



WAGE DATA

Rate Type / Statistical Type	Entry level	Mean	Experienced
Annual wage or salary	\$38,477	\$42,159	\$65,900
Hourly wage	\$18.70	\$20.82	\$34.25

JOB DESCRIPTION

Develop programs to control machining or processing of metal or plastic parts by automatic machine tools, equipment, or systems.

DUTIES

- Determine the sequence of machine operations and select the proper cutting tools needed to machine work pieces into the desired shapes.
- Revise programs or tapes to eliminate errors and retest programs to check that problems have been solved.
- Analyze job orders, drawings, blueprints, specifications, printed circuit board pattern films, and design data to calculate dimensions, tool selection, machine speeds, and feed rates.
- Determine reference points, machine cutting paths, or hole locations, and compute angular and linear dimensions, radii, and curvatures.
- Observe machines on trial runs or conduct computer simulations to ensure that programs and machinery will function properly and produce items that meet specifications.
- Compare encoded tapes or computer printouts with original part specifications and blueprints to verify accuracy of instructions.
- Enter coordinates of hole locations into program memories by depressing pedals or buttons of programmers.
- Write programs in the language of a machine's controller and store programs on media such as punch tapes, magnetic tapes, or disks.
- Modify existing programs to enhance efficiency.
- Enter computer commands to store or retrieve parts patterns, graphic displays, or programs that transfer data to other media.

KNOWLEDGE

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

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

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

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.

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

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

Education and Training — Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.

SKILLS

Programming — Writing computer programs for various purposes.

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

Monitoring — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

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.

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

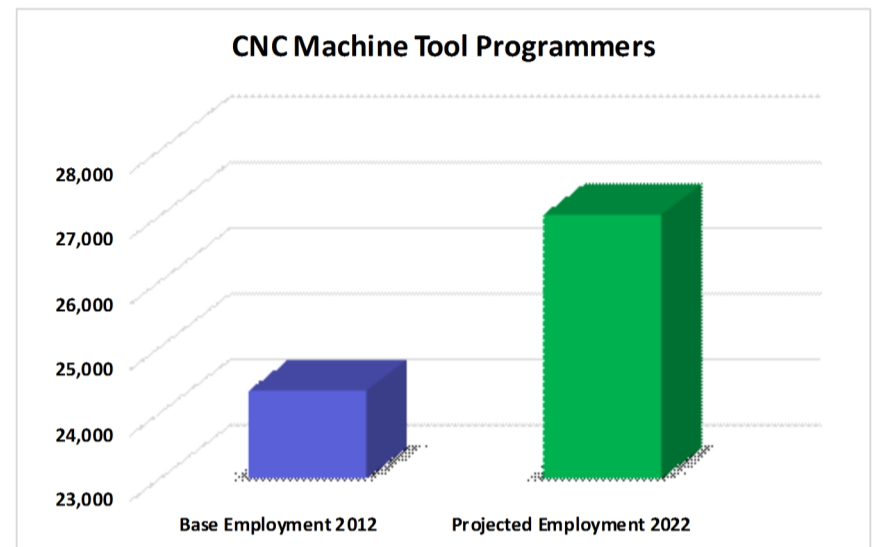
Judgment and Decision Making — Considering the relative costs and benefits of potential actions to choose the most appropriate one.

Mathematics — Using mathematics to solve problems.

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

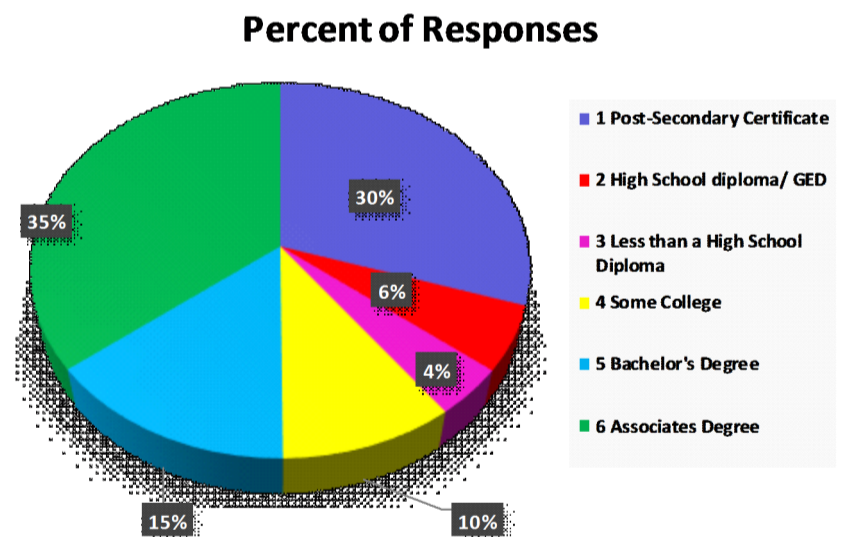
Systems Analysis — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

EMPLOYMENT PROJECTION



EDUCATION

The graph below shows the results of a national survey listing the most common required level of education for CNC Machine Tool Programmers.



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

