Manufacturing engineering transforms raw materials, parts, and subassemblies into intermediate and final products through the use of people, capital, processes, machinery, and operations, following a well-organized plan for each activity. Manufacturing engineering involves designing, planning, and using state of the art technologies in the production of the highest quality products while assuring a competitive level of productivity.

The manufacturing engineering curriculum at WSU focuses on instruction and research in the following areas: product engineering and assembly, manufacturing quality and productivity, advanced processes and systems. The BS degree program requires the completion of 129 semester hours for graduation. Advanced placement credit may be applied toward completion. You may select 9 hours of technical electives to specialize in a specific area of manufacturing engineering determined by your own interests and career plans.

The industrial and manufacturing engineering (IME) department faculty are committed to your educational success. Class sizes are small, allowing individual attention for each student. Many of the IME department faculty have won awards for excellence in research and teaching. Several are international experts in their concentrations.

Students in the WSU manufacturing engineering (MfgE) program have many opportunities to work on real problems in local companies as part of their course requirements. They also have the opportunity to participate in cooperative education, a voluntary program in which students gain real engineering work experience while going to school.

A testament to the IME department’s excellence is the record of success our students have had in regional and international technical paper competitions. WSU students have won the International IIE student technical paper competition more times in the last decade than any other program in the country.

Admission
When you choose to major in manufacturing engineering, your manufacturing engineering faculty adviser will help you plan your course of study and outline specific requirements for degree completion. It is important that you complete the basic skills courses, Calculus I, and University Physics I or General Chemistry I before the completion of 48 college hours.

Laboratory and Computer Facilities
The industrial and manufacturing engineering department has modern well-equipped laboratories to supplement classroom theory in engineering computer graphics, manufacturing processes, metrology, computer-integrated manufacturing, and composites manufacturing.

Engineering students have access to computer laboratories equipped with microcomputers connected through a local area network and terminals connected to the University mainframe computer and the Internet.

Related Opportunities
The IME department offers a wealth of opportunities for students to get involved on campus and in their chosen field. Students are encouraged to participate in the student chapters of professional societies including the Society of Manufacturing Engineers (SME), Institute of Industrial Engineers (IIE), the Association for Operations Management (APICS), the American Society for Quality (ASQ), and the Society of Women Engineers (SWE).

If you are eligible, you may join Tau Beta Pi, the honor society for all areas of engineering.

Related Programs
All of Wichita State’s engineering programs—aerospace, computer, electrical, industrial, manufacturing, and mechanical—share a math/science background and technical orientation. Graduate programs leading to master’s and doctoral degrees are offered in aerospace, electrical, industrial, and mechanical engineering, as well as a master’s program in engineering management.
Education Requirements

Basic Skills (9 hours minimum)
Must be completed in the first 48 college hours and a C or better.
- College English Comp (Eng. 100 or 101 and 102) - 6 credit hours
- Public Speaking (Communication 111) - 3 credit hours

Fine Arts, Humanities, and Social and Behavioral Sciences (18 hours minimum)
- One introductory course from a fine arts discipline - 3 credit hours
- One introductory course from a humanities discipline - 3 credit hours
- One introductory course from a social and behavioral sciences discipline - 3 credit hours
- One introductory course from a second social and behavioral sciences or humanities discipline - 3 credit hours
- 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 - 3 credit hours
- Philosophy 385 Engineering Ethics - 3 credit hours

Major Requirements

- Engineering Graphics - 3 credit hours
- Manufacturing Methods & Materials - 7 credit hours
- Statics - 3 credit hours
- Thermodynamics - 3 credit hours
- Computer Applications - 3 credit hours
- Mechanics of Materials - 3 credit hours
- Circuits I - 4 credit hours
- Engineering Economy - 3 credit hours
- Materials Engineering - 4 credit hours
- Production Systems - 3 credit hours
- Mechanical Engineering Design - 3 credit hours
- Engineering Probability & Statistics II - 3 credit hours
- Engineering Management - 3 credit hours
- Statistical Quality Control - 3 credit hours
- Aircraft Manufacturing - 3 credit hours
- Composites Manufacturing - 3 credit hours
- Manufacturing Engineering Design - 6 credit hours
- Applications of Finite Element Methods - 3 credit hours
- Selection of Materials for Design & Manufacturing - 3 credit hours
- Technical Electives - 12 credit hours

Mathematics and Natural Sciences

- Calculus I, II and III - 13 credit hours
- Linear Algebra - 3 credit hours
- University Physics I and II - 8 credit hours
- General Chemistry I - 5 credit hours
- Engineering Probability & Statistics - 3 credit hours

Faculty

Esra Buyuktahtakin (PhD, University of Florida). Mathematical programming in particular mixed integer programming and dynamic programming with applications arising in invasive species management, bioinformatics, power grid design, production planning, supply chain management, and logistics.

Laila Cure (PhD, University of South Florida) Modeling and analysis of healthcare operations, decision support for patient safety and healthcare quality, work design, Service systems analysis

Michael J. Jorgensen (PhD, Ohio State University). Industrial ergonomics, work-related low-back disorders, musculoskeletal disorder epidemiology, intervention strategies, risk and exposure assessment methodology, and occupational safety.

Krishna K. Krishnan (PhD, Virginia Tech). Facilities planning and material handling, logistics and supply chain systems, production planning, manufacturing systems.

Viswanathan Madhavan (PhD, Purdue University). FEA of manufacturing processes, strain rate and temperature measurement in machining, constitutive models, tribology of high speed sliding contacts, friction in sheet metal forming, use of virtual reality in the design of assembly lines, and engineering education.

Don E. Malzahn (PhD, Oklahoma State University). Systems engineering, decision analysis, project management, and engineering education.

Abu S. M. Masud (PhD, Kansas State University). Operations research, multi-criteria decision making, decision analysis and support systems, forecasting, and QFD.

Wilfredo Moscoso-Kingsley (PhD, Purdue University). Material behavior, tribology, mechanics and feedback control in advanced machining, joining and thermo-mechanical processing.

Janet Twomey (PhD, University of Pittsburgh). Intelligent data processing systems applied to manufacturing and service systems, and environmentally benign manufacturing.

Gamal Weheba (PhD, University of Central Florida). Quality and reliability engineering, statistical process control, economics of quality, precision measurements, and rapid prototyping.

Pingfeng Wang (PhD). Reliability analysis and risk management, probabilistic analysis and design, maintainability, prognostics and health management.

M. Bayram Yildirim (PhD, University of Florida). Energy efficient manufacturing, Industrial Assessment, Logistics and supply chain management, analytics and data mining applications in healthcare, scheduling, energy systems, and pricing on congestible network.

Wichita State University does not discriminate in its employment practices, educational programs or activities on the basis of age, color, disability, gender, gender expression, gender identity, genetic information, marital status, national origin, political affiliation, pregnancy, race, religion, sex, sexual orientation, or status as a veteran. Retaliation against an individual filing or cooperating in a complaint process is also prohibited. Sexual misconduct, relationship violence and stalking are forms of sex discrimination and are prohibited under Title IX of the Education Amendments Act of 1972. Complaints or concerns related to alleged discrimination may be directed to the Director of Equal Opportunity or the Title IX Coordinator, Wichita State University, 1845 Fairmount, Wichita KS 67260-0138; telephone (316) 978-3187.

For more information on Manufacturing Engineering at WSU visit wichita.edu/engineering or call (316) 978-3425.