


WISE Pathways

Women in Sustainable Employment

Building awareness of careers in construction, energy, and manufacturing for women.



Manufacturing Industry

A woman with dark hair, wearing safety glasses and a white lab coat, is working in a laboratory. She is holding a test tube in her right hand and a pipette in her left hand. The background is a blurred laboratory setting with various pieces of equipment and glassware. The entire image has a light blue tint.

What is Manufacturing?

- The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products.
- Establishments in the Manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment.
- Manufacturers produce products such as food, textiles, paper, plastics and rubber, metals and machinery.

Facts About the Manufacturing Industry



- Manufacturing is the fourth largest employer in the United States.
- 11.6 million employees produce goods that we consume domestically or exported abroad.
- Women make up nearly one-third of the manufacturing workforce.
- Average pay in manufacturing is \$50,396.

*From the U.S. Census Bureau.

Manufacturing Top Five

- Machinist (median salary: \$20.48 hour)
- CNC Machine Operator (median salary: \$18.86 hour)
- Welder (median salary: \$19.35 hour)
- Maintenance Worker, Machinery (median salary: \$21.89 hour)
- Electronic Assembler (median salary: \$15.66 hour)

*Source: O*NET 2018

Machinist: What do you do?

- Measure, examine, or test completed units to check

for defects and ensure conformance to specifications

- Set controls to regulate machining
- Maintain industrial machines, applying knowledge of mechanics, shop mathematics, metal properties, layout, and machining procedures

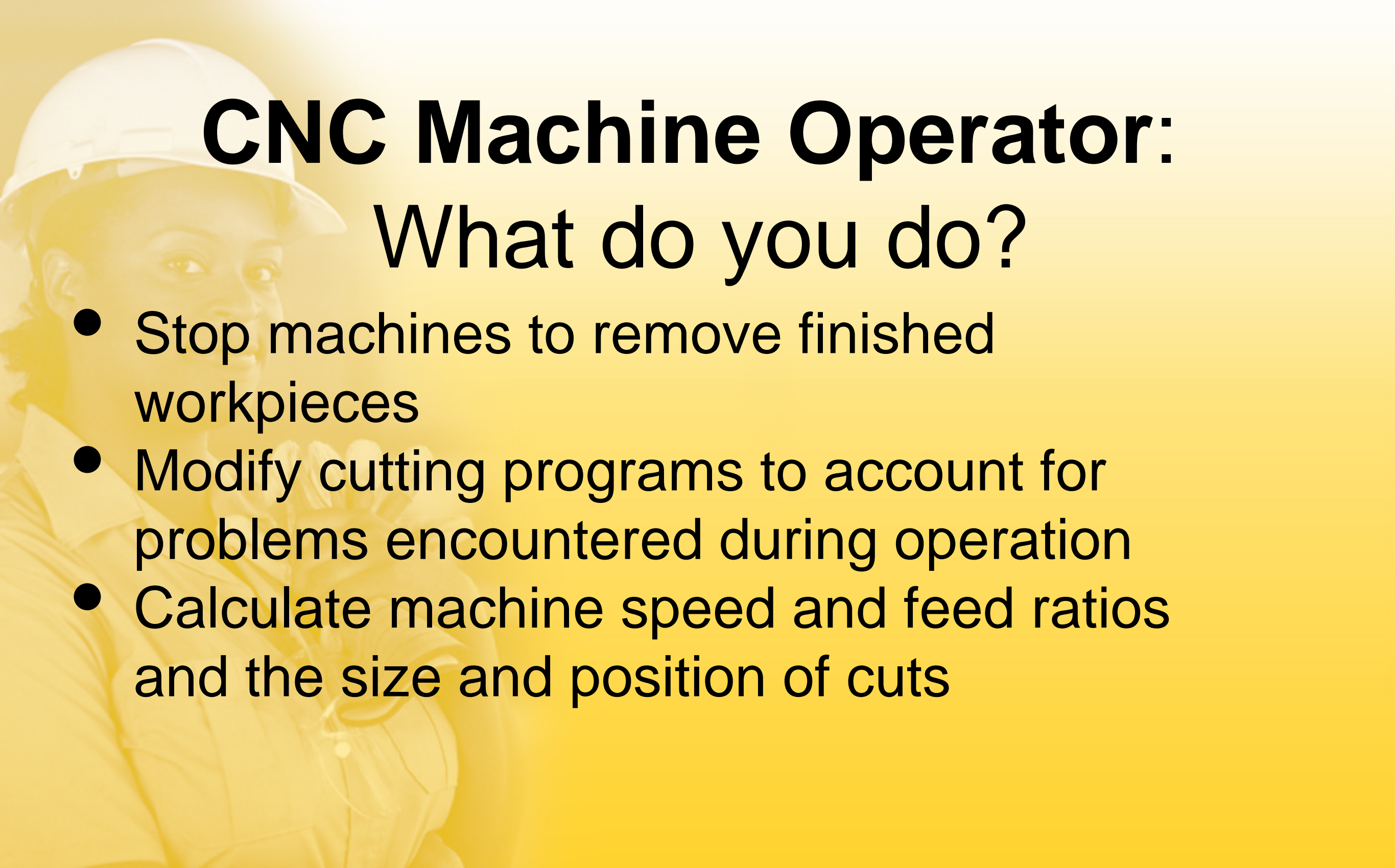
Machinist: What do you do?

