



WAGE DATA

Rate Type / Statistical Type	Entry level	Mean	Experienced
Annual wage or salary	\$60,308	\$86,117	\$98,226
Hourly wage	\$29.80	\$40.19	\$49.98

JOB DESCRIPTION

Manufacturing Engineers - Design, integrate, or improve manufacturing systems or related processes. Work with commercial or industrial designers to refine product designs to increase productivity and decrease costs.

DUTIES

- Identify opportunities or implement changes to improve products or reduce costs using knowledge of fabrication processes, tooling and production equipment, assembly methods, quality control standards, or product design, materials and parts.
- Determine root causes of failures using statistical methods and recommend changes in designs, tolerances, or processing methods.
- Provide technical expertise or support related to manufacturing.
- Incorporate new methods and processes to improve existing operations.
- Supervise technicians, technologists, analysts, administrative staff, or other engineers.
- Troubleshoot new or existing product problems involving designs, materials, or processes.
- Review product designs for manufacturability or completeness.
- Train production personnel in new or existing methods.
- Communicate manufacturing capabilities, production schedules, or other information to facilitate production processes.
- Design, install, or troubleshoot manufacturing equipment.

TOOLS and TECHNOLOGY

Tools used in this occupation:

- Calipers** — Digital calipers
- Micrometers** — Digital micrometers
- Notebook computers** — Laptop computers
- Scientific calculator** — Scientific calculators

Technology used in this occupation:

- Computer aided design CAD software** — Autodesk AutoCAD software, Dassault Systemes CATIA software, Pro-E CAD software, SolidWorks
- Electronic mail software** — IBM Lotus Notes, Microsoft Outlook
- Enterprise resource planning ERP software** — Product lifecycle management PLM software
- Industrial control software** — Computer numerical control CNC software, Programmable logic controller PLC software
- Project management software** — Microsoft Project, SolidWorks Enterprise PDM

KNOWLEDGE

Engineering and Technology — Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.

Production and Processing — Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.

Design — Knowledge of design techniques, tools involved in production of precision technical plans, blueprints, drawings, and models.

Mechanical — Knowledge of machines and tools including their designs, uses, repair, and maintenance.

Mathematics — Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.

Computers and Electronics — Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software including applications and programming.

Physics — Knowledge and prediction of physical principles, laws, their interrelationships, and applications to understanding fluid, material, and atmospheric dynamics, and mechanical, electrical, atomic and sub-atomic structures and processes.

English Language — Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.

Economics and Accounting — Knowledge of economic and accounting principles and practices, the financial markets, banking, and the analysis and reporting of financial data.

Administration and Management — Knowledge of business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and coordination of people and resources.

SKILLS

Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Complex Problem Solving — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

Judgment and Decision Making — Considering the relative costs and benefits of potential actions to choose the most appropriate one.

Reading Comprehension — Understanding written sentences and paragraphs in work related documents.

Speaking — Talking to others to convey information effectively.

Systems Analysis — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

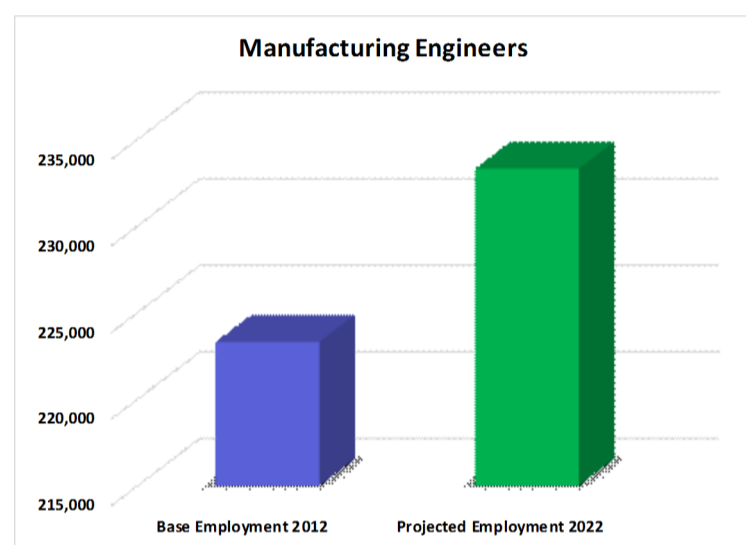
Mathematics — Using mathematics to solve problems.

Systems Evaluation — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.

Technology Design — Generating or adapting equipment and technology to serve user needs.

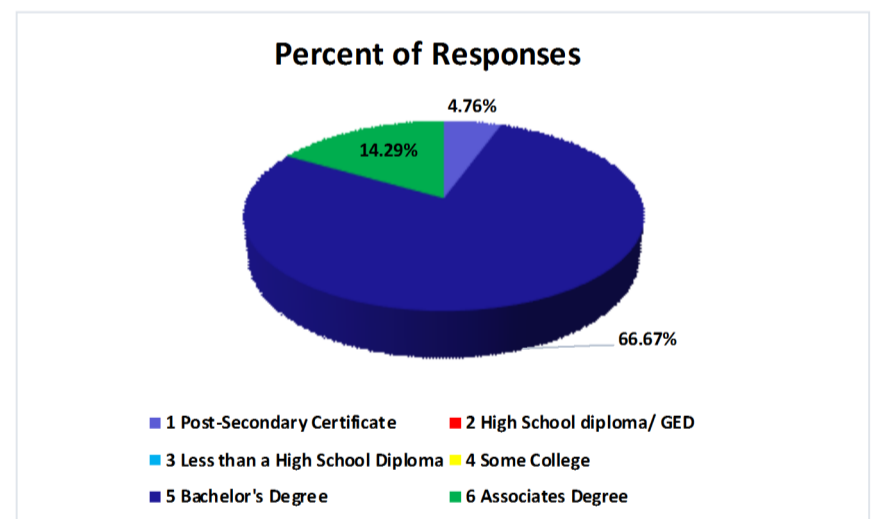
Time Management — Managing one's own time and the time of others.

EMPLOYMENT PROJECTION



EDUCATION

The graph below shows the results of a national survey listing the most common required level of education for Manufacturing Engineering.



EDUCATION FOR THIS JOB

- 2014 Catalogue of Colorado Advanced Manufacturing Program and Skill Resources
<http://www.coloradomanufacturingcareers.com/>
- Approved Colorado Community College Manufacturing Cluster education programs
<http://www.coloradocommunitycolleges.com/go/programs/skilled-trades-technical-sciences/>
<http://www.coloradocommunitycolleges.com/go/>
- Colorado Four Year Colleges and Universities
<http://higher.ed.colorado.gov/academics/colleges/public4year.asp>
- Locations to Get Manufacturing Certificates
<http://www.coloradomanufacturingcareers.com/>

