Our primary goal is to educate our students to become future leaders in engineering, science, technology, and beyond, leading the way toward improving society’s quality of life.

MechSE faculty members are internationally recognized because of their diverse research areas and excellence in teaching. In addition, MechSE enthusiastically engages undergraduate students in their world-class research programs. Our laboratories give students hands-on experience in a wide range of subject areas.

• The Materials Testing Laboratory provides students with the unique opportunity to see materials tested to failure, which provides young engineers with the insight to design components based on material properties.
• The Forced Vibration and Manufacturing Instructional Laboratory provides students with the knowledge to learn the effects and control of vibrations in machinery and structures. The Ford Concurrent Design and Manufacturing Instructional Laboratory allows students to follow designs through to fabrication and conduction, convection, and radiation first-hand.
• The Robotics and Automation Laboratory focuses on the design, development, and implementation of robotic systems. The Laboratory features the latest in robotics technology and research, including a range of robots from small pick-and-place systems to large industrial robots. The laboratory is equipped with state-of-the-art machinery and equipment, including computer-aided design (CAD) and computer-aided manufacturing (CAM) systems. The laboratory also has a machine shop where students can build and test robotic systems.
• The Innovation Studio is a space for students to develop their entrepreneurial skills and bring their ideas to fruition. The studio provides students with the tools and resources they need to turn their ideas into reality, including access to equipment, space, and guidance from faculty and industry partners.

Other labs provide a wide range of hands-on experience involving fluid mechanics, internal combustion engines, hydraulics, mechanics, control, micro- and nanotechnology, and metrology.

The Mechanical Engineering (ME) and Engineering Mechanics (EM) curricula offer a wide variety of courses, including a design class sequence beginning in the freshman year with ME 131 (Computer-Aided Design). Students in their sophomore year take ME 232 (Design for Machined Parts) and ME 332 (Design for Non-Machined Parts). They then have the option of enrolling in a new design course, ME 390 DD, to experience an extramural design project or engage in a design competition. Design work continues into the junior year with ME 370 (Mechanical Design I) and ME 371 (Mechanical Design II). During their senior year, students design full-scale projects, such as vehicles, buildings, or machinery, that they can build and test in the lab. The senior design project is a capstone experience that allows students to apply the knowledge and skills they have learned throughout their college education. The project is typically completed in a team environment, with each team member responsible for a specific aspect of the project. The project is presented at a regional or national conference, and the students have the opportunity to network with professionals in the field and potential employers.

The department strongly supports student participation in design competitions, which provide students with the opportunity to showcase their design skills and compete against other colleges and universities. Students have participated in competitions such as the Shell Eco-marathon, the Solar Car Challenge, and the Formula SAE Competition. These competitions encourage students to apply their knowledge and skills to real-world problems and to develop innovative solutions.

MechSE students are encouraged to develop their critical thinking skills by solving complex problems and working with teams. The faculty is dedicated to providing a challenging and supportive learning environment that prepares students for success in the workplace and beyond.

The feniks, world-changing, society-shaping research that is conducted in the labs. The department views its students as future leaders in this field and encourages them to take an active role in recruiting talented students from around the world. The MechSE curriculum allows student to develop the critical thinking and problem-solving skills that will be necessary in the future work force. The students learn how to conduct research, analyze data, and communicate their findings. The faculty is dedicated to providing a challenging and supportive learning environment that prepares students for success in the workplace and beyond.

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OUR COLLABORATIVE EFFORTS
Our department is dedicated to fostering the growth of researchers into increasingly close contact with researchers in other departments, universities, and industries. Contact us for information about upcoming seminars, Research Faculty and Lecturers, and other opportunities.

RESEARCH FACULTY

Herman Krier
Cham
Emad Jassim
D. Scott Stewart
Blake Johnson
Shao Lee Soo
Professor Emeritus
Ph.D., Cornell
Lecturer / Ph.D., Certified Institute of Technology, 1987
Lecturer and Senior Research Engineer / Ph.D., Pennsylvania State University
Mechanical Engineering
775          814           869         886        893

DEGREES GRANTED
• Frederick Seitz Materials Research Laboratory (MRL)
• Computational Science and Engineering (CSE)
• Air Conditioning and Refrigeration Center (ACRC)

Our science-based approach brings MechSE researchers into increasingly tight confines of the microcirculation; seeking means of reducing the noise of jet propulsion.

Jonathan Freund:
Current research:
• Fully functional parallel-kinematics two and three degree-of-freedom MEMS and nanoscale mechanisms
• Micro-machining technology based on the use of MMTs and integration of micro/nanotechnology

Nasim Khajehhosseini:
Current research:
• Nanomechanics of electronic and photonic materials
• Nanoscale interactions with end-use energy applications

Amy LaViers:
Current research:
• Power electronics and power chargers; power electronics systems, as well as for manipulating and probing complex systems

Arend van der Zande:
Current research:
• Development of techniques for manipulating and probing complex systems

Amit Lakhmi:
Current research:
• Development of techniques for manipulating and probing complex systems

Sascha Hilgenfeldt:
Current research:
• Development of techniques for manipulating and probing complex systems

We need to improve our understanding of the underlying principles of these phenomena. Only then can we develop new technologies and applications that will benefit society.

Every day, our researchers are pushing the boundaries of knowledge and making significant contributions to science and technology. We are committed to excellence in research and education.

DONATE TO MECHSE

Support our mission to educate the future leaders of engineering.

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