Washtenaw Community College Comprehensive Report

HVA 108 Residential HVAC Competency Exams and Codes
Effective Term: Winter 2018

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Heating, Ventilation and A/C
Discipline: Heating, Ventilation, Air Conditioning and Refrigeration
Course Number: 108
Org Number: 14750
Full Course Title: Residential HVAC Competency Exams and Codes
Transcript Title: Res. HVAC Comp Exams & Codes
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:
Consultation with all departments affected by this course is required.
Outcomes/Assessment
Objectives/Evaluation
Rationale: Review syllabus
Proposed Start Semester: Winter 2018
Course Description: In this course, students will learn the relevant codes to residential heating, ventilation and air conditioning. Other topics include residential air conditioning requirements, proper operating conditions and servicing requirements. Students will take a nationally recognized competency exam upon completion of the course.

Course Credit Hours

Variable hours: No
Credits: 3
Lecture Hours: Instructor: 45 **Student:** 45
Lab: Instructor: 15 **Student:** 15
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 60 **Student:** 60
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

Level 2

Requisites

Prerequisite
HVA 105 minimum grade "C"
and
Prerequisite
HVA 107 minimum grade "C"

General Education

Request Course Transfer

Proposed For:
Eastern Michigan University
Ferris State University

Student Learning Outcomes

1. Identify the Michigan Residential Code that applies when servicing and installing HVAC equipment.
   Assessment 1
   Assessment Tool: A departmental final exam involving the Michigan Mechanical Code will be used to assess understanding of key concepts
   Assessment Date: Winter 2020
   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 key
   Standard of success to be used for this assessment: A minimum of 70% of the students should achieve an overall average of 70% or higher.
   Who will score and analyze the data: Department faculty

2. Recognize principles of electricity, residential gas furnaces and air conditioning systems.
   Assessment 1
   Assessment Tool: The ESCO Institute's gas heat, air conditioning and electricity competency test.
   Assessment Date: Winter 2020
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All students
   How the assessment will be scored: ESCO electronic scoring
   Standard of success to be used for this assessment: A minimum of 70% of students should achieve an overall average of 70% or higher.
   Who will score and analyze the data: ESCO electronic scoring system. Departmental faculty will analyze the data.

Course Objectives

1. Identify the Michigan Residential Code's connection to the installation of HVAC equipment.
2. Recognize the sections of the Michigan Residential Code related to heating systems.
3. Recognize the sections of the Michigan Residential Code related to air conditioning systems.
4. Recognize the sections of the Michigan Residential Code related to water heater systems.
5. Recognize the sections of the Michigan Residential Code related to mechanical ventilation systems.

6. Solve required calculations necessary for safe and legal HVAC equipment installation using the Michigan Residential Code.
7. Recognize the Federal Clean Air Act – Section 608.
8. Identify the industry-related potential causes of stratospheric ozone depletion.
9. Identify EPA section 608 rules for HVACR installations.
10. Identify safe practices when working on electrical circuits, components, motors and automated control systems.
11. Identify the factors related to proper system performance in accordance with EPA section 608 rules.
12. Describe the process of performing duct leakage testing in compliance with EPA section 608 rules.
13. Describe the safety precautions required when charging cooling systems.
14. Review elements of air conditioning and heating components and operation through student presentations.

New Resources for Course

Course Textbooks/Resources

Textbooks

Whitman, B. *Refrigeration and Air Conditioning Technology*, 7 ed. Delmar, 2013, ISBN: 9781111644475.

Tomczyk, J. *Troubleshooting and Servicing HVAC Electrical Systems*, ed. ESCO press, 1995, ISBN: 19300444089.

Tomczyk, J. *System Diagnostics and Troubleshooting Procedures*, ed. ESCO press, 1995, ISBN: 1930044151.

Smith, R. *Electricity for Refrigeration, Heating and Air Conditioning* , 9 ed. Delmar, 2016, ISBN: 9781285179988.

Jazwin,R. *Medium and High Efficiency Gas Furnaces*, ed. ESCO press, 1993, ISBN: 1930044097.

Manuals

International Code Council. International Residential Code, ICC, 01-01-2012

Periodicals

Software

Equipment/Facilities

Level III classroom

Reviewer	Action	Date
Faculty Preparer:		
Michael Kontry	*Faculty Preparer*	*Apr 20, 2017*
Department Chair/Area Director:		
Robert Carter	*Recommend Approval*	*Apr 24, 2017*
Dean:		
Brandon Tucker	*Recommend Approval*	*May 03, 2017*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Aug 24, 2017*
Assessment Committee Chair:		
Michelle Garey	*Recommend Approval*	*Aug 30, 2017*
Vice President for Instruction:		

Kimberly Hurns	*Approve*	*Aug 31, 2017*