Course Title: Heating Systems Servicing and Troubleshooting
Prefix and Course Number: AIRC 137

This course introduces the basic controls and control systems found on most residential HVAC systems. Electrical and mechanical functions of the individual components and their relationship to a complete system are emphasized.

Course Learning Outcomes:
By the end of this course, a student should be able to:
- identify how temperature is sensed
- demonstrate the ability to select the proper thermostat for a given application
- install and properly wire a thermostat
- explain the temperature control circuit
- recognize and describe the components in and the types of combination gas controls
- select and install an ignition system on fuel gas burning equipment
- explain the functions of a zoning system
- explain the functions of a two stage system
- demonstrate the ability to perform basic service on a unitary system
- demonstrate the ability to perform basic service on an electric heat system
- demonstrate the ability to perform basic service on a gas fired system

Course Outline:
I. Basic Service Procedures
   A. Air Adjustments
   B. Flame Diagnosis
   C. IP Systems
   D. Hot Surface Systems
   E. Ignition Control Systems
   F. Sequence of Control Systems

II. Thermostats
   A. Differential
   B. Cycle Rate
   C. Response Time
   D. Thermal Lag
   E. Over Shoot
   F. Anticipation
   G. Droop
   H. Programming

III. Unitary Systems
   A. Controls
   B. System Servicing
   C. Applications

IV. Electric Heat Systems
   A. Controls
   B. System Servicing
   C. Applications

V. Zoning Systems
   A. Controls
B. System Servicing
C. Applications
VI. Air Handling and Units and Duct Heaters
   A. Controls
   B. System Servicing
   C. Applications

VII. Combination Gas Controls
   A. Manual Shut Off
   B. Pressure Regulation
   C. Ignition
   D. Safety Lock Out
   E. Over Temperature Control

VIII. Warm Air Control Systems
   A. Zoning Control
   B. Program and Operation

IX. Circuitry
   A. Thermostats
   B. Transformers
   C. Fan Switches
   D. Limit Switches
   E. ECO Switch
   F. Indoor Fan Motors
   G. Spill Switches
   H. Roll-out Switches
   I. Pressure Switches
   J. Vacuum Switches