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

*From The Bureau of Labor Statistics.
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
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
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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