

Washtenaw Community College Comprehensive Report

HVA 202 Air System Layout and Design Effective Term: Winter 2022

Course Cover

College: Advanced Technologies and Public Service Careers
Division: Advanced Technologies and Public Service Careers
Department: Heating, Ventilation and A/C
Discipline: Heating, Ventilation, Air Conditioning and Refrigeration
Course Number: 202
Org Number: 14750
Full Course Title: Air System Layout and Design
Transcript Title: Air System Layout and Design
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.

Rationale: Syllabus updated based on assessment report

Proposed Start Semester: Winter 2021

Course Description: In this course, students will be introduced to HVAC duct airflow, industry standard designs, and indoor air quality issues related to health and comfort. Students will learn testing techniques to assess and troubleshoot a variety of duct systems and components. Other topics will include fan sizing and principles, duct design, and duct termination based on current Indoor Air Quality (IAQ) standards. Troubleshooting topics will include airflow conditions, indoor air quality, pressure losses and diagnosing noise issues.

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

No Level Required

Requisites

Prerequisite

HVA 101 minimum grade "C"

and

Prerequisite

HVA 103 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Eastern Michigan University

Ferris State University

Student Learning Outcomes

1. Identify duct systems and industry design standards.

Assessment 1

Assessment Tool: Outcome-related departmental final exam questions

Assessment Date: Winter 2023

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

Standard of success to be used for this assessment: A minimum of 70% of the students will score 70% or higher on the outcome-related questions.

Who will score and analyze the data: Departmental faculty

2. Recognize Indoor Air Quality (IAQ) issues and standards.

Assessment 1

Assessment Tool: Outcome-related departmental final exam questions

Assessment Date: Winter 2023

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

Standard of success to be used for this assessment: A minimum of 70% of the students will score 70% or higher on the outcome-related questions.

Who will score and analyze the data: Departmental faculty

3. Diagnose airflow problems related to indoor environment and human comfort.

Assessment 1

Assessment Tool: Outcome-related departmental final exam questions

Assessment Date: Winter 2023

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

Standard of success to be used for this assessment: A minimum of 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. Identify different duct systems.
2. Explain the benefits and shortcomings of different duct systems.
3. Explore indoor air quality issues.
4. Explain industry standards pertaining to IAQ.
5. Test and assess existing duct systems for health and comfort.

6. Identify duct design strategies for health and comfort.
7. Take basic air pressure measurements.
8. Generate airflow conditions using an airflow duct calculator.
9. Identify different branch duct terminations.
10. Explain procedures for eliminating contamination sources.
11. Identify the reasons for providing humidification in winter months.

New Resources for Course

Duct Slide Calculation Slide Rule book

Course Textbooks/Resources

Textbooks

Meyer, L. *Airflow in ducts*, 96 ed. Lama, 1996

Rutkowski, Hank. *Duct Slide Calculation Slide Rule*, ed. ACCA, 2003, ISBN: 978-189276514.

Meyer, L. *Fans and V-belt drives*, 02 ed. Lama, 2007

Rutkowski. *Residential duct systems; Manual D*, 3rd ed. ACCA, 2009

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Brian Martindale</i>	<i>Faculty Preparer</i>	<i>Jun 16, 2021</i>
Department Chair/Area Director: <i>Brian Martindale</i>	<i>Recommend Approval</i>	<i>Jul 19, 2021</i>
Dean: <i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>Jul 21, 2021</i>
Curriculum Committee Chair: <i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>Oct 12, 2021</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Nov 10, 2021</i>
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Nov 12, 2021</i>