

Washtenaw Community College Comprehensive Report

UAT 257 Hydronic Heating and Cooling Effective Term: Spring/Summer 2014

Course Cover

Division: Advanced Technologies and Public Service Careers

Department: United Association Department

Discipline: United Association Training

Course Number: 257

Org Number: 28200

Full Course Title: Hydronic Heating and Cooling

Transcript Title: Hydronic Heating & Cooling

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Web Page

Reason for Submission: Three Year Review / Assessment Report

Change Information:

Credit hours

Total Contact Hours

Outcomes/Assessment

Objectives/Evaluation

Rationale: Course update

Proposed Start Semester: Spring/Summer 2014

Course Description: In this course, students will learn methods of teaching the installation, maintenance and repair hydronic heating and cooling systems. Topics include: low pressure boilers, heat exchangers, system controls and accessories, one, two, three and four pipe systems, two-way and three-way control valves, centrifugal pumps and pump curves, system curves, primary and secondary pumping, balancing, venting, zoning, water chillers, chilled and condenser water systems, cooling towers and water source heat pump systems. Limited to United Association program participants.

Course Credit Hours

Variable hours: No

Credits: 1

Lecture Hours: Instructor: 15 Student: 15

Lab: Instructor: 0 Student: 0

Clinical: Instructor: 0 Student: 0

Other: Instructor: 5 Student: 5

Total Contact Hours: Instructor: 20 Student: 20

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

General Education

Degree Attributes

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Demonstrate methods of teaching the central concepts of hydronic heating and cooling utilizing UA approved materials.

Assessment 1

Assessment Tool: Presentation

Assessment Date: Spring/Summer 2014

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Skill checklist with rubric

Standard of success to be used for this assessment: 75% of students will achieve 75% or above.

Who will score and analyze the data: Departmental faculty

2. Demonstrate teaching practicum on maintenance and repair procedures of hydronic heating and cooling systems.

Assessment 1

Assessment Tool: Skill assessment

Assessment Date: Spring/Summer 2014

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Performance parameters with rubric

Standard of success to be used for this assessment: 75% of students will achieve 75% or above.

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Identify concepts related to the streamline and turbulent flow in hydronic systems.

Matched Outcomes

2. Recognize how velocity, pressure, and volume affect hydronic flow.

Matched Outcomes

3. Identify the impact of buoyancy, atmospheric pressure, and expansion and compression of gases.

Matched Outcomes

4. Recognize how energy works in hydronic systems, transmission of heat, and thermal expansion.

Matched Outcomes

5. Demonstrate appropriate use and knowledge of course materials.

Matched Outcomes

6. Identify Fanning's equation.

Matched Outcomes

7. Identify the causes of friction within pipe.

Matched Outcomes

8. Explain how to calculate static pressure based on altitude.

Matched Outcomes

9. Identify the various types of compression/expansion tanks and the use of various air vents.

Matched Outcomes

10. Calculate the heat transfer rate of a chiller, boiler or terminal unit when given the entering and leaving water temperatures and flow rates.

Matched Outcomes

11. Explain the various components of a pump curve.

Matched Outcomes

12. Develop and perform an original lecture about the equipment/technologies presented in the course.

Matched Outcomes

New Resources for Course

Course Textbooks/Resources

Textbooks

International Pipe Trades Joint Training Committee. *Hydronic Heating and Cooling*, ed.

International Pipe Trades Joint Training Committee, 2001

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Reviewer

Action

Date

Faculty Preparer:

Amanda Scheffler

Faculty Preparer

Jun 27, 2013

Department Chair/Area Director:

Scott Klapper

Recommend Approval

Feb 03, 2014

Dean:

Marilyn Donham

Recommend Approval

Feb 05, 2014

Vice President for Instruction:

Bill Abernethy

Approve

Apr 21, 2014