What is 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.

Where do Mechanical Engineers Work?

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.

Mechanical Engineering at Texas A&M

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.

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.

Experiential Education in Mechanical Engineering

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. The full bachelors program is offered on College Station and Qatar campuses. All mechanical engineering undergraduate coursework is offered on both campuses, whereas some coursework is offered via distance learning.

Faculty

Aguilar-Mendoza, Guillermo, Professor
Mechanical Engineering
PHD, University of California - Santa Barbara, 1999

Albakri, Mohammad, Engineering Assistant Professor
Mechanical Engineering-Qatar Campus
PHD, Virginia Polytechnic Institute and State University, 2016

Allaire, Douglas L, Associate Professor
Mechanical Engineering
PHD, Massachusetts Institute of Technology, 2009

Ambrose, Robert, Professor
Mechanical Engineering
PHD, University of Texas at Austin, 1991
Amiri, Ahmad, Research Assistant Professor  
Mechanical Engineering  
PHD, Texas A&M University, 2022  
PHD, Texas A&M University, 2022  
PHD, University of Malaya, 2017

Anand, Nagamangala, Regents Professor  
Mechanical Engineering  
PHD, Purdue University, 1983

Antao, Dion S, Assistant Professor  
Mechanical Engineering  
PHD, Drexel University, 2013

Balas, Mark, Professor  
Mechanical Engineering  
PHD, University of Denver, 1974

Balawi, Shadi Omar, Instructional Associate Professor  
Mechanical Engineering  
PHD, University of Cincinnati, 2007

Bandyopadhyay, Arkasama, Research Assistant Professor  
Mechanical Engineering  
PHD, University of Texas Austin, 2020

Banerjee, Debjyoti, Professor  
Mechanical Engineering  
PHD, University of California at Los Angeles, 1999

Benjamin, Chandler C, Assistant Professor  
Mechanical Engineering  
PHD, University of Wisconsin, Madison, 2017

Borazjani, Iman, Associate Professor  
Mechanical Engineering  
PHD, University of Minnesota, 2008

Charoenphol, Phapanin, Instructional Assistant Professor  
Mechanical Engineering  
DEN, University of Michigan, 2012

Claridge, David E, Professor  
Mechanical Engineering  
PHD, Stanford University, 1976

Cooper, Marcia, Associate Professor  
Mechanical Engineering  
PHD, California Institute of Technology, 2004

Cope, Dale A, Associate Professor of the Practice  
Mechanical Engineering  
PHD, Wichita State University, 2002

Corleto, Carlos Roberto, Professor of the Practice  
Mechanical Engineering  
PHD, Texas A&M University, 1990

Darbha, Swareesha V, Professor  
Mechanical Engineering  
PHD, University of California at Berkeley, 1994

Delgado, Adolfo, Associate Professor  
Mechanical Engineering  
PHD, Texas A&M University, 2008

El Borgi, Sami, Professor  
Mechanical Engineering-Qatar Campus  
PHD, Cornell University, 1993

Elliott, Matthew, Instructional Associate Professor  
Mechanical Engineering  
PHD, Texas A&M, 2013

Erdemir, Ali, Professor  
Mechanical Engineering  
PHD, Georgia Institute of Technology, 1986

Felts, Jonathan R, Associate Professor  
Mechanical Engineering  
DEN, University of Illinois Urbana Champaign, 2013

Fenton Friesen, Rebecca, Assistant Professor  
Mechanical Engineering  
PHD, Northwestern University, 2020

Gao, Wei, Associate Professor  
Mechanical Engineering  
PHD, University of Texas, 2014  
PHD, University of Texas at Austin, 2014

Gopalswamy, Swaminathan, Research Professor  
Mechanical Engineering  
PHD, University of California, 1991

Grunlan, Jaime C, Professor  
Mechanical Engineering  
PHD, University of Minnesota, 2001

Guo, Bing, Associate Professor  
Mechanical Engineering-Qatar Campus  
PHD, Tsinghua University, China, 1998

Haglund, John S, Instructional Associate Professor  
Mechanical Engineering  
PHD, Texas A&M University, 2003

Han, Je C, Distinguished Professor  
Mechanical Engineering  
PHD, Massachusetts Inst of Technology, 1977

Hasnain, Zohaib, Assistant Professor  
Mechanical Engineering  
PHD, University of Maryland, 2014

