



APPRENTICESHIP PROGRAM OUTLINE

NUMERICAL CONTROL MACHINE OPERATOR WORK PROCESSES & SKILLS

The term of the apprenticeship will be based on the apprentice's completion and on-the-job demonstration of the professional competencies outlined in the work processes. Apprentices must demonstrate competency in a minimum of **87.5%** of the listed competencies prior to completing the program. If training employers identify specific competencies that cannot be tested on the job, the apprenticeship committee will approve and provide instruction and testing that ensures the competencies have been met. Registered Apprentices will perform work and are required to demonstrate competencies in the following skills:

Work Processes & Skills

- Lay out and mark areas of parts to be shot-peened and fill hoppers with shot.
- Write simple programs for computer-controlled machine tools.
- Input initial part dimensions into machine control panels.
- Clean machines, tooling, or parts, using solvents or solutions and rags.
- Set up future jobs while machines are operating.
- Implement changes to machine programs and enter new specifications, using computers.
- Confer with supervisors or programmers to resolve machine malfunctions or production errors or to obtain approval to continue production.
- Maintain machines and remove and replace broken or worn machine tools, using hand tools.
- Control coolant systems.
- Stack or load finished items or place items on conveyor systems.
- Lift workpieces to machines manually or with hoists or cranes.
- Adjust machine feed and speed, change cutting tools, or adjust machine controls when automatic programming is faulty or if machines malfunction.
- Calculate machine speed and feed ratios and the size and position of cuts.
- Modify cutting programs to account for problems encountered during operation and save modified programs.
- Enter commands or load control media, such as tapes, cards, or disks, into machine controllers to retrieve programmed instructions.
- Monitor machine operation and control panel displays and compare readings to specifications to detect malfunctions.
- Remove and replace dull cutting tools.
- Listen to machines during operation to detect sounds such as those made by dull cutting tools or excessive vibration and adjust machines to compensate for problems.
- Review program specifications or blueprints to determine and set machine operations and sequencing, finished workpiece dimensions, or numerical control sequences.
- Insert control instructions into machine control units to start operation.
- Set up and operate computer-controlled machines or robots to perform one or more machine functions on metal or plastic workpieces.
- Check to ensure that workpieces are properly lubricated and cooled during machine operation.
- Transfer commands from servers to computer numerical control (CNC) modules, using computer network links.
- Stop machines to remove finished workpieces or to change tooling, setup, or workpiece placement, according to required machining sequences.
- Mount, install, align, and secure tools, attachments, fixtures, and workpieces on machines, using hand tools and precision measuring instruments.
- Measure dimensions of finished workpieces to ensure conformance to specifications, using precision measuring instruments, templates, and fixtures.

REGISTERED WITH:





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Apprentices must Complete Coursework Aligned with Manufacturing and/or Machining Technology, Production Technician, and/or Engineering Technology pathways. Through consultation with the Apprenticeship Committee, the Local Education Agency, and the indenturing employer, apprentices will select an applicable program of study/course track and complete a minimum of **144 hours** of related instruction per year of apprenticeship. Prior applicable education and training will be credited towards completion of related education requirements and apprentices will be offered tracks advancing their technical aptitude in the profession.

Related Instruction Content May Include

SOLID WORKS	108 HOURS
BLUEPRINT READING	54 HOURS
GENERAL MACHINE SHOP & THEORY OF MACHINING	108 HOURS
OSHA STANDARDS FOR GENERAL INDUSTRY	18 HOURS
CNC SET UP AND OPERATIONS	108 HOURS
CNC PROGRAM WRITING	90 HOURS
COOPERATIVE WORK EXPERIENCE (1-16 UNITS)	



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