What is the Study of Manufacturing Engineering?

Manufacturing organizations are responsible for creating the vast array of products used in our modern world. The process of creating these products starts with the identification of a need followed by a systematic sequence of engineering activities that includes the design of the product, the manufacturing processes, the equipment and tooling, and the production systems necessary to produce the final product in sufficient quantities, and with a quality that will be profitable to the organization. The study of manufacturing engineering develops the ability to apply the methods and technologies that accomplish this design effort, and that implement, operate, manage, and continuously improve the facilities and processes necessary for an organization’s success. This program develops these skills with the help of intensive laboratory components spread throughout its courses.

What kind of job would a Manufacturing Engineer have?

Manufacturing Engineers need to be both critical thinkers and applications or “hands-on” oriented. They can be employed in any company that creates a product, and may be involved at any point in product development from design to plant operations, maintenance, and management. Competency in a broad range of technologies in areas such as metals fabrication, polymer processing, CAD/CAM, CNC, machine and tooling design, automation and controls, robotics, quality control, and Lean Manufacturing provides great flexibility in career choice. The ability to work in and lead teams comprised of other engineers, technologists, scientists, and technicians allows for career advancement in management. Manufacturing Engineers are also capable of innovation in design and manufacturing that can lead to patenting and start-up companies.

Job Functions of a Manufacturing Engineer:

- Design and fabrication of products, tooling, and equipment
- Design of processes used for fabrication
- Operation, improvement, and maintenance of production systems
- Programming of automation (Robots, CNC machine tools, CMMs)
- Modeling & analysis using CAD/CAM/CAE
- Conduct studies of reliability & performance of facilities and production/administrative systems
- Develop maintenance standards, schedules, and programs
- Establish programs/conduct studies to enhance industrial health and safety
- Supervise and work in teams with technicians, technologists, analysts, administrative staff, and other engineers

Employment:

Manufacturing Engineers work in almost every industry, on every kind of product, including toys, food, automobiles, aircraft, spacecraft, computers, and electronics. They can also work for themselves (start-up, consulting), in the private, or in the public sector (e.g. the Department of Defense, NASA).

Alumni are Employed at:
- Albar Industries, Lapeer, MI
- Alpha Technologies, Bellingham, WA
- Applied Materials, Santa Clara, CA
- Fleck Co., Hanover, MD
- Hexcel, Burlington, WA
- Mazak, Florence, KY
- Microsoft, Redmond, WA
- Nike, Beaverton, OR
- Physio Control, Redmond, WA
- Sealed Air, Elmwood Park, NJ
- Tempress, Dallas, TX
- Zodiac Aerospace, Bellingham, WA

Program/Degree Quick Facts:

- Bachelor of Science in Manufacturing Engineering
- 24 students per year
- 4 year degree with taking 15-16 credits per quarter
- 149-153 major credits for degree
- Pursuing accreditation through the Accreditation Board for Engineering and Technology (ABET)
- Median mid-level salary: $69,720
- Average starting salary: $51,323

To learn more, visit our website:
cse.wwu.edu/engd

Resources: 1: careercornerstone.org/manueng/; 2: www1.salary.com/Manufacturing-Engineer-II-salary.html; 3: based on data collected from survey of past five years of graduates from WWU’s Manufacturing Engineering Technology program
Manufacturing Engineering (MFG) Program Information

Degree Timeline:
The MFG program has a strong prerequisite course sequence. Students unable to successfully complete foundational math and science courses in their first four terms may find they are unable to complete the MFG degree in four years. Additionally, many MFG courses are only offered once or twice per year, so if a student gets off-sequence with the prescribed course of study, their time to degree completion may exceed four years. Students are encouraged to seek advising early.

Application Process:
Students must initially declare as a Pre-major in Manufacturing Engineering once they begin coursework at WWU. The major application period for the MFG program is in the middle of the Winter Quarter. Students must have completed the required prerequisite courses to apply (up to three may be in progress at the time of application). In addition to academic performance, acceptance will also be based on an essay explaining why the student wants to pursue a degree in Manufacturing Engineering. Although the minimum grade for all courses in the major is a C-, acceptance to the major is based primarily on academic performance in the prerequisite courses, so maintaining a high GPA in these courses is advantageous. Twenty four students are typically accepted into the program each year, and the application process is competitive. For more information on the program admissions process, visit the Admissions page on the MFG website: cse.wwu.edu/engineering-design/admissions-1.

Required course to apply to the major:
MATH124, MATH125, MATH224, CHEM121, PHYS161, ENGR104, ENGR170, ENGR214

Transfer Students:
Many of the courses in the first five terms of coursework for the MFG program are standard offerings at community colleges, including Calculus, Physics, Chemistry and some Engineering courses. For students coming to WWU with a pre-Engineering degree or some engineering courses completed, it may be possible to complete their degree at WWU in two years; students should seek departmental advising early (well before they are a student at WWU) to determine if this will be possible and plan out their coursework before transferring. Having successfully completed the Prerequisite courses is more important than having a fully completed associates degree. If a student needs to take additional courses to be prepared to start the math and science sequences (e.g. MATH 124--Calculus I; PHYS 161--Physics w/ Calculus I), taking those preparatory courses at a community college may be appropriate; otherwise time to graduation may extend as well. For more information on transferring, students should contact the Pre-major advisor listed below and visit the Manufacturing Engineering - Admissions page of the Engineering & Design website. cse.wwu.edu/engd