Hassan, Ibrahim, Professor  
Mechanical Engineering-Qatar Campus  
PHD, Manitoba University, 1995

Hassan, Yassin A, University Distinguished Professor and Regents Professor  
Mechanical Engineering  
PHD, University of Illinois, 1980

Hipwell, M Cynthia, Professor  
Mechanical Engineering  
PHD, University of California at Berkeley, 1996

Hogan, Harry A, Professor  
Mechanical Engineering  
PHD, Texas A&M University, 1984
Hubbard Jr, James, University Distinguished Professor
Mechanical Engineering
PHD, Massachusetts Institute of Technology, 1982

Jacobs, Timothy J, Professor
Mechanical Engineering
PHD, University of Michigan, 2005

Jarrahbashi, Dorrin, Assistant Professor
Mechanical Engineering
PHD, University of California Irvine, 2014

Khraisheh, Marwan, Professor
Mechanical Engineering-Qatar Campus
PHD, Washington State University, 1996

Kim, Haejune, Instructional Assistant Professor
Mechanical Engineering
PHD, University of Wisconsin at Milwaukee, 2014

Kim, Won-Jong, Associate Professor
Mechanical Engineering
PHD, Massachusetts Inst of Technology, 1997

Kim, Yong-Joe, Associate Professor
Mechanical Engineering
PHD, Purdue University, 2003

Krishnamoorthy, Aravind, Assistant Professor
Mechanical Engineering
PHD, Massachusetts Institute of Technology, 2016

Krishnamurthy, Vinayak, Associate Professor
Mechanical Engineering
PHD, Purdue University, 2016

Kulatilaka, Waruna D, Professor
Mechanical Engineering
DEN, Purdue University, 2006

Lacy, Thomas E., Professor
Mechanical Engineering
PHD, Georgia Institute of Technology, 1998

Lan, Shoufeng, Assistant Professor
Mechanical Engineering
PHD, Georgia Institute of Technology, 2017

Layton, Astrid C, Assistant Professor
Mechanical Engineering
PHD, Georgia Institute of Technology, 2014

Lee, ChaBum, Assistant Professor
Mechanical Engineering
PHD, Gwangju Institute of Science and Technology, 2012

Lee, Kiju, Associate Professor
Mechanical Engineering
PHD, Johns Hopkins University, 2009

Li, Ying, Professor
Mechanical Engineering
PHD, University of Florida, 2007

Liang, Hong, Professor
Mechanical Engineering
PHD, Stevens Institute of Technology, 1992

Malak Jr, Richard J, Associate Professor
Mechanical Engineering
PHD, Georgia Institute of Technology, 2008

Mansoor, Bilal, Associate Professor
Mechanical Engineering-Qatar Campus
PHD, University of Michigan, 2010

Masad, Eyad A, Professor
Mechanical Engineering-Qatar Campus
PHD, Washington State University, 1998

Mathieu, Olivier E, Research Associate Professor
Mechanical Engineering
PHD, University of Orleans, 2006

McAdams II, Daniel A, Professor
Mechanical Engineering
PHD, The University of Texas at Austin, 1999

McFarland, Jacob, Associate Professor
Mechanical Engineering
PHD, Texas A&M University, 2013

McVay, Matilda W, Instructional Associate Professor
Mechanical Engineering
PHD, Texas A&M University, 1996

Mohiuddin, Mohammad W, Instructional Assistant Professor
Mechanical Engineering
PHD, Texas A&M University, 2008

Moreno, Michael R, Associate Professor
Mechanical Engineering
PHD, Texas A&M University, 2009

Muliana, Hanifah, Professor
Mechanical Engineering
PHD, Georgia Institute of Technology, 2004

Needleman, Alan, University Distinguished Professor
Mechanical Engineering
PHD, Harvard University, 1971

O'Neil, Zheng, Associate Professor
Mechanical Engineering
PHD, Oklahoma State University, 2004

Pagilla, Prabhakar R, Professor
Mechanical Engineering
PHD, University of California at Berkeley, 1996

Palazzolo, Alan B, Professor
Mechanical Engineering
PHD, University of Virginia, 1981

Pan, Heng, Associate Professor
Mechanical Engineering
PHD, University of California-Berkeley, 2009
Pate, Michael B, Professor
Mechanical Engineering
PHD, Purdue University, 1982

Petersen, Eric L, Professor
Mechanical Engineering
PHD, Stanford University, 1998

