

Mechanical Engineering

Mechanical engineering is one of the broadest engineering disciplines you can enter. Mechanical engineers work on diverse, challenging problems requiring the integration of science, engineering, and socio-economic knowledge. A mechanical engineer is involved in the creation of almost anything manmade that you encounter – whether it is the car you drive to work, the potato chips you eat at lunch, or the heating and air-conditioning system that keeps you comfortable at home – a mechanical engineer helped create it.

Some mechanical engineers specialize in manufacturing, robotics, mechanics, materials or transportation while others pursue a more general career path or cross-over into other engineering disciplines.

What you'll study and what you'll learn...

Basic sciences: provide the basis from which you'll come to understand, model, and solve complex problems.

Machine design: one of the hallmarks of mechanical engineering, you'll practice hands-on design projects that correspond to the theory you're learning in class.

Energy: concepts you'll study in thermodynamics and heat transfer are necessary for engine design, development of heating and cooling systems, product manufacturing, and power plant design.

Manufacturing: broaden or specialize your degree in areas like automation, robotics, rapid prototyping, virtual reality manufacturing and laser manufacturing.

Missouri S&T's ABET-accredited program combines basic science and engineering principles with a strong emphasis in design and technical knowledge. The curriculum is flexible enough for you to satisfy technical elective requirements with coursework in and/or outside of the mechanical engineering department, allowing you to concentrate on an emphasis area in dynamics and control systems, energy conservation, environmental systems, instrumentation, manufacturing automation, materials, mechanical design, thermal science, robotics, fluid mechanics, heat transfer or vibrations.

Diversity in work environments goes hand-in-hand with the scope of industries from which you can choose. You might find employment in a small, local company doing highly design-oriented office work or on the plant floor of a large international firm working closely with a manufacturing operation. If you become a project manager, you'll take projects from initial conceptualization all the way to production, integrating your technical knowledge with management skills.

Student Organizations and Undergraduate Research

You can get involved in a variety of student design teams that work on competition projects like the Solar Car, Human-Powered Vehicle, and SAE Formula Car. Team members of these student-run organizations handle everything from design and production to fundraising, publicity and competition. You can join as early as your freshman year.

Other leadership, service and social opportunities are available in various professional and honor societies. These groups plan and host plant trips, industry speakers and departmental social gatherings. Members also regularly help out the department by providing tours to visiting high school students and representing Missouri S&T at campus and community events.

Many students also participate in the Opportunities for Undergraduate Research Program.

Top Hiring Employers

Caterpillar	Watlow Manufacturing
Exxon	Raytheon
Boeing	Ameren UE
General Motors	Harley Davidson Motorcycles

Co-op and Internship Availability

Co-op and summer intern programs are available to students. These programs provide students with the opportunity to integrate their classroom studies with learning through productive work experiences in a field related to their academic or career goals.

Scholarship Information

Freshman scholarships are automatically awarded based on high school transcripts and ACT/SAT scores. No separate application is necessary. Scholarships ranging from \$500 to \$2,000 for sophomores, juniors and seniors typically require an application and are based on academic record, service activities and extracurricular activities.

Departmental Contact Information

Department Chair:	Dr. James Drallmeier
573-341-4661	194 Toomey Hall
mae.mst.edu	mae@mst.edu

Faculty

Professors:

Bassem Armaly (Curators'), Ph.D., California-Berkeley
 S.N. Balakrishnan (Curators'), Ph.D., Texas
 Victor Birman, Ph.D., Israel Technion
 K. Chandrashekhara (Curators'), Ph.D., Virginia Tech
 Alfred Crosbie (Curators'), Ph.D., Purdue
 L.R. Dharani (Curators'), Ph.D., Clemson
 James Drallmeier (Curators'), Ph.D., Illinois (Chair)
 Walter Eversman' (Curators'), Ph.D., Stanford
 Fathi Finaish, Ph.D., Colorado
 Umit Koylu, Ph.D., Michigan
 K. Krishnamurthy, Ph.D., Washington State
 Kakkattukuzhy Isaac, Ph.D., Virginia Tech (Assoc. Chair)
 Ming Leu, Ph.D., California-Berkeley
 Fue-Wen Liou, Ph.D., Minnesota
 Ashok Midha, Ph.D., Minnesota
 Anthony Okafor, Ph.D., Michigan Tech
 David Riggins, Ph.D., Virginia Tech
 John Sheffield, Ph.D., North Carolina State
 Hai-Lung Tsai, Ph.D., California-Berkeley

Associate Professors:

