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

Master Syllabus

HVA 1301 - Air & Water Distribution Systems

Division: Science, Mathematics and Engineering

Department: HVAC-R Engineering Technology

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

Prerequisite(s): MET 1131AND HVA 1201AND MAT 0200

Date Revised: January 2015

Course Description:

Theory and practice of fluid flow in HVAC distribution systems, including water system design and analysis, duct design and analysis, fan and pump selection, valve and damper selection and Testing, Adjusting, and Balancing (TAB) procedures. Hand calculations and use of computer-based design and analysis tools; select hands-on laboratory studies reinforce basic principles; proper installation practices are also included. Two classroom, three lab hours per week.

General Education Outcomes:

- Critical Thinking/Problem Solving Competency
- Information Literacy Competency
- Computer Literacy Competency

Course Outcomes:

Distribution system/sizing
Demonstrate proficiency in selecting appropriate sizes for piping, ductwork and associated fittings to meet system design objectives.

Assessment Method: Locally developed exams
Performance Criteria:

70% or more correct on exams

Assessment Method: Simulations
Performance Criteria:

Earn at least 70% of available points on assignments.

Testing, adjusting, and balancing
Perform basic TAB procedures on both air and water systems including system documentation.

Assessment Method: Performance appraisals
Performance Criteria:

70% or better on laboratory exercises

Fluid flow losses
Demonstrate proficiency with calculation of losses in piping and ductwork systems.

Assessment Method: Locally developed exams
Performance Criteria:

70% or more correct on exams

Assessment Method: Simulations
Performance Criteria:

Earn at least 70% of available points on assignments

Fan and pump selection
Select appropriate fans and pumps matched to specific HVAC distribution systems.

Assessment Method: Locally developed exams
Performance Criteria:

70% or more correct on exams

Assessment Method: Simulations
Performance Criteria:

Earn at least 70% of available points on assignments.

Damper and control valve selection
Select and properly size dampers and control valves for application in HVAC systems.

Assessment Method: Locally developed exams
Performance Criteria:

70% or more correct on exams

Outline:

Principles of fluid flow, including analysis of open and closed loop systems
Friction in piping and ductwork
Pipe sizing and analysis (includes hand and computer-aided design and selection)
Pump selection (includes hand and computer-aided selection)
Valve selection
Duct design and analysis (includes hand and computer- aided design and selection)
Fan systems and fan selection (includes hand and computer-aided design and selection)
Diffuser selection
Damper selection
Piping and ductwork installation standards
Pump and fan system installation and operation