

Print Date: 7/10/14
Course Objectives/Course Outline
Spokane Community College

Course Title: HVAC/R Fluid Dynamics and Applications
Prefix and Course Number: AIRC 206

Learning/Performance Expectations (e.g., outcomes, performance objectives, competencies, etc.)

Description

Students will explore the theory and application of fluid dynamics as it relates to air flow in HVAC/R systems and water flow in hydronics systems. Topics will include economizers, fan laws, fan and blower performance, air distribution systems, and hydronics systems. Practical applications and labs will include troubleshooting, basic controls, air supply equipment, and closed water coolers.

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Discuss the advantages of using packaged units designed for computer room applications
- Explain the purpose of an economizer system
- Explain basic operating sequence of a packaged economizer
- Identify the symptoms of economizer problems
- Describe the operating characteristics of various types of fans and fan laws
- Describe the methods of air deliver through a variety of terminal air handling units
- Identify and describe duct system designs
- Determine the duct approach to an outlet that will provide the best air distribution
- Explains how a cooling tower operates
- Describe the different types of piping systems
- Trace flow circuits and paths
- Describe the performance characteristics of a centrifugal pump
- Follow a logical, step by step approach in troubleshooting procedures

Course Outline:

I. Economizers

- A. Economizer systems part 1
- B. Economizer systems part 2

II. Fans and Blowers

- A. Airflow in ducts
- B. Calculating pressure losses
- C. Fan Laws and fan curves
- D. Measuring Airflow

III. Air Distribution and Hydronics

- A. Air flow in a duct and dynamic lowwes
- B. Sizing ductwork
- C. Calculating Duct sizes
- D. Basic operation of chillers
- E. Refrigerant circuit and the water circuit
- F. Piping systems
- G. Loop systems

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- H. Two pipe systems
- I. Balancing devices