



WAGE DATA

Rate Type / Statistical Type	Entry level	Mean	Experienced
Annual wage or salary	\$61,211	\$87,124	\$98,700
Hourly wage	\$29.01	\$40.03	\$47.93

JOB DESCRIPTION

Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.

DUTIES

- Read and interpret blueprints, technical drawings, schematics, or computer-generated reports.
- Assist drafters in developing the structural design of products using drafting tools or computer-assisted design (CAD) or drafting equipment and software.
- Research, design, evaluate, install, operate, and maintain mechanical products, equipment, systems and processes to meet requirements, applying knowledge of engineering principles.
- Confer with engineers or other personnel to implement operating procedures, resolve system malfunctions, or provide technical information.
- Recommend design modifications to eliminate machine or system malfunctions.
- Conduct research that tests or analyzes the feasibility, design, operation, or performance of equipment, components, or systems.
- Investigate equipment failures and difficulties to diagnose faulty operation, and to make recommendations to maintenance crew.
- Develop and test models of alternate designs and processing methods to assess feasibility, operating condition effects, possible new applications and necessity of modification.
- Develop, coordinate, or monitor all aspects of production, including selection of manufacturing methods, fabrication, or operation of product designs.
- Specify system components or direct modification of products to ensure conformance with engineering design and performance specifications.

TOOLS and TECHNOLOGY

Tools used in this occupation:

Flowmeters — Digital particle image velocimeters, Laser Doppler anemometers, Laser Doppler velocimeters LDV, Pitot tubes

Machine mounts or vibration isolators — Vibration control systems, Vibration isolators

Semiconductor process systems — Plasma etchers, Rapid thermal processing systems, Wafer dicing saws, Wire bonders

Signal generators — Function generators, Pattern generators

Voltage comparator integrated circuits — Analog to digital converters, Digital to analog converters

Technology used in this occupation:

Analytical or scientific software — MAYA Nastran, ReliaSoft Weibull++ 6, Sigmetrix CETOL 6 Sigma, The MathWorks MATLAB

Computer aided design CAD software — Autodesk AutoCAD software, SolidWorks CAD software, UGS I-DEAS; Zeemax software

Computer aided manufacturing CAM software — Rapid prototyping software

Development environment software — Ladder Logic, Microsoft Visual Basic, National Instruments LabVIEW, Rockwell Software

Object or component oriented development software — C++, G-code

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.

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

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

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

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

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.

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

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

Customer and Personal Service — Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.

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

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

Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.

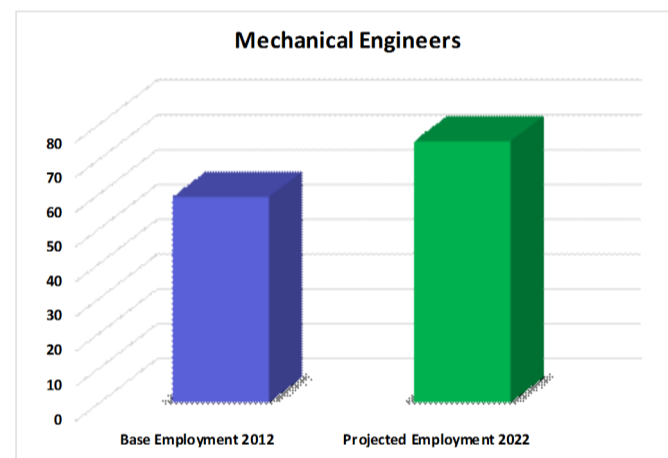
Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

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

Mathematics — Using mathematics to solve problems.

Reading Comprehension — Understanding written sentences and paragraphs

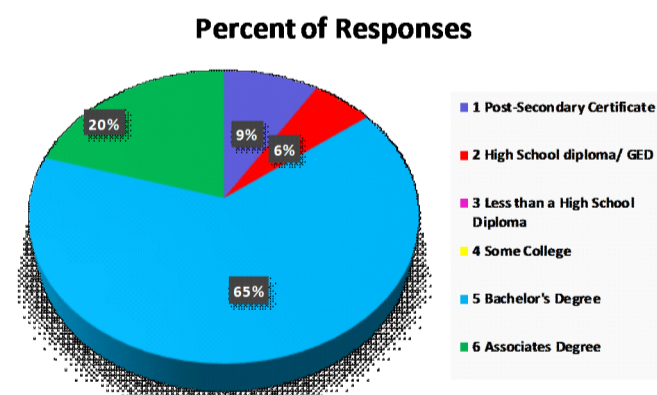
EMPLOYMENT PROJECTION



This information is based on LMI Gateway Data

EDUCATION

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



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://highered.colorado.gov/academics/colleges/public4year.asp>
- Locations to Get Manufacturing Certificates
<http://www.coloradomanufacturingcareers.com/>

