

APPENDIX A

ELECTRICAL DISCHARGE MACHINE (EDM) -Wire and Sinkers PROGRAMMER/OPERATOR (Time-Based)

D.O.T. CODE 609.380-010/609.482-010
O*NET CODE 51-4199.00

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, and safety/health issues may result in the need for additional on-the-job or classroom learning.

WORK PROCESSES

	<u>Approximate Hours</u>
A. <u>Basic Machine Shop Skills</u>	1000
1. Reading blueprints and schematic drawings.	
2. Understanding machining concepts/ Understanding manufacturing processes.	
3. Using machining tools, including: drill presses, manual lathes, grinders, manual mills, Computer Numerical Control (CNC) mills, CNC lathes (if available).	
4. Using hand tools and instruments, such as: clamps, allen wrenches, adjustable wrenches, dial indicators, calipers, micrometers, gage blocks, and manual Coordinate Measuring Machine (CMM)	
B. <u>Electrode Fabrication and Estimating, and CNC Programming</u>	2500
1. Interpreting design drawings (design by others).	
2. Programming specifications using Computer-Aided Design (CAD)/ Computer-Aided Manufacturing (CAM) software.	
3. Machining electrodes from raw stock, such as: graphite, copper-coated graphite, various metals.	
4. Calculating number of electrodes needing fashioning based on type of machining job, material(s) being used.	
C. <u>Electrical Discharge Machine Setup</u>	1500
1. Designing fixtures to support workpieces, using machining methods and hand tools when necessary.	
2. Loading CNC-programmed designs into machinery.	

3. Affixing wire electrode spools and threading through guides prior to operation.
4. Selecting proper wires and guides based on application.
5. Filling and servicing EDM reservoirs, pumps and filters.
6. Drilling through-holes to accommodate EDM wire.

D. Electrical Discharge Machine Operation 2500

1. Initiating machining process.
2. Monitoring workstations while machining is performed.
3. Interrupting machining to insert/replace used electrodes.
4. Conducting in-process inspection
 - a. Utilizing gage (gauge) blocks.
 - b. Using micrometers and calipers.
 - c. Operating Coordinate Measuring Machine (CMM); running standard program.
 - d. Reading instrumentation to check the desired dimensions and tolerances.
5. Adjusting production process to incorporate changes needed to improve finished product.

E. Miscellaneous (At Option of Sponsor) 500

1. Performing scheduled machine operator maintenance.
2. Cleaning work area(s).
3. Ready finished work for transfer to quality control.
4. Completing process paperwork and inspection documentation.
5. Familiarizing oneself with basic quality control.

Total Hours 8000

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 <http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf>

APPENDIX B
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RELATED INSTRUCTION

Safety & Health

General Workplace Safety
Forklift Safety (if forklifts will be used on job)
First Aid & CPR (minimum 6.5 hours every 3 years)
Right-to-Know/Material Safety Data Sheets (MSDS)
Proper Use of All Trade-Related Personal Protective Equipment (PPE)
Blood borne Pathogens

Engineering Drawings & Mathematics

Reading Blueprints and Schematic Drawings
Interpreting Design Drawings
Math Fundamentals
Estimating
Geometric Dimensioning Tolerancing (GDT)
Basics of Computer-Aided Design (CAD)

Trade Theory and Science

Machining Concepts/ Manufacturing Processes –including hands-on instruction
Machining Tools, Equipment, and Materials
Fixture Design and Manufacturing
Metallurgy / Material Science
Computer Numerical Control (CNC) Programming
Precision Measurement: Tools and Methods: Manual,
Coordinate Measuring Machine (CMM)

Other Workplace Skills

Sexual Harassment Prevention Training (minimum 3 hours)
Interpersonal Communication: oral and written
Basic Computer Skills, such as: word processing, spreadsheets, email and web
browsing

A Minimum of 144 Hours of Related Instruction is Required for Each Apprentice for Each Year.