# Washtenaw Community College Comprehensive Report

## HVA 205 Hydronic Systems
## 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:** 205
**Org Number:** 14750
**Full Course Title:** Hydronic Systems
**Transcript Title:** Hydronic Systems
**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:** Review syllabus.
**Proposed Start Semester:** Winter 2018
**Course Description:** This course covers an overview of hydronics which includes steam and hot water boilers. Major components are identified; safety and control systems are analyzed and inspected. Flow characteristics are examined for proper calculation of piping and radiator sizes. Electrical wiring of zoning systems is emphasized and practiced.

### 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

### Requisites

**Prerequisite**
HVA 108 minimum grade "C"

## General Education

## Request Course Transfer

**Proposed For:**
Eastern Michigan University
Ferris State University

## Student Learning Outcomes

1. Identify hydronic systems.
   **Assessment 1**
   Assessment Tool: Departmental final exam 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
   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 a score of 70% or higher
   Who will score and analyze the data: Departmental faculty

2. Identify hydronic system components.
   **Assessment 1**
   Assessment Tool: Departmental final exam 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
   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 a score of 70% or higher
   Who will score and analyze the data: Departmental faculty

3. Demonstrate proper wiring of hydronic zoning systems.
   **Assessment 1**
   Assessment Tool: Student project
   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: Departmentally-developed rubric
   Standard of success to be used for this assessment: A minimum of 70% of the students should achieve a score of 70% or higher

Who will score and analyze the data: Departmental faculty

4. Troubleshoot basic hydronic system components.

**Assessment 1**

Assessment Tool: Departmental final exam 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
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 a score of 70% or higher
Who will score and analyze the data: Departmental faculty

## Course Objectives

1. Identify steam hydronic heating systems.
2. Identify closed loop hot water hydronic heating systems.
3. Identify hydronic safety devices.
4. Identify hydronic control devices.
5. Identify hydronic pumping devices.
6. Identify hydronic heat emitters.
7. Interpret pump curves related to water flow.
8. Evaluate a residential structure for heat load requirements.
9. Compute water flow requirements for hydronic heat emitters.
10. Demonstrate techniques for purging air from hydronic systems.
11. Diagnose water flow problems.
12. Diagnose mechanical problems.
13. Diagnose electrical problems.
14. Demonstrate correct wiring for various hydronic zoning systems.

## New Resources for Course

## Course Textbooks/Resources

Textbooks

Siegenthaler, J.. *Modern Hydronic Heating*, 3 ed. Delmar, 2012, ISBN: 9781428335158.
Whitman,B. *Refrigeration and Air Conditioning Technology*, 7 ed. Delmar, 2013, ISBN: 9781111644475.

Manuals
Periodicals
Software

## Equipment/Facilities

Level III classroom

| Reviewer | Action | Date |
|---|---|---|
| **Faculty Preparer:** | | |
| *Michael Kontry* | *Faculty Preparer* | *Apr 06, 2017* |

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|---|---|---|
| **Department Chair/Area Director:** | | |
| *Robert Carter* | *Recommend Approval* | *Jun 08, 2017* |
| **Dean:** | | |
| *Brandon Tucker* | *Recommend Approval* | *Jun 21, 2017* |
| **Curriculum Committee Chair:** | | |
| *Lisa Veasey* | *Recommend Approval* | *Sep 18, 2017* |
| **Assessment Committee Chair:** | | |
| *Michelle Garey* | *Recommend Approval* | *Sep 19, 2017* |
| **Vice President for Instruction:** | | |
| *Kimberly Hurns* | *Approve* | *Sep 24, 2017* |