, computational methods. Rocket and jet propulsion, gas turbine and internal combustion engines.

Haithem Taha
Associate Professor of Mechanical and Aerospace Engineering
Research Interests:
Geometric nonlinear control theory; unsteady aerodynamics and aeroelasticity; optimal control; flight dynamics and autopilot design.

Jacqueline Thomas
Assistant Professor of Mechanical and Aerospace Engineering
Research Interests:
Design of aircraft systems and operations, aviation environmental impacts, aeroacoustics.

William Sirignano
Distinguished Professor of Mechanical and Aerospace Engineering
Research Interests:
Combustion theory, multiphase flows, turbulent reacting flows, computational methods. Rocket and jet propulsion, gas turbine and internal combustion engines.
Fluid Dynamics and Propulsion - **Courses**

- **MAE 230A Inviscid Incompressible Fluid Mechanics I**
- **MAE 230B Viscous Incompressible Fluid Dynamics II**
- **MAE 230C Compressible Fluid Dynamics**
- **MAE 230D Theoretical Foundations of Fluid Mechanics**
- **MAE 231 Fundamentals of Turbulence**
- **MAE 233 Turbulent Free Shear Flows**
- **MAE 236 Nonequilibrium Gas Dynamics**
- **MAE 237 Computational Fluid Dynamics**
- **MAE 239 Dynamics of Unsteady Flows**

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**ENGRMAE 231 Fundamentals of Turbulence. 4 Units.**


Prerequisite: ENGRMAE 230A and ENGRMAE 230B

Restriction: Graduate students only.
**Mechanics of Materials and Structures - Research**

**Areas of Interest:**
- Nanoscale Mechanics
- Morphing Structures
- Active Materials
- Machine Learning
- Defect Formation/Propagation
- Deformation and Failure
- Advanced Manufacturing
- Composites
- Stretchable Sensors
Mechanics of Materials and Structures - Faculty

Ramin Bostanabad
Assistant Professor of Mechanical and Aerospace Engineering
Research Interests: Design under uncertainty, probabilistic machine learning, materials informatics, computational microstructure characterization, topology optimization.

Penghui Cao
Assistant Professor of Mechanical and Aerospace Engineering; Materials Science and Engineering
Research Interests: Morphing structures, deployable structures, origami, tensegrity, active materials, structural optimization.

Edwin Peraza Hernandez
Assistant Professor of Mechanical and Aerospace Engineering
Research Interests: Fundamental understanding of the mechanisms by which materials plasticity deform and fail, particularly in extreme environments.

SungWoo Nam
Associate Professor in Mechanical and Aerospace Engineering
Research Interests: Materials, mechanics and multifunctionality; understanding mechanically coupled properties in low-dimensional materials; building devices based on advanced materials.

Tim Ruppert
Associate Professor in Materials Science and Engineering
Research Interests: Optimal design, fabrication and experimental characterization of micro-architected materials.

Lorenzo Valdevit
Professor in Materials Science and Engineering
Professor (Joint Appt.) in Mechanical and Aerospace Engineering
Director: Institute for Design and Manufacturing Innovation (IDMI)
Research Interests: Mechanics of multifunctional materials, building energy efficiency.

Mark Walter
Professor of Teaching in Mechanical and Aerospace Engineering
Research Interests:
Mechanics of Materials and Structures - Courses

- **MAE 254** Mechanics of Solids and Structures (Continuum Mechanics)
- **MAE 258** Mechanical Behavior of Solids - Continuum Theories (Materials Modeling)
- **MAE 259** Mechanical Behavior of Solids - Atomistic Theories
- **MAE 207** Advanced Finite Elements
- **MAE 248** Mechanics of Smart Structures
- **MAE 255** Composite Materials and Structures
- **MAE 256** Nanomechanics
- **MAE 282** Engineering Design Under Uncertainty
- **MAE 295** Failure and Fracture

**ENGRMAE 256. Nanomechanics. 4 Units.**

Nanoscale materials and the experimental and computational techniques used to measure their properties. Mechanical behavior is the main focus, but other material properties such as diffusion and electron transport are discussed.