Pharr, George, Associate Professor
Mechanical Engineering
PHD, Harvard University, 2014

Polycarpou, Andreas A, Professor
Mechanical Engineering
PHD, University of Buffalo - The State University of New York, 1994

Powell-Palm, Matthew, Assistant Professor
Mechanical Engineering
PHD, University of California, Berkeley, 2020

Qiu, Jingjing, Associate Professor
Mechanical Engineering
PHD, Florida State University, 2008

Rajagopal, Kumbakonam, Distinguished Professor
Mechanical Engineering
PHD, University of Minnesota, 1978

Rasmussen, Bryan P, Professor
Mechanical Engineering
PHD, University of Illinois, 2005

Rathinam, Sivakumar, Professor
Mechanical Engineering
PHD, University of California at Berkeley, 2007

Reddy, Junuthula N, Distinguished Professor and Regents Professor
Mechanical Engineering
PHD, University of Alabama at Huntsville, 1974

Restrepo Perez, Vanessa, Assistant Professor
Mechanical Engineering
PHD, Purdue University, 2021

Robbins, Andrew B, Research Assistant Professor
Mechanical Engineering
PHD, Texas A&M University, 2018

Ruimi, Annie, Associate Professor
Mechanical Engineering-Qatar Campus
PHD, University of California at Santa Barbara, 2005

Sadr, Reza, Professor
Mechanical Engineering-Qatar Campus
PHD, University of Utah, 2002

Saripalli, Srikanth, Professor
Mechanical Engineering
PHD, University of Southern California, 2007

Schuller, Michael J, Instructional Associate Professor
Mechanical Engineering-Qatar Campus
DEN, Texas A&M University, 1985

Seets, David, Professor Of The Practice
Mechanical Engineering
PHD, The University of Texas at Austin, 1997

Srinivasa, Arun R, Professor
Mechanical Engineering
PHD, University of California at Berkeley, 1991

Staack, David A, Associate Professor
Mechanical Engineering
PHD, Drexel University, 2008

Subramanian, Velumani, Instructional Associate Professor
Mechanical Engineering
PHD, Bharathiar University, 1998

Suh, Chii-Der, Associate Professor
Mechanical Engineering
PHD, Texas A&M University, 1997

Tafreshi, Reza, Professor
Mechanical Engineering-Qatar Campus
PHD, University of British Columbia, Canada, 2005

Taheri Andani, Mohsen,
Mechanical Engineering

Tai, Li-Jung, Associate Professor
Mechanical Engineering
PHD, University of Michigan Ann Arbor, 2011

Tarazaga, Pablo, Professor
Mechanical Engineering
PHD, Virginia Polytechnic Institute & State University, 2009

Thomas, James, Research Assistant Professor
Mechanical Engineering
PHD, Texas A&M, 2018

Thomas, Navyen, Instructional Assistant Professor
Mechanical Engineering
PHD, Texas A&M, 2021

Thyagarajan, Ravi, Professor Of The Practice
Mechanical Engineering
PHD, California Institute of Technology, 1989

Tran, Thanh Hai, Instructional Assistant Professor
Mechanical Engineering
PHD, University of South Florida, 2016

Tsenn, Joanna N, Instructional Assistant Professor
Mechanical Engineering
PHD, Texas A&M University, 2016

Tseregounis, Spyros, Professor of the Practice
Mechanical Engineering
PHD, University of Southern California at Los Angeles, 1984

Walsh, Michael, Associate Professor of the Practice
Mechanical Engineering
MFA, University of Southern California, 2001
Wang, Ya, Associate Professor
Mechanical Engineering
PhD, Virginia Tech, 2012

Weaver-Rosen, Jonathan, Instructional Assistant Professor
Mechanical Engineering
PhD, Texas A&M, 2021

Wen, Sy-Bor, Associate Professor
Mechanical Engineering
PhD, University of California at Berkeley, 2006

Wilkerson, Justin W, Associate Professor
Mechanical Engineering
PhD, Johns Hopkins University, 2014

Wright, Lesley M, Associate Professor
Mechanical Engineering
PhD, Texas A&M University, 2006

Yu, Choongho, Professor
Mechanical Engineering
PhD, The University of Texas at Austin, 2004

Zhou, Yuxiao, Assistant Professor
Mechanical Engineering
PhD, Pennsylvania State University, 2020

**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/)