Course Description

Presents installation, servicing, troubleshooting, and repair of hydronic systems for heating and cooling. Includes hot water and chilled water systems using forced circulation as the transfer medium. Lecture 2 hours. Laboratory 2 hours.

General Course Purpose

This course of study will provide the student with the knowledge to design, analyze, diagnose, repair and install of a water distribution system. The student will be able to apply this knowledge and skills to the different application of heating and cooling systems using water as a medium.

Entry Level Competencies

Prerequisite: AIR 154

Course Prerequisites/Corequisites

Upon completion of this course, the student should be able to:

- Design, install, analyze, diagnose, repair and install a hydronic system and its associated components
- Design hydronic heating and cooling systems
- Create a system that maximizes comfort, reliability, and energy efficiency
- Demonstrate the latest design and installation techniques for residential and light commercial hydronic systems
- Demonstrate the use of renewable energy heat sources, hydraulic separation, smart circulators, distribution efficiency, thermal accumulators, mixing methods, heat metering, and web-enabled control methods

Major Topics to Be Included

- Principles of heat transfer
- Terms/definitions
- Safety precautions
- Tools and test equipment
- Brazing/soldering techniques
- Boiler design/types
- Piping systems
- Appliance rating
- Selection of boiler
- Selection of heat distribution units
- Layout the heating circuits
- Sizing circulator/pumps
- Sizing trunk lines
- Selection of peripheral components
- Water/steam systems
- Maintenance and installation
- Zone systems
- Balancing a hydronic system

Extra Topics (Optional)