Restriction: Graduate students only.
Areas of Interest

- Design and control of MEMS
- Machine information systems integration
- Computer Aided Design
- Robotics including microrobotics
- Biomechanics

- Carbon- and Magnetic MEMS
- CD-Based Fluidics
- Rehabilitation, prosthetics and exoskeletons
- Kinematics of spatial motion
- Design of Mechanical Systems
Systems and Design - Faculty

Natasha T. Buswell
Assistant Professor of Teaching in Mechanical and Aerospace Engineering

Research Interests:
Graduate engineering education, faculty development, engineering teaching, engineering education research methods.

Donald Dabdub
Professor of Mechanical and Aerospace Engineering; Civil and Environmental Engineering

Research Interests:
Mathematical modeling of urban and global air pollution, dynamics of atmospheric aerosols, secondary organic aerosols, impact of energy generation on air quality, chemical reactions at gas-liquid interfaces.

Lawrence Kulinsky
Adjunct Professor of Mechanical and Aerospace Engineering

Research Interests:
Micro- and nano-manufacturing, hybrid manufacturing, microfluidics, electrokinetic phenomena, BioMEMs, personalized diagnostics, and drug delivery.

Marc Madou
Distinguished Professor of Mechanical and Aerospace Engineering

Research Interests:
Design of mechanical systems, computer aided design, kinematic theory of spatial motion.

J. Michael McCarthy
Director of the Performance Engineering Program and Professor of Mechanical and Aerospace Engineering

Research Interests:
Design of mechanical systems, computer aided design, kinematic theory of spatial motion.

David Reinkensmeyer
Professor of Mechanical and Aerospace Engineering; Anatomy and Neurobiology; Biomedical Engineering; Physical Medicine and Rehabilitation

Research Interests:
Robotics, mechatronics, biomedical engineering, rehabilitation, biomechanics, neural control of movement.

Lawrence Kulinsky

Marc Madou

J. Michael McCarthy

David Reinkensmeyer

MAE Graduate Orientation Fall 2021
Systems and Design - Faculty

Nina Robson
Associate Adjunct Professor of Mechanical and Aerospace Engineering
Research Interests: Kinematics, mechanical systems design, robotics, biomechanics.

Andrei Shkel
Professor of Mechanical and Aerospace Engineering; Biomedical Engineering; Electrical Engineering and Computer Science
Research Interests: Design and advanced control of (MEMS); High-precision micro-machined gyroscopes; MEMS-enhanced optical systems; Electro-mechanical and machine-information systems integration.

Jacqueline Thomas
Assistant Professor of Mechanical and Aerospace Engineering
Research Interests: Design of aircraft systems and operations, aviation environmental impacts, aeroacoustics.

Camilo Velez
Assistant Professor of Mechanical and Aerospace Engineering

Alexandra Voloshina
Assistant Professor of Mechanical and Aerospace Engineering
Research Interests: Rehabilitation robotics, prosthetics, exoskeletons, locomotion biomechanics.

David Reinkensmeyer demonstrates one of his robotic devices created to help patients recover hand and arm function after neurologic damage caused by stroke or spinal cord injury.
Systems and Design - Courses

- MAE 242  Robotics
- MAE 244  Theoretical Kinematics
- MAE 245  Spatial Mechanism Design
- MAE 212  Electrochemistry for Engineers
- MAE 247  Micro-System Design
- MAE 249  Micro-Sensors and Actuators
- MAE 250  Bio-Robotics
- MAE 252  Fundamentals of Microfabrication
- MAE 253  BIOMEMS
- MAE 280  Design of computer controlled robots
- MAE 281  Design for Human Movement
- MAE 282  Computational Methods in Design
- Engr 265  Advanced Manufacturing Choices
- MAE 279  Special Topics in Mechanical Systems
- ENGR 290  Developing Teaching Excellence
- MAE 295  Academic Writing in Engineering
- MAE 295  Small-Scale Robotics (new on fall)

