

## HVAC Apprenticeship Program Courses

Course	Credits	Total Class Hours
<b>Introduction to HVAC</b> Introduces the apprentices to the terminology used; the basic math concepts relevant to the HVAC industry and basic electrical concepts are covered.	1.11	40
<b>Tube and Piping Skills</b> Introduces the mechanical skills necessary to identify, select, and construct plastic, copper and ferrous tubing and pipe to industry and Code standards.	1.11	40
<b>Ductwork</b> Introduces the apprentice to the design and application of sheet steel, fiberglass and flexible duct layout and construction are extensively covered.	1.11	40
<b>Air Flow Basics</b> Topics covered include air moving devices, types of ductwork and fittings used, friction, airflow measurements and common test meters. Indoor air quality issues such as humidity, filtration and an introduction of commercial sized air devices are covered.	1.11	40
<b>Alternating Current and Controls</b> Types of motors, transformers and capacitors and covered in depth. The application of electronics in HVAC is introduced and basic troubleshooting of common electromechanical and electronic devices are explored.	1.11	40
<b>Introduction to Forced Air Heating</b> The theory of heating using air as a medium is introduced. The common components of each fuel are covered and how efficiency changes affects the heating cycle. The importance of proper venting and vent design and basic troubleshooting are introduced.	1.11	40
<b>Oil Heating</b> Common components, basic operation and	1.11	40

troubleshooting of high pressure gun burners and the integral safety devices used on oil fired equipment are covered.

### **Cooling Fundamentals**

Introduces the student to concepts of heat transfer, the refrigeration cycle used of the P/T chart. Evacuation, recovery, leak detection and basic troubleshooting are covered. 1.11 40

### **Troubleshooting HVAC**

Expanded troubleshooting of gas, electric furnaces and central air. Forced air systems are covered in detail. 1.11 40

### **Hydronics**

This course covers Hydronic equipment, types of piping circuits safety components, pumps and near boiler piping. Also basic steam and chilled water technology is introduced. 1.11 40

### **Preventative Maintenance**

Basics of planned maintenance, tooling required and air balancing are covered. Inspection, repair and replacement of belts, bearings and lubrication are covered in detail. 1.11 40

### **Heating and Cooling Design**

Interpretation and use of construction drawings, heat loss and gains, and site factors that affect equipment selection and duct design are introduced. 1.11 40

### **Indoor Air Quality and DDC Controls**

Factors that affect IAQ, the use of DDC controls in energy management are covered. Economizers, energy recovery and ice concepts are introduced. 1.11 40

### **Commercial Concepts**

Cooling towers, water quality and treatment, steam plant commissioning and idling are introduced. 1.11 40

### **Heat Pumps**

Introduces the operation, maintenance and 1.11 40

troubleshooting of heat pumps.

**Commercial Refrigeration Systems**

Types of common industrial and commercial refrigeration equipment are covered. Advanced troubleshooting skills are introduced for the technician. 1.11 40

<b>Total</b>	<b>16</b>	<b>640</b>
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**Additional Courses**

<b>Course</b>	<b>Total Hours</b>
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**OSHA Safety Construction**

Will provide the necessary OSHA Safety Construction Training requirements that are covered in 10 hours. 10

**Medic First Aid**

Provides basic first aid knowledge and care in adult CPR, choking aid, and emergency care. 8

**Medic First Aid Recertification**

Reviews the seven basic skills of first aid including CPR. 4

**Transition to Trainer \***

Apprentices will explore the skills necessary to be an effective trainer, discover how to deliver hands-on training, and examine the process for giving useful feedback. 8

\*Required