



WAGE DATA

Rate Type / Statistical Type	Entry level	Mean	Experienced
Annual wage or salary	\$40,512	\$44,614	\$50,891
Hourly wage	\$20.70	\$23.82	\$24.25

JOB DESCRIPTION

Assist mechanical engineers in such activities as generation, transmission, or use of mechanical or fluid energy. Prepare layouts of machinery or equipment or plan the flow of work. May conduct statistical studies or analyze production costs.

Sample of reported job titles: CAD Designer (Computer Aided Design Designer), Engineer Technical Staff, Engineering Tech, Engineering Technologist, Mechanical Designer, Mechanical Designer/Wind-Chill Administrator, Senior Designer, Senior Process Analyst, Technical Staff Engineer, Tooling Engineering Tech

DUTIES

- Interpret engineering sketches, specifications, or drawings.
- Assist engineers to design, develop, test, or manufacture industrial machinery, consumer products, or other equipment.
- Design specialized or customized equipment, machines, or structures.
- Prepare specifications, designs, or sketches for machines, components, or systems related to the generation, transmission, or use of mechanical or fluid energy.
- Provide technical support to other employees regarding mechanical design, fabrication, testing, or documentation.
- Inspect and test mechanical equipment.
- Conduct failure analyses, document results, and recommend corrective actions.
- Assemble or disassemble complex mechanical systems.
- Test machines, components, materials, or products to determine characteristics such as performance, strength, or response to stress.
- Prepare cost and materials estimates or project schedules.

TOOLS and TECHNOLOGY

Tools used in this occupation:

Laboratory benches — Hydraulic benches, Hydrostatics benches

Load frame — Manual load frames, Servohydraulic load frames

Power grinders — Bench grinders, Grinding machines, Internal grinding machines, Tool grinders

Power saws — Cold cut chop saws, Dual column bandsaws

Tracer or duplicating or contouring lathe — Lathes, Micro lathes

Technology used in this occupation:

Analytical or scientific software — ANSYS FLUENT, Intellisense Intellisuite, ProModel software, The MathWorks MATLAB

Computer aided design CAD software — Autodesk Inventor, Bentley Microstation, Dassault Systemes SolidWorks software, PTC Pro/ENGINEER Mechanical

Computer aided manufacturing CAM software — Stereolithography SLA rapid prototyping systems, TekSoft CAMWorks

Electronic mail software — Microsoft Outlook

Spreadsheet software — Microsoft Excel

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.

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

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, and principles involved in production of precision technical plans, blueprints, drawings, and models.

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

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

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

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.

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.

Clerical — Knowledge of administrative and clerical procedures and systems such as word processing, managing files and records, stenography and transcription, designing forms, and other office procedures and terminology.

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.

Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.

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

Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

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

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

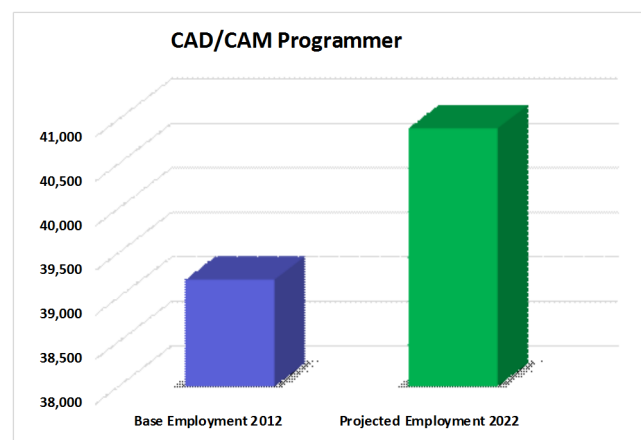
Operation and Control — Controlling operations of equipment or systems.

Speaking — Talking to others to convey information effectively.

Writing — Communicating effectively in writing as appropriate for the needs of the audience.

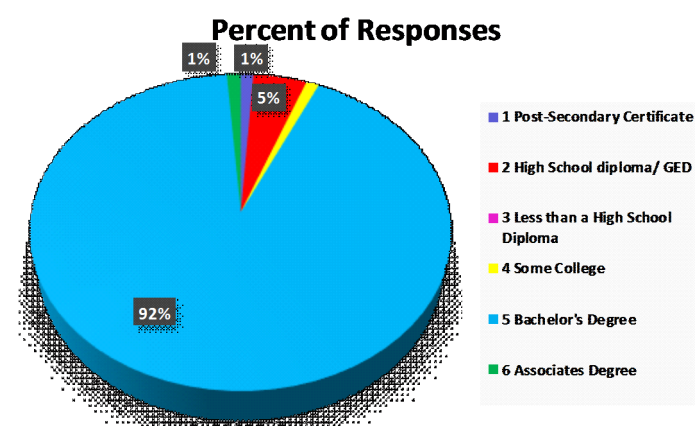
Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.

EMPLOYMENT PROJECTION



EDUCATION

The graph below shows the results of a national survey listing the most common required level of education for CAD/CAM Programmer.



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/>