*MAE 242  Robotics*
*MAE 244  Theoretical Kinematics*
*MAE 245  Spatial Mechanism Design*
*MAE 212  Electrochemistry for Engineers*
*MAE 247  Micro-System Design*
*MAE 249  Micro-Sensors and Actuators*
*MAE 250  Bio-Robotics*
*MAE 252  Fundamentals of Microfabrication*
*MAE 253  BIOMEMS*
*MAE 280  Design of computer controlled robots*
*MAE 281  Design for Human Movement*
*MAE 282  Computational Methods in Design*
*Engr 265  Advanced Manufacturing Choices*
*MAE 279  Special Topics in Mechanical Systems*
*ENGR 290  Developing Teaching Excellence*
*MAE 295  Academic Writing in Engineering*
*MAE 295  Small-Scale Robotics (new on fall)*

**ENGRMAE 252. Fundamentals of Microfabrication. 4 Units.**

Introduces Engineering and Science students to the science of miniaturization. Different options to make very small machines (micro and nano size) are reviewed, materials choices are discussed, scaling laws are analyzed, and many practical applications are listed.

Restriction: Graduate students only.
Thermal and Transport Sciences - Research

Areas of Interest
• Combustion and Emissions
• Fuel Cell Technologies
• Advanced Energy Systems
• Renewable Energy

• Heat Transfer
• Atomization and Sprays
• Reaction Kinetics
• Nanomaterials
Jacob Brouwer  
Professor of Mechanical and Aerospace Engineering; Civil and Environmental Engineering  
**Research Interests:** Fuel cells, energy systems dynamics, electrochemical systems design and analysis, chemical kinetics, reacting flows.

Derek Dunn-Rankin  
Professor Emeritus of Mechanical and Aerospace Engineering; Civil and Environmental Engineering; Environmental Health Sciences  
**Research Interests:** Combustion, optical particle sizing, particle aerodynamics, laser diagnostics and spectroscopy.

Jaeho Lee  
Associate Professor of Mechanical and Aerospace Engineering  
**Research Interests:** Heat transfer, electronics cooling, energy harvesting, photonics, microdevices, and nanomaterials.

Vince McDonell  
Adjunct Professor of Mechanical and Aerospace Engineering  
**Research Interests:** Combustion, alternative fuels, gas turbines, sprays, diagnostics, combined heat and power, emissions, autoignition/flashback

Bihter Padak  
Assistant Professor of Mechanical and Aerospace Engineering  
**Research Interests:** Combustion, reaction kinetics, and emissions control technologies.
G. Scott Samuelsen
Director of Advanced Power and Energy Program, Research Professor and Professor Emeritus of Mechanical and Aerospace Engineering; Civil and Environmental Engineering

Research Interests:
Combustion, sprays, laser diagnostics, air quality, turbulent transport, alternative fuels, modeling reacting flows, practical systems, energy and environmental conflict.

William Sirignano
Distinguished Professor of Mechanical and Aerospace Engineering

Research Interests:
Combustion theory, multiphase flows, turbulent reacting flows, computational methods. Rocket and jet propulsion, gas turbine and internal combustion engines.

Yun Wang
Professor of Mechanical and Aerospace Engineering

Research Interests: Fuel cells, computational modeling, thermo-fluidics, two-phase flows, electrochemistry, CFD, turbulent combustion.

Yoonjin Won
Associate Professor of Mechanical and Aerospace Engineering

Research Interests: Multi-scale structures for thermal and energy applications, in particular fabrication, characterization, and integration of structured materials.
ENGRMAE 260. Current Issues Related to Air Quality, Climate, and Energy. 4 Units.

Current issues related to the atmosphere, climate, and air quality in the context of energy conversion and sustainability. Topics include transportation systems; building design; impacts on humans and ecosystems; modeling and meteorology; economics; and application to public policies.

Prerequisite: ENGRMAE 261 or CHEM 245 or EARTHSS 240

Restriction: Graduate students only.