- Calculate dimensions and tolerances using knowledge of mathematics and instruments
- Select the appropriate tools, machines, and materials to be used in preparation of machinery work
- Monitor the feed and speed of machines during the machining process
- Set up, adjust, and operate all of the basic machine tools

CNC Machine Operator:

What do you do?

- Measure dimensions of finished workpieces to ensure conformance to specifications
- Remove and replace dull cutting tools
- Mount, install, align, and secure tools, attachments, fixtures, and workpieces on machines
- Adjust machine feed and speed, change cutting tools, or adjust machine controls when automatic programming is faulty or if machines malfunction



CNC Machine Operator: **What do you do?**

- Stop machines to remove finished workpieces
- Modify cutting programs to account for problems encountered during operation
- Calculate machine speed and feed ratios and the size and position of cuts

Welder: What do you do?

- Weld components in flat, vertical, or overhead positions
- Use various methods to obtain required configurations and positions for welding
- Detect faulty operation of equipment or defective materials and notify supervisors
- Operate manual or semi-automatic welding equipment to fuse metal segments

Welder: What do you do?

- Monitor the fitting, burning, and welding processes to avoid overheating of parts or warping, shrinking, distortion, or expansion of material
- Examine workpieces for defects to ensure conformance with specifications
- Recognize, set up, and operate hand and power tools
- Operate brazing and soldering equipment



Maintenance Worker, Machinery: What do you do?

- Record production, repair, and machine maintenance information
- Read work orders and specifications to determine machines and equipment requiring repair or maintenance
- Set up and operate machines, and adjust controls to regulate operations

Maintenance Worker,

Machinery: What do you do?

- Reassemble machines after the completion of repair or maintenance work
- Start machines and observe mechanical operation to determine efficiency and to detect problems
- Inspect or test damaged machine parts, and mark defective areas
- Install, replace, or change machine parts and attachments

Electronics Assembler:

What do you do?

- Read and interpret schematic drawings, diagrams, blueprints, specifications, work orders, or reports
- Position, align, or adjust work pieces or electrical parts to facilitate wiring or assembly
- Pack finished assemblies for shipment and transport them to storage areas
- Explain assembly procedures or techniques to other workers

Electronics Assembler:

What do you do?

- Inspect or test wiring installations, assemblies, or circuits
- Assemble electrical or electronic systems or support structures and install components, and other pieces
- Adjust, repair, or replace electrical or electronic component parts to correct defects and to ensure conformance to specifications

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Manufacturing Industry Education/Credentials

- Required: High school diploma or GED
- Desirable: National Career Readiness Certificate (NCRC)
- Machinist: post-secondary certificate desirable; NIMS certification
- CNC Machine Operator: post-secondary certificate or degree desirable; NIMS certification
- Welder: post-secondary certificate desirable; AWS certification
- Maintenance Worker, Machinery: post-secondary certificate desirable; NIMS certifications
- Electronics Assembler: a few certifications are offered

Video

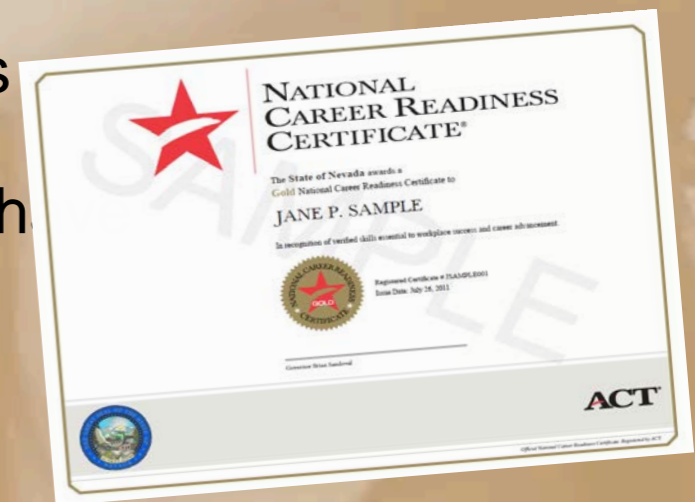
Manufacturing Institute's STEP Ahead Awards

<https://youtu.be/IP3MtztaAsk>

What is the NCRC?

The ACT WorkKeys National Career Readiness Certificate (ACT WorkKeys NCRC®) is an assessment-based credential issued at four levels; Platinum, Gold, Silver, and Bronze. The NCRC measures and certifies the essential work skills needed for success in jobs across industries and occupations. With an NCRC, you can:

- Build confidence that your skills meet the needs of employers
- Show prospective employers concrete proof of the skills you have
- Apply real-world use to coursework from the classroom
- Determine skill improvement and training needs
- Improve the opportunities for career changes and advancement
- Earn college credit at many institutions and reach academic goals more quickly



NCRC: Qualifying for the Credential

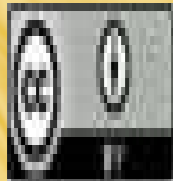
- A multi-level credential
- Requires scores of Level 3 or higher on three assessments:

Applied Math, Workplace Documents, Graphic Literacy

- Bronze: Level 3 or higher on each assessment
- Silver: Level 4 or higher
- Gold: Level 5 or higher
- Platinum: Level 6 or higher

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