Washtenaw Community College Comprehensive Report

UAT 257 Hydronic Heating and Cooling (UA 6006)
Effective Term: Fall 2020

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 (UA 6006)
Transcript Title: Hydronic Heat & Cool (6006)
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Web Page
Reason for Submission: Course Change
Change Information:
Consultation with all departments affected by this course is required.
Course title
Course description
Outcomes/Assessment
Objectives/Evaluation
Rationale: Updating United Association course
Proposed Start Semester: Fall 2020
Course Description: In this course, students will identify the principles of hydronics heating and cooling. Topics include time and control theory, equipment and controlling components, design, installation methods and operation. Students will demonstrate maintenance and troubleshooting techniques with hands-on activities. In addition, students will locate and navigate instructional resources, methods and materials for teaching an effective hydronics course at their local Training Center. The title of this course was previously Hydronic Heating and Cooling. Limited to United Association program participants.

Course Credit Hours

Variable hours: No
Credits: 1.5
The following Lecture Hour fields are not divisible by 15: Student Min ,Instructor Min
Lecture Hours: Instructor: 22.5 **Student:** 22.5
The following Lab fields are not divisible by 15: Student Min, Instructor Min
Lab: Instructor: 1.5 **Student:** 1.5
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 24 **Student:** 24
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

Below College Level Pre-Reqs

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Identify and define the principles and advantages of hydronics heating and cooling.
   Assessment 1
   Assessment Tool: Outcome-related written exam questions
   Assessment Date: Fall 2020
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 80% of the students will score 80% or higher.
   Who will score and analyze the data: U.A. instructors

2. Identify and define hydronic equipment, installation, operation and maintenance.
   Assessment 1
   Assessment Tool: Outcome-related written exam questions
   Assessment Date: Fall 2020
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 80% of the students will score 80% or higher.
   Who will score and analyze the data: U.A. instructors

3. Prepare and present a customized troubleshooting activity and lesson plan using UA Online Learning Resources (UAOLR) and other online resource materials.
   Assessment 1
   Assessment Tool: Presentation
   Assessment Date: Fall 2020
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Observational checklist
   Standard of success to be used for this assessment: 80% of the students will score 80% or higher.
   Who will score and analyze the data: U.A. instructors

Course Objectives

1. Identify concepts related to the streamline and turbulent flow in hydronic systems.
2. Recognize how velocity, pressure, and volume affect hydronic flow.
3. Identify the impact of buoyancy, atmospheric pressure, and expansion and compression of gases.

4. Recognize how energy works in hydronic systems, transmission of heat, and thermal expansion.
5. Identify the causes of friction within pipe.
6. Explain how to calculate static pressure based on altitude.
7. Identify the various types of compression/expansion tanks and the use of various air vents.
8. Explain the various components of a pump curve.
9. Explain the hydronics involved in heating and cooling processes.
10. Compare and contrast the advantages and disadvantages of hydronic temperature control to other methods.
11. Explain the design and construction of heating and cooling systems with independently controlled zones.
12. Discuss the equipment design and installation of heating and cooling systems.
13. Discuss the basic theory and operation of heating and cooling systems.
14. Discuss and demonstrate troubleshooting tips and maintenance techniques for hydronic systems.
15. Locate and navigate United Association Online Learning Resources (UAOLR), Blackboard, and student access.
16. Practice utilizing webbooks, assessments, and other instructional resources for customized use at the student's local Training Center.
17. Prepare and present a lesson plan based on course material.

New Resources for Course

Course Textbooks/Resources

Textbooks

International Pipe Trades Joint Training Committee. *Hydronic Heating and Cooling*, first ed. International Pipe Trades Joint Training Committee, 2016

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Reviewer	Action	Date
Faculty Preparer:		
Tony Esposito	*Faculty Preparer*	*Jun 04, 2020*
Department Chair/Area Director:		
Marilyn Donham	*Recommend Approval*	*Jun 05, 2020*
Dean:		
Jimmie Baber	*Recommend Approval*	*Jun 09, 2020*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Sep 25, 2020*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Sep 30, 2020*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Oct 06, 2020*