• MAE 216 Statistical Thermodynamics
• MAE 217 Generalized Thermodynamics
• MAE 220 Conduction Heat Transfer
• MAE 221 Convective Heat Transfer
• MAE 210 Advanced Fundamentals of Combustion
• MAE 212 Engineering Electrochemistry: Fundamentals and Applications
• MAE 214A Fuel Cell Fundamentals and Technology
• MAE 214B Fuel Cell Systems and Degradation
• MAE 214C PEM Fuel Cells
• MAE 215 Advanced Combustion Technology
• MAE 224 Advanced Transport Phenomena
• MAE 227 Thermal Resistance Analysis in Microdevices and Nanomaterials
• MAE 228 Nanoscale Phase Change Transport Physics
• MAE 260 Current Issues Related to Air Quality, Climate, and Energy
• MAE 295 Chemical Kinetics and Simulations
Aerospace Engineering

A broad theme that encompasses many research and educational activities in MAE, including:

- Aircraft systems design and operations
- Innovative engine cycles for airbreathing propulsion
- Electrified propulsion for aircraft
- Subsonic and supersonic aerodynamics
- Dynamics and control of aerospace vehicles, including geometric nonlinear control
- Aeroacoustics of integrated aerial platforms
- Aeroelasticity and morphing structures
- Spacecraft propulsion
- Autonomy and Cyber Physical Systems
- Navigation Systems
Aerospace Engineering - Faculty

Manuel Gamero Castano
Professor of Mechanical and Aerospace Engineering
Research Interests:
Electric propulsion, colloidal thrusters, electrosprays.

Edwin Peraza Hernandez
Assistant Professor of Mechanical and Aerospace Engineering
Research Interests:
Morphing structures, deployable structures, origami, tensegrity, active materials, structural optimization.

Zak Kassas
Associate Professor of Mechanical and Aerospace Engineering
Research Interests:
Cyber-physical systems (CPS), autonomous vehicles (aerial, ground, underwater), satellite-based navigation, intelligent transportation systems (ITS), cognitive and software-defined radio (SDR), sensor fusion.

Solmaz Kia
Associate Professor of Mechanical and Aerospace Engineering
Research Interests:
Systems and control; decentralized/distributed algorithm design for multi-agent systems; cooperative navigation; sensor fusion; fault detection.

Robert Liebeck
Distinguished Adjunct Professor of Mechanical and Aerospace Engineering
Research Interests:
Aerodynamics, hydrodynamics, and aircraft design.
Aerospace Engineering - Faculty

Feng Liu
Professor of Mechanical and Aerospace Engineering
Research Interests:
Computational fluid dynamics, turbomachinery, propulsion.

Dimitri Papamoschou
Professor of Mechanical and Aerospace Engineering
Research Interests:
Aeroacoustics, compressible turbulence.

William Sirignano
Distinguished Professor of Mechanical and Aerospace Engineering
Research Interests:
Combustion theory, multiphase flows, turbulent reacting flows, computational methods. Rocket and jet propulsion, gas turbine and internal combustion engines.

Haithem Taha
Associate Professor of Mechanical and Aerospace Engineering
Research Interests:
Geometric nonlinear control theory; unsteady aerodynamics and aeroelasticity; optimal control; flight dynamics and autopilot design.

Jacqueline Thomas
Assistant Professor of Mechanical and Aerospace Engineering
Research Interests:
Design of aircraft systems and operations, aviation environmental impacts, aeroacoustics.
About MAE-GSA

✓ **Student-run** organization with a focus on improving the academic lives of graduate students in the MAE department

✓ Enhance your educational experience through **mentorship, outreach, and social activities.**

✓ Provide **guidance and support** for your academic life
  ✓ Relationship with your PI
  ✓ Issues working as a TA or Grader
  ✓ Masters degree requirements, Preliminary exam, etc.

