

PLANT MAINTENANCE (REFRIGERATION AND AIR CONDITIONING MECHANIC)

APPENDIX A

O*NET CODE 49-9021.02

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. General Trade Orientation	296
1. Care and use of tools	
2. Test and measurement devices	
3. Types and sizes of piping, tubing, fittings	
4. Introduction to refrigeration components	
5. Safety procedures, and first aid procedures	
6. Equipment records and reports	
B. Fabrication of System Components	496
1. Cut, thread, flare, bend, shape piping and tubing	
2. Install fittings	
3. Solder, braze, tin fittings and components	
4. Care and use of oxy-acetylene and prestolite torches	
5. Silver and soft soldering	
C. System Installation and Connection	1,408
1. Electric supply lines and cables	
2. Electrical connections	
3. Water service line	
4. Air supply line	
5. Steam line	
6. Steam return line	
7. Steam traps and strainers	
8. Pressure reduction, expansion, evaporator, stop valves	
9. Suction and discharge lines	

- 10. Gauges
- 11. Dehydrators
- 12. Filters and strainers
- 13. Controls

D. Equipment Installation 896

- 1. Install condensers
- 2. Prepare compressors and motor bases
- 3. Install and align compressors and motors
- 4. Install evaporators and other cooling coils
- 5. Install and align centrifugal pumps and pump bases
- 6. Use of slings, lines, blocks and falls, chain hoists, rollers, dollies and skids

E. System Maintenance 992

- 1. Troubleshoot field systems
- 2. Test pressure, flow etc.
- 3. Check liquid levels
- 4. Check, repair leaks (freon, liquid)
- 5. Purge, dehydrate, charge systems
- 6. Repair, align, adjust fans and blower sections
- 7. Align pulleys, bearing blocks, belt tension

F. Equipment Repair 2,792

- 1. Disassemble and clean, repair/renew, perform shop tests and run-in compressors
- 2. Repair, pressure test, dehydrate evaporators
- 3. Repair, acidize condensers, roll condenser tubes
- 4. Remove, replace, disassemble, test, clean, calibrate, renew defective parts on controls of all types, such as:
 - a. Pneumatic
 - b. Electrical
 - c. Electro-Pneumatic
 - d. Thermostatic
 - e. Humidity
 - f. Pressure
 - g. Vacuum

G. Ducting	320
1. Supply systems	
2. Return systems	
3. Introduction to duct systems – for central air conditioning (fire dampers, etc.)	
4. Installation of controls (pressure, temperature)	
5. Leak testing (vacuum pressure)	
H. Miscellaneous	224
1. Orientation	
2. Housekeeping	
3. Safety	
4. Activity not otherwise listed	
I. Related Study	576

Approximate Total Hours	8,000
--------------------------------	--------------

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>.

PLANT MAINTENANCE REFRIGERATION AND AIR CONDITIONING MECHANIC

APPENDIX B

RELATED INSTRUCTION

Safety and Health

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

Mathematics

1. Practical arithmetic
2. Basic algebra
3. Plane Geometry
4. Trigonometry

Trade Drawing

1. Reading Blueprints
2. Elementary architectural drawing
3. Drawing and sketching
4. Specification writing

Related Trade Courses

1. Pipes and fittings
2. Pipework
3. Principles of heating, ventilating and air conditioning
4. Fractional horsepower motors
5. Principles of refrigeration
6. Refrigeration and air conditioning servicing
7. Controls for air condition
8. Estimating
9. Refrigerants
10. OSHA: Occupational Safety and Health Act
11. A.C. and D.C. Motors

144 Hours of Related Instruction are 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.