Washtenaw Community College Comprehensive Report

HVA 105 Residential and Light Commercial Heating Systems
Effective Term: Spring/Summer 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: 105
Org Number: 14750
Full Course Title: Residential and Light Commercial Heating Systems
Transcript Title: Res & Light Commer Heat 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: Three-year update
Proposed Start Semester: Fall 2020
Course Description: In this course, students build on the heating system skills and knowledge learned in prerequisite courses. Major units covered include HVAC service and preventative maintenance for residential electric, gas, oil or hydronic and heat pump systems. Students get an overview of indoor air quality, air distribution and installation concepts and techniques.

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
MTH 067; may enroll concurrently

or Academic Math level 2
and
Prerequisite
HVA 101 minimum grade "C"
and
Prerequisite
HVA 103 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Diagnose service problems associated with residential heating systems.
   Assessment 1
   Assessment Tool: Live furnace lab fault diagnosis
   Assessment Date: Winter 2020
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Checklist
   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. Identify industry standards for maintenance of residential heating equipment.
   Assessment 1
   Assessment Tool: Department final exam
   Assessment Date: Winter 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: 70% of the students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: Departmental faculty

3. Recognize Indoor Air Quality (IAQ) issues and standards.
   Assessment 1
   Assessment Tool: Department final exam
   Assessment Date: Winter 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: 70% of the students will score 70% or higher on the outcome-related questions
   Who will score and analyze the data: Departmental faculty

Course Objectives

1. Diagnose electrical failures.
2. Diagnose mechanical failures.
3. Explain troubleshooting techniques.

4. Recognize components for electric, oil and heat pump heating systems.
5. Identify heating components requiring regular maintenance.
6. Recognize steps on various heating system maintenance checklists.
7. Explore indoor air quality (IAQ) issues.
8. Explain industry standards pertaining to IAQ.
9. Apply simple mathematical calculations (addition, subtraction, multiplication or division) to determine results of diagnostic procedures and compare them to manufacturer's specifications.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Level I classroom
Data projector/computer

Reviewer	Action	Date
Faculty Preparer:		
Brian Martindale	*Faculty Preparer*	*Aug 01, 2019*
Department Chair/Area Director:		
Brian Martindale	*Recommend Approval*	*Aug 06, 2019*
Dean:		
Brandon Tucker	*Recommend Approval*	*Aug 22, 2019*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Sep 30, 2019*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Oct 04, 2019*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Oct 07, 2019*

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Course Number: 105
Org Number: 14750
Full Course Title: Residential and Light Commercial Heating Systems
Transcript Title: Res & Light Commer Heat 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.
Course description
Distribution of contact hours
Outcomes/Assessment
Rationale: Regular three year review following assessement
Proposed Start Semester: Spring/Summer 2014
Course Description: In this course, students build on the heating system skills and knowledge learned in prerequisite courses. Major units covered include HVAC mathematics, service and preventative maintenance for residential electric, gas, oil or hydronic and heat pump systems. Students get an overview of indoor air quality, air distribution and installation concepts and techniques. The title of this course was previously Heating, Ventilation and Air Conditioning III.

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
MTH 067; may enroll concurrently

Prerequisite
HVA 101 minimum grade "C"; may enroll concurrently
and
Prerequisite
HVA 103 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Diagnose service problems associated with residential heating systems.
   Assessment 1
   Assessment Tool: Computer simulatioin
   Assessment Date: Winter 2016
   Assessment Cycle: Every Three Years
   Course section(s)/other population: all
   Number students to be assessed: all
   How the assessment will be scored: Check list
   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. Identify industry standards for maintenance of residential heating equipment.
   Assessment 1
   Assessment Tool: Department final exam
   Assessment Date: Winter 2016
   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. Recognize Indoor Air Quality (IAQ) issues and standards.
   Assessment 1
   Assessment Tool: Department final exam
   Assessment Date: Winter 2016
   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

Course Objectives

1. Diagnose electrical and mechanical failures.
   Matched Outcomes
2. Explain troubleshooting techniques.
   Matched Outcomes
3. Recognize components for electric, oil and heat pump heating systems.
   Matched Outcomes
4. Identify heating and components requiring regular maintenance.
   Matched Outcomes

5. Explain how maintenance is performed.
   Matched Outcomes
6. Explore indoor air quality issues.
   Matched Outcomes
7. Explain industry standards pertaining to IAQ.
   Matched Outcomes

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Reviewer	Action	Date
Faculty Preparer:		
Michael Kontry	*Faculty Preparer*	*Oct 16, 2013*
Department Chair/Area Director:		
Les Pullins	*Recommend Approval*	*Nov 05, 2013*
Dean:		
Marilyn Donham	*Recommend Approval*	*Nov 22, 2013*
Vice President for Instruction:		
Bill Abernethy	*Approve*	*Dec 17, 2013*