✓ Provide **information sessions** to prepare you for a career after graduation

@MAE.GSA

@UCIMAEAGSA

Are you Interested to Join Us? Let Us Know: maegsa@uci.edu
MAE GSA Members

**President:** Marzieh Ataei

**VP Internal:** Mahmoud Abdelgalil

**VP External:** Asmaa Eldesoukey

**Outreach Coordinator:** Chico Chi-shih Jao

**Available positions:** International Student Rep, Masters Student Rep, Secretary, Treasurer, Web Master, Publicity, Faculty Ambassador

Are You Interested in Joining Us?  
Email us: maegsa@uci.edu
Dr. Fadi Kurdahi
Associate Dean

Jean Bennett
Director
jean.bennett@uci.edu
Primarily works with MSEM, M.Eng, and Computational Science JDP

Mark Banderas
Graduate Counselor
mark.banderas@uci.edu
Primarily works with all MS and PhD students
For non-F1 or J1 visa holders

For F1 or J1 visa holders

After IC approval
Full-time

• 12 units minimum
• 16 units maximum
• 17+ units – need to email GPS Graduate Counselor for approval
• Required every quarter until graduation

Part-time

• 1 units minimum
• 8 units maximum
• For domestic MS students only
• For international MS students in their last quarter only
• Requires form and approval by certain deadline

**ABSOLUTE REGISTRATION DEADLINE:** Friday of Week 3 @ 4:00pm

**ADD/DROP/UNIT CHANGE DEADLINE:** Friday of Week 2 @ 5:00pm

Missed Deadline?
Submit electronic Enrollment Exception through StudentAccess
No guarantee that request will be approved
All Students:
- 3.0 GPA or higher
- Passing courses = B or higher or Satisfactory (S)
  - P/NP courses = not acceptable toward degree
  - Academic Conditional Status = lower than 3.0 GPA OR 2 Consecutive Term GPAs lower than 3.0

PhD Students:
- Match with PhD advisor by end of 1st year and maintain an advisor at all times
- Stay within normative time (see catalogue for specific timelines)
CHOOSE OPTION
Plan I: Thesis
Plan II: Non-Thesis

Plan I: Thesis
Begin coursework
Submit Plan of Study to Grad Coordinator
Identify thesis advisor and topic
Advancement to Candidacy must be submitted at least one quarter prior to graduation
Complete thesis and exit survey, submit thesis University Archives

Plan II: Non-Thesis
Begin coursework
Submit Plan of Study to Grad Coordinator
Continue coursework
Advancement to Candidacy must be submitted at least one quarter prior to graduation
Complete coursework and exam/project (differs by department) and exit survey
Steps to a Ph.D. Degree

1. Choose research advisor
2. Complete any necessary coursework
3. Take preliminary exam
4. Continue research and choose dissertation topic
5. Nominate qualifying committee
6. Take qualifying exam and submit PhD Form I
7. Select doctoral committee
8. Complete dissertation
9. Defend dissertation and submit PhD Form II
10. Submit dissertation to university archives, submit exit survey
• You can find a list of course descriptions as well as your requirements in the [2021-22 UCI General Catalogue](https://catalog.uci.edu/).

• You can find the policies and procedures to guide you through your graduate study in the [Engineering Graduate Student Handbook](https://www.uci.edu/graduate-studies/graduate-student-handbook/).

• Also refer to your departmental handbook for additional/specific requirements.

• Additional policy information can be found on the [Graduate Division Forms](https://www.uci.edu/graduate-studies/forms/).
Contact Graduate and Professional Studies

- "I need help planning my classes" OR "I want to graduate in...." – academic advising

- "What do I need to do for.... (advancing to candidacy, taking my qualifying exam, defending my dissertation, etc.)" – we send important information to you when appropriate

- "I need the Associate Dean's signature" – this request is most likely for a DocuSign form. If so, the form will be routed to our office so we can get the signature for you

- "I am going on CPT" - we can provide you with authorization to enroll in the necessary course and obtain required signature

- "I have concerns about my research lab/research advisor" - we are here to listen and counsel you on how to proceed depending on the situation
Campus Resources

Division of Career Pathways

Counseling Center

Graduate Division

Graduate & Postdoctoral Scholar Resource Center

International Center

Libraries