

What Can I Do With a Major In...

Mechanical & Industrial Engineering-Mechanical Engineering?

Mechanical Engineering programs¹ teach individuals how to apply mathematical and scientific principles to the design, development and operational evaluation of physical systems in manufacturing, and end-product systems for specific uses. This includes machine tools, jigs and manufacturing equipment, stationary power units and appliances, engines, self-propelled vehicles, housings and containers, hydraulic and electric systems for controlling movement, and the integration of computers and remote control with operating systems. Some specialties include applied mechanics, computer-aided design and manufacturing, energy systems, heat transfer, power plant engineering, pressure vessels and piping, and heating, refrigeration, and air-conditioning systems. Other specialties include motor vehicles, underwater technology, energy conversion systems, instrumentation, and special machinery for the petroleum, rubber, and plastics industries.

Programs at Montana State University² teach individuals to design, build, develop, maintain, and modify the tools of our technological society. In the broadest terms, mechanical engineering is concerned with the conversion, transmission, and use of energy. Of the four basic forms of energy - thermal, mechanical, chemical and electromagnetic - the mechanical engineer is primarily concerned with thermal and mechanical energy. These "tracks" of mechanical engineering - thermal sciences and mechanics - make it one of the most diverse fields of engineering, with a tremendously wide variety of career opportunities.

This program is principally oriented toward career preparation, providing students with the engineering and technical education appropriate to the challenges presented by today's technologically complex and difficult problems. The coursework in mechanical engineering provides four years of study in mathematics, basic sciences, humanities, social sciences, and engineering. The overall curriculum provides an integrated educational experience directed toward the development of an ability to apply pertinent knowledge to the identification and solution of practical problems in mechanical engineering. Finally, "hands on" experience is distributed throughout the curriculum in laboratory courses such as Chemistry, Physics, Measurements and Instrumentation, and in the final years, senior-level Mechanical Engineering Laboratory.

Characteristics associated with success¹ in this major include a strong desire to understand how objects, especially machines, work.

You should¹:

- Have the ability to think logically
- Be able to work in a team
- Have excellent organizational skills
- Have leadership potential
- Have good computer skills
- Be proficient in Math and Science

Occupations in this field require the ability to¹: be creative; be a good problem solver and have good oral and written communication skills.

Related occupations include¹:

- Automotive Engineer
- Tool Designer
- Utilization Engineer
- Stress Analyst
- Solar-Energy-Systems Designer
- Plant Engineer
- Drawings Checker, Engineering
- Aerospace Engineer
- Industrial Engineer
- Marine Engineer
- Mechanical Engineering Tech
- Sales Engineer
- Staff Engineer
- Draftsman
- Technician
- Fabrication Engineer
- System Application Engineer
- Developmental Engineer

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MSU graduates (Bachelor's degree) were hired in the following selected fields³:

Associate Technical Professional– Halliburton
Core-Tech Immigration Engineer– The Boeing Company
Counselor of Emotionally Disturbed Children– Intermountain Children's Home
Designer– CDI Corporation
Design Engineer– HDR Engineering; ConocoPhillips; Genie Industries; Display Devices, Inc.; CDI-Aerospace
Detailer– Rosco Steel
Developmental Engineer– US Air Force
Dewater Engineer– Kiewit Pacific Company
Director of Infrastructure and Renewable Energy– Sun Ranch Group
Directional Drilling Coordinator– Baker Hughes INTEQ
District Engineer– Conoco Phillips
Documentation– Specialist Tech
Draftsman– Summit Drafting and Design
Engineer– Salt River Project
Engineer/Engineer Design Development– Honda Research & Design Americas Inc.
Engineering Staff– Kennedy Jenks Consultants
Entry Level Laser Engineer– Naval Undersea Warfare Center
Equipment Engineer– IM Flash Technologies
Fabrication Engineer– Micon Technology, Inc.
Field Engineer– Halliburton; Kiewit Power Engineers
Field Supervisor– Boart Longyear
Graduate Teacher aid and Research– MSU– Mechanical Engineering Department
Junior Field Engineer– Weatherferd
Manufacturing Engineer– Genie Industries; Photon Dynamics Inc.
Adjunct Professor– MSU-Mechanical Engineering Department

Mechanical Design Engineer– JE Engineering; Northwest Aerospace Technologies, Inc.; Three Rivers Engineering; Xerox Corporation
Mechanical Engineer– Autopilot Inc.; DC Engineering; GE Energy; Hewlett Packard; Hypertherm, Inc.; Northwest Arrow Space Technologies; SSOE Inc.; U.S. Department of Energy; U.S. Air Force; U.S. Navy; Boeing; Godwin; Itron; MKK Consulting Engineers; MSU; Schlumberger; Vemko Inc.; Scientific Materials Corporation; Fluor
Mechanical Engineering Consultant- Great Northern Engineering
Mechanical Manufacturing Engineer– S&K Electronics
Navigator– Air Force
Nuclear Engineer– Puget Sound Naval Shipyard
Office Engineer– Harris and Associates
Project Coordinator/Mechanical Engineer– Arcomac Surface Engineering
Project Engineer– BP; WET Design
Project Management– Mobile Communication Systems
Quality Assurance Engineer– Black Diamond Equipment, Ltd.
Reliability Engineer– BP
Researcher– Leonardo Technologies Inc
School Super Attendant– Sidney Public Schools
Second Lieutenant– US Army Engineering Battalion; US Air Force Solar
Technician– Allwest Energy, Inc
Staff Engineer– Kennedy Jenks Consultants
Structural Engineer– The Boeing Company
System Application Engineer– Godwin Pumps of America; Microsat Systems
Transition Team Officer– Army

Salary averages of survey respondents (# of respondents in parentheses)³:

2010: MT: \$35,811 (9)	Out of State: \$59,659 (12)
2009: MT: \$ 33,804 (10)	Out of State: \$ 51,654 (19)
2008: MT: \$ 44,450 (16)	Out of State: \$ 57,452 (23)
2007: MT: \$ 50,994 (17)	Out of State: \$ 54,652 (21)

Graduates from this program entered programs of further education at these institutions:

No graduates are known to have entered programs of further education at this time.

Other Sources of Information:

SAE International: www.sae.org
American Society of Mechanical Engineers: www.asme.org
International Federation of Professional and Technical Engineers: www.ifpte.org
American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.: www.ashrae.org
Department of Engineering- Montana State University: www.coe.montana.edu/mie/

For more information contact:



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www.montana.edu/careers

¹University of Oregon. 2007. Created by "intoCareers", a unit of the University of Oregon. Montana information Montana Career Information System. Discover: 2008 by ACT, Inc.

²Montana State University Department of Engineering

³Montana State University Career & Internship Services

Number of graduates/number of respondents: ; 2007: 57/46; 2008: 74/53; 2009: 73/49; 2006: 27/21