Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

HVA 1221 - Heating Systems

Division: Science, Mathematics and Engineering

Department: HVAC-R Engineering Technology

Credit Hour Total: 3.0 **Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

Prerequisite(s): DEV 0015

Date Revised: January 2015

Course Description:

Introduction to the basic concepts of all heating systems found in light commercial applications for the experienced and inexperienced in HVAC. A comprehensive presentation of HVAC systems, including rooftop packaged systems, heat pumps, packaged low-pressure boiler systems, and packaged unitary heaters. Includes low-pressure hot water and steam generation, including the fundamentals of heat generation in water-based heating systems. Two classroom, two lab hours per week.

General Education Outcomes:

- Critical Thinking/Problem Solving Competency

Course Outcomes:

Combustion process
Explain the combustion process.

Assessment Method: Locally developed exams
Performance Criteria:

70% or better on exams

Water treatment
Describe the different types of water treatment and when and where they are used.

Assessment Method: Locally developed exams
Performance Criteria:

70% or better on exams

Application of various fuel sources
Describe the proper application and safe use of various fuel sources.

Assessment Method: Locally developed exams
Performance Criteria:

70% or better on exams

Fuel economizer
Describe the proper use of fuel economizers.

Assessment Method: Locally developed exams
Performance Criteria:

70% or better on exams

Sequence of operation in basic systems
Describe the sequence of operation in basic systems.

Assessment Method: Locally developed exams
Performance Criteria:

70% or better on exams

Types of boilers
Identify different types of boilers.

Assessment Method: Locally developed exams
Performance Criteria:

70% or better on exams

Radiant heating
Explain the concept of radiant heating.

Assessment Method: Locally developed exams
Performance Criteria:

70% or better on exams

Outline:

Principles of heating energy conversion
Rooftop equipment
Types of fuels
Combustion processes
Water treatment
Safety controls and their operation
Fuel-saving equipment, ignition systems, component design and economizers
Specific applications in hot water systems including operation considerations
Preventive maintenance for light commercial systems