

PLUMBER & PIPEFITTER

APPENDIX A

O*NET CODE 47-2152.02

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. Rigging, Material Handling, Working at Heights	200
1. Signaling, rigging, hoisting.	
2. Loading/unloading materials in safe manner.	
3. Using ladders, scaffolding safely.	
4. Using power lifts, personnel lifts safely.	
B. Tools, Machines and Equipment	300
1. Care and safe use of:	
a. hand tools.	
b. power tools.	
c. cutting and burning equipment.	
d. machines used in the trade.	
C. Materials	200
1. Identifying grade, type and appropriate use of various piping materials.	
D. Basic Installation	1,600
1. Accurately reading specifications, blueprints, work orders.	
2. Planning and layout; including avoiding obstructions, maximizing efficiency, avoiding	
3. interfering with activities of other workers.	
4. Cutting structural openings as required.	
5. Cutting and threading pipe.	
6. Pipe bending.	
7. Pipe joining.	
8. Caulking of joints	

9. Assembling and installing pipe, fittings, valves, hydraulic and pneumatic equipment.
10. Securing pipes to structures, walls, fixtures.
11. Connecting to outside lines (e.g. - water, utility, sewage)
12. Inspecting pipe system for leaks, using such methods as gauges, hydrostatic testing, observation.

E. Cutting and Burning **500**

1. Following all safety procedures and policies.
2. Using cutting torch.
3. Welding for the trade.

F. Controls **500**

1. Installing electrical controls.
2. Installing hydraulic controls.
3. Installing pneumatic controls.
4. Maintaining and repairing controls.

G. Fixtures and Appliances **500**

1. Assembling, in position, and connecting fixtures and appliances used in plumbing and drainage systems.

H. Specialized Plumbing Work **1,000**

1. Installing sanitary, storm, waste, vent, hot water, cold water piping.
2. Water purification.
3. Sewage disposal.
4. Installing sheet lead (x-ray room and shower pan use only).
5. Demonstrating familiarity with all tools, equipment and replacement parts used in repair and service, maintaining proper inventory.
6. Maintaining, modifying and repairing plumbing systems; including lead and tin pipe repair.

I. Boiler Installation and Repair **700**

1. Low pressure.
2. High pressure.
3. Installing heating plant.
4. Insulating.

5. Installing steam and hot water piping.
6. Maintaining and repairing.

J. Gas Installations and Repair **700**

1. Pipe and fittings for natural gas installations.
2. Pipe and fittings for L.P. gas systems (if available).
3. Sizing and venting gas systems.
4. Gas appliances and controls.
5. Pipe and fittings for medical gas systems (including obtaining required certifications) (optional*).
6. Maintaining and repairing.

K. Oil Installations and Repair **700**

1. Connecting fuel oil tank, pump, and equipment in place.
2. Connecting oil pipeline, fittings, and valves in place.
3. Maintaining and repairing.

L. Geothermal Installations and Repair (optional*) **450**

1. Installing heat pumps.
2. Maintaining and repairing.

M. Solar Thermal Installations and Repair (optional*) **450**

1. Installing solar panels; running piping to hot water pumps; installing storage/mixing tanks.
2. Maintaining and repairing.

N. Refrigeration and Air-Conditioning Systems **600**

1. Installing refrigeration and air-conditioning systems including:
 - a. compressors
 - b. pumps
 - c. meters
 - d. pneumatic and hydraulic controls
 - e. piping
2. Testing, adjusting, balancing (TAB), using computer if available.
3. Maintaining and repairing.

O. Specialized Pipefitting Work **600**

1. Process piping.
2. Power piping.
3. Pneumatic tube pipe work.

Approximate Total Hours **9,000**

*If optional components are not selected, the hours should be devoted to further mastery of the 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>

PLUMBER & PIPEFITTER

APPENDIX B

RELATED INSTRUCTION

Safety and Health

1. OSHA 10-Hour Construction Course – if required for Public Work
2. Proper Use of Personal Protective Equipment (PPE)
3. Proper Lifting Techniques
4. Fall Protection
5. Scaffold Safety
6. Right-to-Know/Material Safety Data Sheets (MSDS)
7. Asbestos Awareness – minimum 4 hours (see attachment)
8. Welding Safety
9. First Aid – minimum 6.5 hours every 3 years
10. Sexual Harassment Prevention – must comply with Section 201-g of the Labor Law

Mathematics

1. Fundamentals
2. Trade Math, including pipe measurements

Blueprint Reading and Drawing

1. Reading Specifications
2. Reading Building Plans and Blueprints
3. Elementary Blueprint Reading for the Pipe Trades
4. Advanced Blueprint Reading for the Pipe Trades
5. Elementary Drawing
6. Advanced Drawing and Layout (using computers and trade-specific software if available)

Trade Theory and Science

1. Basic Building Construction
2. Use and Care of Tools, Machines, Equipment
3. Materials of the Trade
4. Trade Physics
5. Trade Chemistry

6. Bacteriology for the Trade
7. Rigging, Signaling, Hoisting
8. Local Plumbing Codes and Regulations
9. Water Supply
10. Drainage
11. Sewage Disposal
12. Water Pollution in Plumbing Systems – including back-flow prevention and cross-connection control devices
13. Soil and Waste Lines
14. Venting
15. Plumbing Fixtures and Appliances
16. Pumps
17. Valve Repair
18. Basic Electricity
19. Electric Controls for Mechanical Equipment Service
20. Layout
21. Heating Systems
22. Heat Pumps (if Work Process “L” is undertaken)
23. Solar Thermal Installations (if Work Process “M” is undertaken)
24. Steam Systems
25. Power Plant Operation
26. Refrigeration
27. Conservation and Safe Handling of Refrigerants
28. Air-Conditioning
29. Introduction to Start, Test and Balance
30. Gas Installations
31. Medical Gas Systems Certification (if Work Process “J-5” is undertaken)
32. Special Purpose Plumbing Installations
33. Soldering and Brazing
34. Welding
35. Cutting
36. Instrumentation and Process Control
37. Service and Repair Work

Other Workplace Skills

1. Computer Fundamentals
2. Oral and Written Communication Skills
3. Customer Service Skills

216 Hours of Related Instruction are Required for Each Apprentice for Each Year of the Program – minimum total of 972 hours.

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.