

Manufacturing Engineering

STARTING SALARY: \$58,581

MEDIAN INCOME (FOR MECHANICAL ENGINEERING): \$80,580



Just as the mechanical engineer designs parts, the manufacturing engineer designs the processes that make them. You find manufacturing engineers in Detroit's big-three production facilities, overseeing plants of the major computer companies, directing six-person mold and die shops that make advanced prototypes, and working on teams in the football-field-sized structures where Boeing assembles jumbo jets. Wherever there's a production process to be designed and managed, you'll find manufacturing engineers at work.

Manufacturing engineers need an aptitude for basic engineering principles, a disciplined approach to work, and creativity. Because the focus is the process, not the individual part, they need to look through a wider-angle lens. They bring their particular brand of insight to teams. They work with plant managers, production supervisors, CNC programmers, quality managers, product designers, and R&D staff on issues ranging from evaluating new technology and choosing equipment and suppliers to leading industry-wide standards development to reorganizing a plant into a more efficient production system.

Negotiation skills and the ability to sell ideas are essential. Ford Motor Co. names interpersonal skills right after basic engineering on the list of skills manufacturing engineers need. Ford's manufacturing engineers must work closely with product designers and communicate with them on the same technical level. The goal is not to make a designer out of the manufacturing engineer, but to get design and manufacturing to work seamlessly together to make products of the highest quality at the lowest possible cost.

During the last two decades, most major U.S. companies have turned their attention to the plant floor, discovering that the way they make their products can be a strategic advantage in the growing

Job Outlook

Employment of manufacturing engineers, similar to mechanical engineers, is projected to grow 5 percent from 2012 to 2022, slower than the average for all occupations. Job prospects may be best for those who stay abreast of the most recent advances in technology.

Industries with the highest levels of employment in this occupation:

1. Architectural, engineering, and related services
2. Machinery manufacturing
3. Transportation equipment manufacturing
4. Computer and electronic product manufacturing
5. Fabricated metal product manufacturing

Top paying industries for this occupation:

1. Computer and electronic product manufacturing
2. Architectural, engineering, and related services
3. Transportation equipment manufacturing
4. Machinery manufacturing
5. Fabricated metal product manufacturing

Source: US Bureau of Labor Statistics

global marketplace. Manufacturing engineers led the way by championing key concepts including lean production, agile manufacturing, re-engineering, and continuous improvement.

Manufacturing engineers must do more than make and deliver products competitively. They must use system thinking to understand what role manufacturing plays in the overall business and how to customize products to meet the needs and suit the tastes of customers around the world.

The Society of Manufacturing Engineers (SME) certifies manufacturing engineers (CmfgE) and technologists (CMfgT). In most states, a state-sponsored examination leads to professional registration in manufacturing engineering.

To attract young people to the field, SME sponsors an annual student robotics/automation contest with undreds of entries from middle school through college (www.sme.org).

Glossary of Terms

Agile Manufacturing - is a term applied to an organization that has created the processes, tools, and training to enable it to respond quickly to customer needs and market changes while still controlling costs and quality (Wikipedia, 15 November 2013 at 14:08)

Analyze - to study (something) closely and carefully: to learn the nature and relationship of the parts of (something) by a close and careful examination (merriam-webster.com)

Aptitude – capacity for learning (merriam-webster.com)

Assemble – to connect or put together the parts of (something, such as a toy or machine) (merriam-webster.com)

Design - to plan and make (something) for a specific use or purpose (merriam-webster.com)

Interpersonal – relating to or involving relations between people : existing or happening between people (merriam-webster.com)

Lean Production – is a production practice that considers the expenditure of resources for any goal other than the creation of value for the end customer to be wasteful, and thus a target for elimination (Wikipedia, 24 January 2014 at 12:09)

Mold and Die – A Die is a shaped block of metal or other hard material used to cut or form metal in a drop forge, press, or similar device (dictionary.reverso.net) A mold is a cavity in which a substance is shaped: as a matrix for casting metal (merriam-webster.com)

Plant – a building or factory where something is made (merriam-webster.com)

Process - a series of actions that produce something or that lead to a particular result (merriam-webster.com)

Prototype – an original or first model of something from which other forms are copied or developed (merriam-webster.com)

R&D – Research and design

ABET Accredited Programs in Manufacturing Engineering

School Name	Location	Website	Program and Degree Name
Bradley University	Peoria, IL, US	www.bradley.edu	Manufacturing Engineering, BS
California Polytechnic State University, San Luis Obispo	San Luis Obispo, CA, US	www.calpoly.edu	Manufacturing Engineering, BS
California State Polytechnic University, Pomona	Pomona, CA, US	www.csupomona.edu	Manufacturing Engineering, BS
California State University, Northridge	Northridge, CA, US	www.csun.edu	Manufacturing Systems Engineering, BSMSE
Central State University	Wilberforce, OH, US	www.centralstate.edu/	Manufacturing Engineering, BS
Miami University	Oxford, OH, US	www.muohio.edu	Manufacturing Engineering, BS
North Dakota State University	Fargo, ND, US	www.ndsu.edu	Manufacturing Engineering, BS
Northwestern University	Evanston, IL, US	www.northwestern.edu	Manufacturing and Design Engineering, BS
Oregon State University	Corvallis, OR, US	www.oregonstate.edu	Manufacturing Engineering, BS
Robert Morris University	Moon Township, PA, US	www.rmu.edu	Manufacturing Engineering, BS
Southern Illinois University Edwardsville	Edwardsville, IL, US	www.siue.edu	Manufacturing Engineering, BS
St. Cloud State University	St. Cloud, MN, US	www.stcloudstate.edu	Manufacturing Engineering, BS
Texas State University	San Marcos, TX, US	www.txstate.edu	Manufacturing Engineering, BS
The University of Texas - Pan American	Edinburg, TX, US	www.utpa.edu	Manufacturing Engineering, BSMfgE
University of Michigan - Dearborn	Dearborn, MI, US	www.umd.umich.edu	Manufacturing Engineering, BSE
University of Wisconsin-Stout	Menomonie, WI, US	www.uwstout.edu	Manufacturing Engineering, BS
Virginia State University	Petersburg, VA, US	www.vsu.edu	Manufacturing Engineering, BS
Wichita State University	Wichita, KS, US	www.wichita.edu	Manufacturing Engineering, BS