Washtenaw Community College Comprehensive Report

UAE 165 Accelerated HVACR Training
Effective Term: Spring/Summer 2013

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: United Association Department
Discipline: United Association Service Technicians
Course Number: 165
Org Number: 14600
Full Course Title: Accelerated HVACR Training
Transcript Title: Accelerated HVACR Training
Is Consultation with other department(s) required: No
Publish in the Following: Web Page
Reason for Submission: Course Change
Change Information:
Consultation with all departments affected by this course is required.
Credit hours
Rationale: Need to increase credit hours.
Proposed Start Semester: Spring/Summer 2013
Course Description: This is an accelerated HVACR course that will prepare the UA apprentice to start his or her career in the HVACR service and installation field. HVACR tools, air conditioning, refrigeration, heat, combustion process, soldering, brazing, electrical theory, electrical motors, HVACR controls, refrigerant handling, and safety will be covered. The student is expected to pass OSHA 10 certification, first aid certification, CFC certification, R410-A certification, UA 51 certification brazing test, and the UA STAR residential and light commercial test. Enrollment in this course is limited to students identified by the UA.

Course Credit Hours

Variable hours: No
Credits: 12
Lecture Hours: Instructor: 60 **Student:** 60
Lab: Instructor: 660 **Student:** 660
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 720 **Student:** 720
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

No Basic Skills Prerequisite

College-Level Math

No Level Required

Requisites

General Education

Degree Attributes
Below College Level Pre-Reqs

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Recognize and apply the principles of proper safety and OSHA procedures.
   Assessment 1
   Assessment Tool: Multiple choice test
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All students
   How the assessment will be scored: Answer sheet
   Standard of success to be used for this assessment: A minimum of 75% of the students will score 75% or higher on the project.
   Who will score and analyze the data: Departmental Faculty

2. Recognize and apply the principles of HVACR pipe brazing and soldering.
   Assessment 1
   Assessment Tool: Practical component of the final project
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All students
   How the assessment will be scored: Rubric
   Standard of success to be used for this assessment: A minimum of 75% of the students will score 75% or higher on the project.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Short answer test final exam
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: departmentally-developed rubric
   Standard of success to be used for this assessment: 75% of the students will score 75% or higher.
   Who will score and analyze the data: Departmental faculty

3. Recognize and apply the principles of refrigeration, air conditioning, and refrigerant handling.
   Assessment 1
   Assessment Tool: Written short answer exam
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Answer key and rubric
   Standard of success to be used for this assessment: 75% of the students will score 75% or higher on the exam.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Practical component of the final exam
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years

Course section(s)/other population: All
Number students to be assessed: All
How the assessment will be scored: departmentally-developed rubric
Standard of success to be used for this assessment: 75% of all students will score 75% or higher.
Who will score and analyze the data: Departmental faculty

4. Recognize and apply the principles of combustion and heating.
   Assessment 1
   Assessment Tool: Written short answer exam
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Answer key and rubric
   Standard of success to be used for this assessment: 75% of the students will score 75% or higher on the exam.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Practical component of the exam
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: departmentally-developed rubric
   Standard of success to be used for this assessment: 75% of all students will score 75% or higher.
   Who will score and analyze the data: Departmental faculty

5. Recognize and apply the principles of electrical controls and electricity as applied to HVACR.
   Assessment 1
   Assessment Tool: Practical component of the exam
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: departmentally-developed rubric
   Standard of success to be used for this assessment: 75% of the students will score 75% or higher.
   Who will score and analyze the data: departmental faculty
   Assessment 2
   Assessment Tool: Written Final
   Assessment Date: Winter 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer sheet
   Standard of success to be used for this assessment: 75% of students will score 75% or higher.
   Who will score and analyze the data: Departmental faculty

Course Objectives

1. Braze and solder copper pipe
   Matched Outcomes
   2. Recognize and apply the principles of HVACR pipe brazing and soldering.
2. Recognize appropriate filler materials for copper pipe
   Matched Outcomes

2. Recognize and apply the principles of HVACR pipe brazing and soldering.

3. Remove and replace refrigerant from an operating air conditioning unit
   Matched Outcomes
   3. Recognize and apply the principles of refrigeration, air conditioning, and refrigerant handling.
4. Describe the physical state of refrigerant as it flows in a vapor compression cycle
   Matched Outcomes
   3. Recognize and apply the principles of refrigeration, air conditioning, and refrigerant handling.
5. Troubleshoot a cooling failure on a rooftop heating and cooling unit
   Matched Outcomes
   3. Recognize and apply the principles of refrigeration, air conditioning, and refrigerant handling.
6. Recognize the major components of a rooftop air conditioning unit
   Matched Outcomes
   3. Recognize and apply the principles of refrigeration, air conditioning, and refrigerant handling.
7. Describe the combustion process
   Matched Outcomes
   4. Recognize and apply the principles of combustion and heating.
8. Troubleshoot a heating failure on a rooftop heating and cooling unit
   Matched Outcomes
   4. Recognize and apply the principles of combustion and heating.
9. Recognize the major components of a boiler and furnace
   Matched Outcomes
   4. Recognize and apply the principles of combustion and heating.
10. Cite Ohm's law
    Matched Outcomes
    5. Recognize and apply the principles of electrical controls and electricity as applied to HVACR.
11. Construct a ladder diagram from a pictorial diagram
    Matched Outcomes
    5. Recognize and apply the principles of electrical controls and electricity as applied to HVACR.
12. Cite OSHA rules and procedures
    Matched Outcomes
    1. Recognize and apply the principles of proper safety and OSHA procedures.
13. Recognize safe job practices
    Matched Outcomes
    1. Recognize and apply the principles of proper safety and OSHA procedures.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Reviewer	Action	Date
Faculty Preparer:		
Les Pullins	*Faculty Preparer*	*May 02, 2013*
Department Chair/Area Director:		
Les Pullins	*Recommend Approval*	*May 02, 2013*
Dean:		

Marilyn Donham	*Recommend Approval*	*May 03, 2013*
Vice President for Instruction:		
Bill Abernethy	*Approve*	*Jun 24, 2013*