

# MECHANICAL ENGINEERING

## What is Mechanical Engineering?

Mechanical engineering is one of the broadest engineering fields. Mechanical engineers are found in virtually all productive industries, from aircraft and automotive to consumer products and building equipment. In these jobs, mechanical engineers design products, machines, and processes for manufacturing. They analyze, test, and develop these products, machines and manufacturing processes to attain the best performance and durability within cost and time limits.

## WSU Mechanical Engineering

Wichita State's mechanical engineering program prepares students for numerous job possibilities through a broad course of study that covers not only the technical aspects required, but the ethical, professional, communication, economic, and business skills needed to be a successful practicing engineer. Modern laboratories and a wide variety of computer facilities provide students with hands-on experience in experimental work and computer-aided design and engineering. Mechanical Engineering students at WSU benefit from its strong Cooperative Education Office and close proximity to related industry, which provide Co-Op and internship opportunities.

## Specific jobs in Mechanical Engineering include:

- design, development, and manufacture of automotive engines and vehicle systems;
- design, development, and manufacture of gas turbine and other aircraft engines;
- design and construction of electrical power plant energy conversion and generating systems;
- design, development, and manufacture of consumer products, ranging from appliances such as refrigerators, washers, and electric drills, to the manufacturing systems for producing facial tissue and processed foods and packaging of these items;
- design and specification of heating, air-conditioning, and ventilating systems used in aircraft, automobiles, and buildings;
- analysis of the complex flow of gases and fluids such as air flow in aircraft inlet ducts and fluid flow in hydraulic and pumping systems;
- study of heat flow, ranging from boilers and automotive radiators to heat management problems in orbiting spacecraft;
- study of globalization, moral, ethical, economic, and business issues related to mechanical engineering.

## WSU's Mechanical Engineering Educational Objectives

The Mechanical Engineering program at WSU is committed to:

- Educate students to be successful mechanical engineers in their professions in a global environment.
- Prepare students to pursue life-long learning.
- Prepare students for real-world problems by working on industry-based project.

## Admission

As a mechanical engineering major a faculty advisor will help you plan your individual course of study and outline the specific requirements for degree completion.

## Other Activities

There are many activities and associations available to students out of the classroom. WSU hosts student sections of the American Society of Mechanical Engineers (ASME), Pi Tau Sigma National Honor Society, the Society of Automotive Engineers (SAE), the Society of Women Engineers (SWE), and the Society of Manufacturing Engineers (SME). Formula SAE and Baja SAE are international collegiate design competitions where students can design, build, and compete with formula-style or off-road vehicles.

**For more information visit**  
[www.wichita.edu/mechanical](http://www.wichita.edu/mechanical)

## Faculty

- Ikram Ahmed (PhD, University of Texas, Austin). Transport phenomena in materials processing, Computational Fluid Dynamics and Heat Transfer (CFD&HT), computational techniques in complex geometrics.
- Ramazan Asmatulu (Ph.D., Virginia Tech.) Nanotechnology, bio/nanotechnology
- Brian Driessen (PhD, Georgia Institute of Technology). Dynamics, controls modeling, optimization, scalability and robustness aspects of control implementation.
- David Koert (PhD, Drexel University). Fuel tank safety, combustion and combustion chemistry, alternative fuels, flammability of materials, and air pollution control.
- Hamid Lankarani (PhD, University of Arizona). Mechanical Engineering design, impact dynamics, crashworthiness, multibody dynamics, structures, biomechanics, and occupant protection.
- Bob Minaie (PhD, University of Minnesota). Computational and experimental research in polymer composites, nanocomposites, and functionally graded hybrid composites.
- T.S. Ravigururajan (PhD, PE, Iowa State University). Thermal management in material processing.
- Jorge Talia (PhD, Case Western Reserve University). Materials sciences, mechanical properties of materials, microscopy, defects in materials, friction stir welding, and composite materials.

## For More Information

To receive more information, or to arrange a campus visit, contact:

Office of Admissions  
 Marcus Welcome Center  
 Wichita State University  
 1845 Fairmount  
 Wichita, Kansas 67260-0124  
 Telephone (316) 978-3085  
 Toll-free (800) 362-2594  
 www.wichita.edu

The University reserves the right to revise or change rules, charges, fees, schedules, courses, requirements for degrees, and any other regulations affecting students whenever considered necessary or desirable.

### Notice of Nondiscrimination:

Wichita State University does not discriminate on the basis of race, religion, color, national origin, gender, age, marital status, sexual orientation, status as a Vietnam-era veteran, or disability. Any person having inquiries concerning this may contact the Office of Equal Employment Opportunity, Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-0145; telephone (316) 978-3001.

General Education Requirements	
Basic Skills (9 hours minimum) Must be completed in the first 48 college hours with a C or better	Minimum number of semester hours
<ul style="list-style-type: none"> <li>• College English Composition (English 100 or 101 and 102)</li> <li>• Public Speaking (Communication 111)</li> </ul>	6 3
Fine Arts, Humanities, and Social and Behavioral Sciences (18 hours minimum)	
<ul style="list-style-type: none"> <li>• One introductory course from a fine arts discipline</li> <li>• One introductory course from a humanities discipline</li> <li>• One introductory course from a social and behavioral sciences discipline</li> <li>• One introductory course from a second humanities discipline or a second social and behavioral sciences discipline</li> <li>• One further study course from one of the two disciplines in the division, humanities or social and behavioral sciences, in which two introductory courses are taken</li> <li>• Philosophy 385: Engineering Ethics</li> </ul>	3 3 3 3 3 3
Mathematics and Natural Sciences	
Calculus I, II, and III	13
Ordinary Differential Equations	3
University Physics I and II	8
University Physics Lab	1
General Chemistry I	5
Natural Science Elective	3
Professional Course Requirements	
Statics and Dynamics	6
Thermodynamics I	3
Computer Applications	3
Engineering Graphics	3
Design of Machinery	3
Mechanics of Materials	3
Circuits I	4
Engineering Economy	3
Materials Engineering	3
Materials Engineering Lab	1
Mechanical Engineering Lab	3
Mechanical Engineering Design I	3
Fluid Mechanics	3
Heat Transfer	3
Mechanical Engineering Systems Lab	3
Mechanical Control	3
Mechanical Engineering Elective	3
Thermal Design elective	3
Mechanical Design elective	3
Technical electives	9
Thermal/Fluids Elective	3
<b>General Education Course Requirements</b>	<b>60 Hours</b>
<b>Professional Course Requirements</b>	<b>74 Hours</b>
<b>Grand Total Hours for BSME</b>	<b>134 Hours</b>