

**CNC SAWYER  
(Time-Based)**

**APPENDIX A**

O\*NET CODE 51-9032.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

**WORK PROCESSES**

	<b>Approximate Hours</b>
<b>A. Safety and Workplace Orientation</b>	<b>100</b>
1. Demonstrate knowledge of workplace policies, procedures, etc.	
2. Describe workplace structure and workflow.	
3. Practice working safely around machines and throughout workspace.	
4. Demonstrate knowledge of workplace safety plans.	
5. Learn proper body mechanics for work tasks.	
<b>B. Material Fundamentals</b>	<b>600</b>
1. Develop familiarity with materials, e.g., stone, plastic, wood, and their properties/characteristics.	
2. Ready material for use: transport to appropriate shopfloor locations; prep material prior to work operation(s); place materials on work “tables” utilizing appropriate manual and/or mechanical methods.	
3. Read and interpret job orders.	
<b>C. Computer Numerical Control (CNC) Fundamentals</b>	<b>400</b>
1. Demonstrate an understanding of spec sheets and blueprints (if applicable).	
2. Learn basics/use Cartesian/rectangular coordinate system.	
3. Learn and understand polar coordinate system (if applicable).	
4. Learn and understand positioning systems.	
5. Learn and understand CNC Codes: g-codes and m-codes.	

6. Demonstrate knowledge of CNC program elements: a. program Safe-start; material removal; and c. program ending.

**D. CNC Saw Operation**

**1000**

1. Become familiar with basic components of CNC saws, such as: Machine Control Unit (MCU), or CNC Control Pendant; work table, or “bench”; head or spindle(s); bridge; axis(-es); saw blades.
2. Enter/input CNC program on MCU; identify parts of program.
3. Make production runs, including material setup, machine setup, and material removal.
4. Complete all necessary documentation.
5. Troubleshoot production issues.
6. Perform Quality Control (if applicable).
7. Perform preventive maintenance.

**E. CNC Water Jet Machining (Optional\*)**

**400**

1. Become familiar with water jet components, including abrasive grit(s).
2. Enter/input CNC program on MCU; identify parts of program.
3. Make production runs, including material setup, machine setup, and material removal.
4. Complete all necessary documentation.
5. Troubleshoot production issues.
6. Perform Quality Control (if applicable).
7. Perform preventive maintenance.

**Approximate Total Hours**

**2500**

\*If Optional Work Processes are not selected, the hours should be devoted to further mastery of required Work Processes.

*Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <https://dol.ny.gov/public-work-and-prevailing-wage>*

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**APPENDIX B**

**RELATED INSTRUCTION**

**Safety & Health**

1. General Workplace Safety
2. Personal Protective Equipment (PPE)
3. Right-to-Know/Safety Data Sheets (SDS)
4. Sexual Harassment Prevention – MUST comply with Section 201-g of the Labor Law
5. Lock-Out/Tag-Out (LO/TO)
6. First Aid and CPR

**Trade Theory and Skills**

1. Trade math, including speeds and feeds
2. Geometry
3. Engineering Drawings
4. Computer-Aided Design (CAD)/Computer-Aided Manufacturing (CAM)
5. Materials and Their Properties
6. Basic Machining: Concepts, Materials, and Machinery
7. Geometric Dimensioning & Tolerancing (GD&T) (if applicable)
8. Abrasives (if applicable)
9. CNC Saws
10. CNC Programming and Program Writing
11. Quality Control Basics
12. Metrology & Measuring Instruments (if applicable)
13. Recordkeeping

**Other Topics as Necessary**

A Minimum of 180 hours of Related Instruction is Required for Each Apprentice, 144 of Which Must be Provided in First Year.

Appendix B topics are approved by New York State Education Department.