Xiaoping Du, Ph.D., Illinois
 Kelly Homan, Ph.D., Illinois
 Robert Landers, Ph.D., Michigan (Assoc. Chair)
 Gearoid MacSithigh, Ph.D., Minnesota
 J. Keith Nisbett, Ph.D., Texas-Arlington (Assoc. Chair)
 Hank Pernicka, Ph.D., Purdue
 Daniel Stutts, Ph.D., Purdue

Assistant Professors:

Arindam Banerjee, Ph.D., Texas A&M
 Doug Bristow, Ph.D., Illinois
 Jie Gao, Ph.D., Columbia University
 Serhat Hosder, Ph.D., Virginia Tech
 Shun Takai, Ph.D., Stanford
 Josh Rovey, Ph.D., Michigan
 Xiaodong Yang, Ph.D., Columbia University

Assistant Teaching Professors:

Ryan Hutcheson, Ph.D., Texas A&M
 Nishant Kumar, Ph.D., New Mexico State

Assistant Research Professors:

Kevin Martin, Ph.D., Missouri S&T

Emeritus Faculty:

Darryl Alofs, Ph.D., Michigan
 Xavier Avula, Ph.D., Iowa
 Ta-Shen Chen (Curators'), Ph.D., Minnesota
 Donald Cronin, Ph.D., CalTech
 Virgil Flanigan', Ph.D., Missouri S&T
 Leslie Koval', Ph.D., Cornell
 Shen Ching Lee', Ph.D., Washington
 Terry Lehnhoff', Ph.D., Illinois
 Dwight Look, Ph.D., Oklahoma
 B.P. Selberg, Ph.D., Michigan

[†]Registered Professional Engineer

Notes

Detailed information on course equivalencies, acceptable credits for elective coursework, grade requirements and prerequisites is available from S&T's Registrar's Office at registrar.mst.edu.

All mechanical engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade is not required; however, this is the first step to becoming a registered professional engineer.

Bachelor of Science

Mechanical Engineering128 credit hours

Entering freshmen desiring to study Mechanical Engineering are admitted to the Freshman Engineering Program. They can, however, state a Mechanical Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Freshmen Engineering program is on enhanced advising and career counseling, with the goal of providing to the student the information necessary to make an informed career decision.

FIRST YEAR

	Credit
Chemistry 1310,1319-General Chemistry.....	5
English 1120-Exposition.....	3
FE 1100-Careers in Engineering.....	1
MechE 1720-Intro to Engineering Design.....	3
Math 1214-Calculus for Engineers I.....	4
Math 1215-Calculus for Engineers II.....	4
Physics 1135-Engineering Physics I.....	4
History 1200, 1300, 1310 or Pol Sci 1200.....	3
Elective/Hum or Soc Science.....	3
Economics 1100 or 1200-Micro or Macroeconomics.....	3
	33

SECOND YEAR

Elective/Programming.....	3
CivE 2200-Eng Mech/Statics.....	3
Math 2222-Calculus/Analytic Geometry III.....	4
Math 3304-Elementary Differential Equations.....	3
MechE 2653-Intro to Manufacturing Processes.....	3
MechE 2360-Dynamics.....	3
MechE 2761-Intro to Design.....	3
MechE 2519-Thermodynamics.....	3
Physics 2135-Engineering Physics II.....	4
MetE 2110-Metallurgy for Engineers.....	3
	32

THIRD YEAR

ElecE 2800-Electrical Circuits.....	3
CivE 2210,2211-Mechanics of Materials w/ Lab.....	4
MechE 3708-Machine Design I.....	3
MechE 3411-Modeling and Analysis of Dynamic Systems.....	3
MechE 3313-Machine Dynamics.....	3
MechE 3521-Applied Thermodynamics.....	3
MechE 3525-Heat Transfer.....	3
MechE 3131-Thermofluid Mechanics I.....	3
MechE 4840-Mechanical Instrumentation.....	2
Elective/Advanced Math or Computer Science.....	3
Elective/Communication.....	3
	33

FOURTH YEAR

EngMgt 1100-Principles of Engr Management.....	1
EngMgt 1210-Economic Analysis of Engr Projects.....	2
MechE 4842-Mech Engineering Systems.....	2
MechE 4761-Engineering Design.....	3
MechE 4479-Automatic Control of Dynamic Systems.....	3
MechE 4480-Control Systems Lab.....	1
MechE Elective/Technical.....	3
MechE Elective/4000 level Technical.....	3
Elective/Hum or Social Science.....	3
Elective/Literature.....	3
Elective/Free.....	3
Elective/Free.....	3
	30