# HEATING, VENTILATION, AIR CONDITIONING AND REFRIGERATION

32-601-1

**Program Overview**

HVAC/R is one of the fastest-growing industries in the world today. With the changing laws involving refrigerants, there is a constant need for qualified service and installation technicians to work on residential HVAC equipment.

This program will provide proper training for people interested in a career in the residential/light commercial heating, ventilation, and air conditioning (HVAC) field. The technician will be prepared for employment in maintaining, servicing and installing HVAC systems for residential/light commercial applications. The most modern equipment, test instruments, and computers are used for instruction.

After completing the Residential HVAC one-year Technical Diploma program, students may wish to pursue an Associates Degree in AIR CONDITIONING AND REFRIGERATION TECHNOLOGY. Credits earned in the 1-year technical diploma are associate-level courses and can be applied to the Associate Degree.

- Perform HVAC/R service and repair operations in compliance with published safety standards.
- Promote customer satisfaction.
- Operate tools/equipment according to process published in operator's manual and/or demonstrated in class.
- Service and/or repair/replace defective components established in equipment specific repair manual and/or electronic service information systems.
- Diagnose root cause of problems by comparing test results to an established standard.
- Efficiently complete tasks within the expected time frame for an entry level technician.

**Semester 1**

- A/C Safety, Tools, Thermal Dynamics and HVAC Terminology - 1 credit
- A/C Components, REfrigeration Cycle and Refrigeration Gauges - 1 credit
- Air Flow Fundamentals - 1 credit
- Electrical Safety, Meter Usage and Ohm's Law - 1 credit
- Parallel Circuits, Combination Circuits and Capacitors - 1 credit
- Electrical Services, Wire Sizing and Electrical Diagrams - 1 credit
- Access Valves, Compressors and Condensers - 1 credit
- Evaporators, Metering Devices and Accessories - 1 credit
- Heat Transfer Principles and Manual J - 1 credit
- Wrightsoft Load Calculations and RESCheck - 1 credit
- Print Reading for HVAC/R - 1 credit
- Mechanical Code - 1 credit
- Shop Mathematics 1 - 1 credit

**Semester 2**

- Flaring, Swagging and Soldering Copper Pipe - 1 credit
- Air Acetylene and Ocy-Acetylene Brazing Copper Pipe - 1 credit
- Refrig Recov, Deep Evac and Charging of Residential, Light Commercial, Geothermal and Ice Mach Equipment - 1 credit
- Gas Pipe Sizing, Gas Regulators and Gas Valves - 1 credit
- Residential Gas Furnaces - 1 credit
- Electric Heat and Air-to-Air Residential Heat Pump Systems - 1 credit
- Split Phase Motor Identification, Testing and Replacement - 1 credit
- Variable Speek Motors, Current Relays, Potential Relays and PTC Relays - 1 credit
- Transformers, Contactors, Relays and Motor Starters - 1 credit
- Human Relations in the Industrial Setting - 2 credits
- Communication - 2 credits

**Semester 3**

- Refrigeration and HVAC Temperature Control Systems - 1 credit
- Refrigeration and A/C Control Systems - 1 credit
- Heating and Package Gas/Electric Control Systems - 1 credit
- Residential Split and Light Comercial Package Gas/Electric Cooling Applications - 1 credit
- Residential Air-to-Air and Geothermal Heat Pump Systems Cooling Applications - 1 credit
- Commercial - Package, Split DX and Chilled Water A/C Applications - 1 credit
- Advanced Compressors, Condensers, Metering Devices, and Evaporators - 1 credit
- Walk-in Coolers/Freezers and Reach-in Freezers - 1 credit
- Ice Machines - 1 credit
- Residential Split System Gas and Refrigeration Pipe Installation - 1 credit
- Residential Split System Duct and Controls System Installation and Start-up - 1 credit
- Split Refrigeration System Installation - 1 credit
- Shop Mathematics II - 2 credits

**Semester 4**

- Residential Oil Heat, Duel Fuel Systems and Two Stage Heat Pump Heating Applications - 1 credit
- Mini-Split, Light Commerical Gas/Electric Package and Unit Heater Heating Applications - 1 credit
- Commerical-Package Gas/Electric, Hydronic and In-Line Duct Heating Applications - 1 credit
- Hydronic Systems Theory - 1 credit
- Hydronic Systems Installation nd Start-up - 1 credit
- Hydronic and Steam System Service - 1 credit