

# STEAMFITTER

## APPENDIX A

O\*NET CODE 47-2152.01

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. Rigging and Material Handling</b>	<b>200</b>
1. Rigging and signaling.	
2. Unloading materials in safe manner.	
<b>B. Tools, Machines and Equipment</b>	<b>400</b>
1. Safe use and care of:	
a. Hand tools	
b. Power tools	
c. Cutting and burning equipment	
d. Machines	
e. Ladders, scaffolds, slings	
<b>C. Planning and Layout</b>	<b>700</b>
1. Reviewing blueprints, plans, specifications, supervisor's directions.	
2. Selecting type and size pipe, related materials and equipment.	
3. Inspecting worksite to determine presence of obstructions and to ascertain that holes cut for pipe will not cause structural weakness.	
4. Laying out job; minimizing waste.	
5. Using computer for layout, if available.	
6. Measuring and marking structure and materials.	
<b>D. Pipe Cutting, Threading, Bending</b>	<b>800</b>
1. Cutting pipe using the following methods:	
a. Saws.	

- b. Pipe cutter.
  - c. Hammer and chisel.
  - d. Cutting torch.
  - e. Pipe cutting machine.
2. Using pipe threading machine.
  3. Using pipe bending tools and pipe bending machine.

**E. Pipe Joining** **800**

1. Connecting pipe and fittings by the following methods:
  - a. Threading
  - b. Soldering
  - c. Brazing
  - d. Fusing
  - e. Cementing and adhesives

**F. General Installation and Repair** **1,000 –2,000**

1. Cutting holes in structure prior to pipe installation.
2. Assembling pipes, tubes and fittings.
3. Securing pipes to structure with hangers, supports and fasteners.
4. Installing valves.
5. Installing hydraulic and pneumatic components such as pumps and cylinders.
6. Connecting equipment, such as radiators or tanks.
7. Increasing pressure in pipe system and testing for leaks.
8. Maintaining and repairing systems; turning valve to shut off gases or liquids in piping prior to beginning work.

**G. Controls** **500**

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

**H. Boiler Installation and Repair** **875 – 1,000**

1. Low pressure
2. High pressure

3. Installing heating plant.
4. Insulating.
5. Maintaining and repairing.

**I. Gas Installations and Repair** **875 – 1,000**

1. Natural gas installations.
2. L.P. gas systems.
3. Sizing and venting gas systems.
4. Gas appliances and controls.
5. Medical gas systems.
6. Maintaining and repairing.

**J. Oil Installations and Repair** **875 – 1000**

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

**K. Refrigeration and Air-Conditioning Systems** **875 – 1,000**

1. Installing refrigeration and air-conditioning systems including:
  - a. Compressor
  - b. Pumps
  - c. Meters
  - d. Pneumatic and hydraulic controls
  - e. Piping
2. Maintaining refrigeration and air-conditioning systems.

**L. Cutting and Burning** **600**

1. Using cutting torch.
2. Welding for the trade.

**Approximate Total Hours** **8,500 – 10,000**

*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>*

# **STEAMFITTER**

## **APPENDIX B**

### **RELATED INSTRUCTION**

#### **Safety and Health**

1. All applicable OSHA regulations, standards, rules
2. OSHA 10-Hour Construction Course – if required for Public Work
3. Proper lifting techniques
4. Fall protection
5. Blood-borne pathogens
6. First Aid – minimum 6.5 hours every 3 years
7. Asbestos Awareness – minimum 4 hours (see attachment)
8. Sexual Harassment Prevention Training – must comply with section 201-g of the Labor Law

#### **Mathematics**

1. Principles of basic math
2. How to use a pocket calculator
3. Pipe measurements
4. Instruments for piping systems layout
5. Algebra, as it applies to the trade

#### **Blueprint Reading and Sketching**

1. Drawing interpretation and plan reading
2. Reading building plans, blueprints, specifications
3. Graphic symbols used in the pipe trades
4. Advanced plan reading
5. Introduction to basic drawing
6. Advanced sketching and layout
7. Computer aided drafting

#### **Industrial and Labor Relations**

1. History and background (6 hours, 1<sup>st</sup> year)
2. Current laws and practices (14 hours, 2<sup>nd</sup> year)

## **Trade Theory**

1. Trade physics
2. Trade chemistry
3. Basic electricity
4. Properties of materials
5. Principles of mechanics

## **Trade Science**

1. Use and care of tools
2. Pipe, fittings, valves, supports and fasteners
3. Local plumbing code and regulations
4. Rigging
5. Steam systems
6. Pumps
7. Valve repair
8. Hydronic heating and cooling
9. Refrigeration
10. Air-conditioning
11. Conservation and safe handling of refrigerants
12. Introduction to starting, testing, balancing
13. Electric controls for mechanical equipment service
14. Soldering and brazing
15. Oxy-fuel cutting and welding
16. Shielded metal-arc welding
17. Gas tungsten arc welding

## **Other related courses as necessary**

216 hours of Related Instruction are required for each apprentice for each of the five years of the apprenticeship

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.**