

PLANT MAINTENANCE – MILLWRIGHT

APPENDIX A

O*NET CODE 49-9044.00

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

	Approximate Hours
A. Tools, Machines, and Equipment	600
1. Use of personal protective safety equipment.	
2. Safe use and proper care of hand tools, power tools, measuring devices, equipment.	
3. Familiarization with industrial machines and equipment.	
4. Stockroom layout, catalogs, ordering procedures.	
B. Rigging and Equipment Handling	1,200
1. Erecting and use of ladders.	
2. Erecting, dismantling, and repairing scaffolding.	
3. Unloading/unpacking machinery and equipment.	
4. Inspecting for completeness and any damages.	
5. Selection of conveying and hoisting methods, based on load-bearing characteristics.	
6. Cables, ropes, and chains: selection based on load-bearing characteristics, inspections, adjustment, replacement, splicing, knotting, annealing, forging.	
7. Selection and use of pulleys.	
8. Use of slings and chokers.	
9. Hitching.	
10. Using other hoisting devices.	
11. Using of dollies and rollers.	
12. Assisting crane operator (optional).	
C. Installation of Machinery and Equipment	1,200
1. General	

- a. Review of blueprints
- b. Layouts
- c. Checking utility connections
- d. Assembling machinery and equipment
- e. Installing electric motors (excluding wiring)
- f. Setting machines and equipment
- g. Measuring, leveling, aligning
- h. Fastening (bolting, welding, riveting)
- i. Grouting
- j. Calibrating
- k. Conducting test run
- l. Adjusting
- 2. Robots (optional*)
 - a. Operating fundamentals
 - b. Installing mechanical parts
 - c. Modifying programs

D. Maintenance and Repair of Machinery and Equipment 3,000

- 1. Preventive maintenance: inspection, cleaning, lubrication, replacement, and repair of worn parts.
- 2. Troubleshooting: assembling and disassembling; inspecting mechanical parts; removing, replacing, and repairing defective parts; calibrating; adjusting and aligning; conducting test run.
- 3. Using machines such as engine lathe and grinder to grind, file, and turn machine parts to specifications.
- 4. Making replacement parts for machines and equipment.
- 5. Diagnosing and repairing automated systems (including robots, if available).

E. General Carpentry 500

- 1. Building forms.
- 2. Making safety blocks.
- 3. Constructing guard rails.
- 4. Performing other carpentry duties necessary to set up machines.

5. Maintaining buildings and fixtures (if in keeping with trade jurisdiction and area practice).

F. Foundations and Pavement **500**

1. Constructing wood, concrete, and steel foundations for machines.
2. Constructing and repairing sidewalks, roads, drives (if in keeping with trade jurisdiction and area practice).

G. Cutting and Burning **500**

1. Torch cutting
2. Welding
3. Brazing
4. Soldering

H. Pipefitting (optional*) **500**

1. Fabricating, installing, and repairing piping and tubing.
2. Installing and repairing valves, supports, and other associated devices.
3. Unplugging lines.

Approximate Total Hours **8,000**

*If optional work processes are not chosen, the extra hours should be devoted to further mastery of the other 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

1. Fundamentals
2. Trade Safety
3. Asbestos Awareness – minimum 4 hours (see attachment)
4. First Aid – 6.5 hours minimum every 3 years
5. Sexual Harassment Prevention – must comply with Section 201-g of the Labor Law

Industrial History and Labor Relations (20 hours)

1. History and Background (6 hours first year)
2. Current Laws and Practices (14 hours second year)

Blueprint Reading and Sketching

1. Elementary Industrial Blueprint Reading
2. Advanced Industrial Blueprint Reading
3. Reading Mechanical Schematics
4. Sketching and Layout

Mathematics

1. Fundamentals of Mathematics
2. Shop Mathematics and Measurement
3. Use of Handbooks and Reference Tables
4. Estimating for Installation and Reconditioning

Trade Theory and Science

1. Hand Tools, Power Tools and Portable Equipment for Millwrights
2. Machine Tools
3. Use and Care of Tools and Equipment
4. Materials of the Trade
5. Properties of Construction Materials
6. Fundamental Mechanics
7. Advanced Mechanics

8. Hydraulics
9. Pneumatics
10. Basic Electricity
11. Electronics
12. Introduction to Industrial Machines
13. Introduction to Computers
14. Operational Fundamentals of Automated Systems
(including robots, if available)
15. Plant Planning and Layout
16. Scaffolding
17. Rigging
18. Installation of Machinery and Controlling Auxiliaries
19. State and Local Codes for Installing Machinery
20. Welding
21. Power Transmission Equipment Installation
22. Mechanical Maintenance, Repair, Troubleshooting
23. Carpentry for Millwrights
24. Sheetmetal Work for Millwrights (optional)
25. Industrial Pipefitting (If Work Process "H" is selected)
26. Interpersonal Communication

Other Related Topics as Necessary

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

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

ATTACHMENT TO APPENDIX B

Asbestos Awareness

This course must be delivered by one of the following:

1. A provider currently approved by the New York State Department of Health to deliver asbestos safety training.
2. A person holding a current Asbestos Handler certificate from the New York State Department of Labor in the title of: Inspector, Supervisor, Project Monitor, Management Planner, or Project Designer.
3. Anyone otherwise approved by the New York State Education Department.

Minimum course contents must include the following:

1. Definition of asbestos
2. Types and physical characteristics
3. Uses and applications
4. Health effects:
 - a. Asbestos-related diseases
 - b. Risks to families
 - c. Cigarette smoking
 - d. Lack of safe exposure level
5. Employer-specific procedures to follow in case of potential exposure, including making a supervisor or building owner immediately aware of any suspected incidental asbestos disturbance so that proper containment and abatement procedures can be initiated promptly.

Notwithstanding the above course requirement, employers are advised that they must also be in compliance with New York State Department of Labor Industrial Code Rule 56 at all times.

Employers are further advised, and must advise all apprentices, that completion of the above course requirement does not authorize any person to remove, encapsulate, enclose, repair, disturb, or abate in any manner, any friable or non-friable asbestos, asbestos containing material, presumed asbestos containing material, or suspect miscellaneous asbestos containing material.