



APPRENTICESHIP PROGRAM OUTLINE

Tool Programmer (CNC) 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

- Write programs in the language of a machine's controller and store programs on media such as punch tapes, magnetic tapes, or disks.
- Determine the sequence of machine operations, and select the proper cutting tools needed to machine workpieces 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.
- Write instruction sheets and cutter lists for a machine's controller to guide setup and encode numerical control tapes.
- Observe machines on trial runs or conduct computer simulations to ensure that programs and machinery will function properly and produce items that meet specifications.
- Enter computer commands to store or retrieve parts patterns, graphic displays, or programs that transfer data to other media.
- Modify existing programs to enhance efficiency.
- Determine reference points, machine cutting paths, or hole locations, and compute angular and linear dimensions, radii, and curvatures.

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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 I	108 HOURS
BLUEPRINT READING	54 HOURS
COMPUTER AIDED DRAFTING	108 HOURS
OSHA STANDARDS FOR GENERAL INDUSTRY	18 HOURS
GEOMETRIC DIMENSIONING & TOLERANCING	90 HOURS
MATH FOR ENGINEERING TECHNOLOGY	54 HOURS
COMPUTER AIDED MANUFACTURING-MASTERCAM	144 HOURS
CNC MACHINE SETUP AND OPERATION	108 HOURS
CNC PROGRAM WRITING	90 HOURS
COOPERATIVE WORK EXPERIENCE (1-16 UNITS)	

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