DEPARTMENT OF MECHANICAL ENGINEERING

Mechanical engineering is a highly diversified profession. The mechanical engineer designs machines, devices, various products and control systems, and works with the generation, conversion, transmission, and utilization of mechanical and thermal power. Assignments often include analysis and synthesis of mechanical, thermal, and fluid systems. Mechanical engineers are also responsible for characterization, specification, and analysis of materials used in design and manufacturing. Manufacturing systems, robotics, electromechanical devices, and control systems are also the purview of the mechanical engineer. Graduates in mechanical engineering are among the most versatile engineers and enjoy professional employment in industry, government, consulting, and research organizations. The undergraduate program in Mechanical Engineering at Texas A&M University is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

The work of mechanical engineers varies from general engineering to numerous, narrow specialties, as required by the wide variety of employers. A general list, though not in any way exhaustive, of the areas of professional employment opportunities available to mechanical engineers includes: design, construction, controls, materials specification and evaluation, analysis of thermal systems, fluid and solid mechanics, manufacturing, plant engineering, research and development, and technical sales. Many mechanical engineers are promoted to management and administrative positions as well.

The mission of the Department of Mechanical Engineering is to serve the students of Texas A&M University, the State of Texas, and the nation by:

- providing quality education that is well-grounded in the fundamental principles of engineering, fostering innovation and preparing students for leadership positions and successful careers in industry, government, and academia;
- advancing the knowledge base of mechanical engineering to support the competitiveness of existing industry and to spawn new economic development in Texas and the nation through active involvement in basic and applied research in a global context; and
- successfully pursue life-long learning and advanced study opportunities, and subsequently contribute to the development of advanced concepts and leading edge technologies.

The objectives of the Mechanical Engineering program are to produce graduates who will:

- have successful careers, and become leaders, in industry and the public sector;
- appropriately apply acquired knowledge, work well with other people, effectively communicate ideas and technical information, and continue to learn and improve; and
- successfully pursue advanced studies, if they so choose, opportunities, and subsequently contribute to the development of advanced concepts and leading edge technologies.

The educational outcomes for the Mechanical Engineering program are that students will attain:

- an ability to apply knowledge of mathematics, science and engineering;
- an ability to design and conduct experiments, as well as to analyze and interpret data;
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- an ability to function on multi-disciplinary teams;
- an ability to identify, formulate and solve engineering problems;
- an understanding of professional and ethical responsibility;
- an ability to communicate effectively;
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- a recognition of the need for, and an ability to engage in life-long learning;
- a knowledge of contemporary issues; and
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Mechanical engineers should possess a thorough understanding of engineering science as well as analytical and practical skills in one of many basic mechanical engineering specialties. The mechanical engineering curriculum at Texas A&M requires students to develop and apply logical thinking, innovative approaches, and ethical standards as a prerequisite for professional competence. The curriculum consists of basic theory courses complemented by laboratory experiences in dynamic systems and controls, design, experimentation, fluid mechanics, heat transfer, manufacturing, and materials. Elective courses are offered in numerous areas including air conditioning, automotive engineering, computer-aided design, control systems, corrosion, energy conversion, internal combustion engines, manufacturing, materials, mechanical design, polymers, mechatronics, metallurgy, power generation, robotics, stress analysis, fluid mechanics, turbomachinery, and others. The selection of elective courses is dictated by the interests and goals of the student, working with departmental advisors and within the curriculum guidelines.

Many students enhance their education by participating in cooperative education and/or professional internships, which offer opportunities for employment in engineering positions while working toward a degree. Numerous study abroad programs are also available for gaining experience and perspectives in the international arena. Participation in student chapters of professional and honor societies provides leadership opportunities, collegial activities, and learning experiences outside the classroom. Many students also participate in research projects through individual directed studies courses with a professor. The mechanical engineering program culminates with a senior capstone design course sequence highlighted by real-life projects sponsored by various industries. Students benefit from the challenges and gratification that come through direct interaction with practicing engineers.

Before commencing course work in the major, students must be admitted to the major or have the approval of the department.

Faculty

Allaire, Douglas L, Assistant Professor
Mechanical Engineering
PHD, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 2009
Alvarado, Jorge L, Professor (courtesy appointment)
Mechanical Engineering
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Gao, Huajian, Visiting Professor
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Hipwell, M Cynthia, Professor
Mechanical Engineering
PHD, University of California-Berkeley, 1996
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<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
<th>Institution</th>
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<tr>
<td>Hogan, Harry A, Professor</td>
<td>Mechanical Engineering</td>
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<td>Hsieh, Sheng-Jen, Professor (courtesy appointment)</td>
<td>Mechanical Engineering</td>
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<td>Hung, Nguyen P, Associate Professor (courtesy appointment)</td>
<td>Mechanical Engineering</td>
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<td>Hur, Pilwon, Assistant Professor</td>
<td>Mechanical Engineering</td>
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<td>Mechanical Engineering</td>
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<td>Jarrahhashi, Dorrin, Assistant Professor</td>
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<td>Karaman, Ibrahim, Professor (courtesy appointment)</td>
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<td>Kim, Haejune, Assistant Professor of Instruction</td>
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<td>Kim, Won-Jong, Associate Professor</td>
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<td>Kim, Yong-Joe, Associate Professor</td>
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<td>Kimber, Mark, Assistant Professor (courtesy appointment)</td>
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<td>Kulatilaka, Waruna D, Associate Professor</td>
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<td>Lacy, Thomas E., Professor</td>
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<td>Layton, Astrid C, Assistant Professor</td>
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<td>Lee, ChaBum, Assistant Professor</td>
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<td>Lewis, Heather S, Lecturer</td>
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<td>MEN, North Carolina State University, 2000</td>
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<td>Liang, Hong, Professor</td>
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<td>Malak Jr, Richard J, Associate Professor</td>
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<td>McAdams II, Daniel A, Professor</td>
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<td>McVay, Matilda W, Instructional Associate Professor</td>
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<td>Muliana, Hanifah, Professor</td>
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<td>Needleman, Alan, Professor (courtesy appointment)</td>
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<td>Palazzolo, Alan B, Professor</td>
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</table>
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Majors
- Bachelor of Science in Mechanical Engineering (http://catalog.tamu.edu/undergraduate/engineering/mechanical/bs)

Minors
• Control of Mechanical Systems Minor (http://catalog.tamu.edu/undergraduate/engineering/mechanical/control-mechanical-systems-minor)
• Design and Simulation of Mechanical Systems Minor (http://catalog.tamu.edu/undergraduate/engineering/mechanical/design-simulation-mechanical-systems-minor)