

Washtenaw Community College Comprehensive Report

HVA 107 Residential and Light Commercial Air Conditioning Systems Effective Term: Winter 2020

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Heating, Ventilation and A/C
Discipline: Heating, Ventilation, Air Conditioning and Refrigeration

Course Number: 107

Org Number: 14750

Full Course Title: Residential and Light Commercial Air Conditioning Systems

Transcript Title: Res/Light Comm Air Cond Systms

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

Other:

Rationale: Lab practical exam alone will be used as the sole criteria for outcome 4. Departmental final exam was used in the past as a second assessment tool and will not be in the future.

Proposed Start Semester: Fall 2019

Course Description: In this course, students review basic electrical and refrigeration principles needed for maintaining and troubleshooting equipment. Sequence of operational mechanical and electrical failures is covered for residential and light commercial equipment. This includes logical diagnostic techniques which are simulated on both computer simulators and live lab equipment.

Course Credit Hours

Variable hours: No

Credits: 4

Lecture Hours: Instructor: 45 **Student:** 45

Lab: Instructor: 45 **Student:** 45

Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 90 **Student:** 90

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 101 minimum grade "C"

and

Prerequisite

HVA 103 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Identify air conditioning principles and functions used to troubleshoot residential and commercial air conditioning systems.

Assessment 1

Assessment Tool: Written departmental final exam

Assessment Date: Winter 2022

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: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

2. Recognize safety rules and safe working practices while working around electricity and refrigerants.

Assessment 1

Assessment Tool: Written departmental final exam

Assessment Date: Winter 2022

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: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

3. Interpret wiring diagrams for the purpose of troubleshooting air conditioning systems.

Assessment 1

Assessment Tool: Written departmental final exam

Assessment Date: Winter 2022

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: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

4. Apply principles of air conditioning to solve air conditioning problems on actual air conditioning units.

Assessment 1

Assessment Tool: Practical lab exam

Assessment Date: Winter 2022

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Check sheet

Standard of success to be used for this assessment: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Identify the four major components of an air conditioning system.
2. Recognize the function of each of the four major air conditioning components.
3. Explain the refrigeration cycle as it applies to air conditioning systems.
4. Identify the physical state of refrigerant as it flows through a refrigeration system.
5. Read and interpret wiring diagrams.
6. Recognize safe and effective use of an electrical meter.
7. Identify the safety precautions to follow while servicing air conditioning systems.
8. Interpret air conditioning power distribution through wiring diagrams by identifying the flow of electricity in a circuit.
9. Identify air conditioning system problems on actual air conditioning units using electrical meters and mechanical tools.
10. Use a systematic procedure to troubleshoot electrical problems in an air conditioning system.
11. Diagnose refrigerant related failures and identify solutions.
12. Diagnose electrical failures and identify solutions.

New Resources for Course

Course Textbooks/Resources

Textbooks

Tomczyk, J., A., Silberstein, E., Whitman, W., C., Johnson, W., M.. *Refrigeration and Air Conditioning Technology*, 8th ed. Cengage Learning, 2017, ISBN: 9781305578296.

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Michael Kontry</i>	<i>Faculty Preparer</i>	<i>Jun 18, 2019</i>
Department Chair/Area Director: <i>Robert Carter</i>	<i>Recommend Approval</i>	<i>Jul 07, 2019</i>
Dean: <i>Brandon Tucker</i>	<i>Recommend Approval</i>	<i>Jul 08, 2019</i>
Curriculum Committee Chair: <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Aug 14, 2019</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Aug 29, 2019</i>
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Sep 04, 2019</i>