MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
COURSE OUTLINE

Faculty is required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT.  Plumbing & Heating Technology                      COURSE NUMBER: PLHT 1145

NUMBER OF CREDITS: 5 (5 lab)

COURSE TITLE: Heating and Air Conditioning Installation and Service

CATALOG DESCRIPTION: Develop skills in system operation, installation, service and repair. Emphasis in this course will be on controls and safety components. Testing of systems, calculating corrections, installation of new and replacement parts, and methods of system repair will be practiced.

AUDIENCE: Students interested in pursuing a career in plumbing and heating.

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)
Area: by meeting the following competencies:
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PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE:

LENGTH OF COURSE: Semester

THIS COURSE IS USUALLY OFFERED:
Every other year ☐ fall ☐ spring ☐ X ☐ summer ☐ ☐ undetermined ☐

Four goals are emphasized in course at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT: The academic objectives of this course are:
   a. Fundamentals of installation, troubleshooting and repair of heating systems, various energy sources, and technology.
   b. Testing of heating and cooling systems, troubleshooting and diagnostics.
   c. Fundamentals of installation, troubleshooting and repair of air conditioning systems.
   d. Safe handling methods for hazardous materials and gases.

2) THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:
   a. Completing homework (reading, reports, and worksheets)
   b. Participating in classroom discussions
c. Taking open and closed book quizzes and tests
d. Complete assigned lab projects

3) COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:
a. Participate in classroom discussions and reports.
b. Participate in assignments, worksheets and reports

4) HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:
a. Participate in classroom discussions.
b. Work with fellow students on projects.
c. Working with students from other cultures.

5) Topics will include controls, sizing, types of heat, venting and distribution requirements. This course will explore the evolving impact of technology and efficiency of systems and energy consumption.

TOPICS TO BE COVERED:
1. Installation and service of heat producing systems
2. Installation and service of cooling systems.
3. Installation of venting and air distribution systems.
4. Safe handling methods of hazardous gases and fluids.
5. Proper use of personal protective equipment, testing & measuring equipment.
6. Troubleshooting residential heating and cooling systems.
7. Repair and service heat producing systems.
8. Repair and service cooling systems.

COURSE LEARNING OUTCOMES (GENERAL):
1. Demonstrate safety practices in shop and job site.
2. Identify and describe techniques for installation of heat producing and cooling systems.
3. Understand components of air distribution systems.
4. Proper use of testing and measuring meters and equipment.
5. Proper handling methods of hazardous gases and fluids.

STUDENT LEARNING OUTCOMES (SPECIFIC):
Students will:
1. Design a heating/cooling system based on a house plan
2. Determine codes that apply to system installation
3. Match control system to equipment types
4. Identify air control/ventilation system components
5. Identify testing and service tools
6. Perform system operation tests
7. Plan service for system maintenance
8. Test condensing section problems
9. Service indoor system components
10. Service compressor failures
11. Conduct coolant service

LEARNING/TEACHING TECHNIQUES used in the course are:

- Collaborative Learning
- Problem Solving
- Student Presentations
- Interactive Lectures
- Creative Projects
- Individual Coaching
- Lecture
- Films/Videos/Slides
- Demonstrations
- Other (describe below)
- Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

- Reading
- Tests
- Individual Projects
- Oral Presentations
- Worksheets
- Collaborative Projects
- Textbook Problems
- Papers
- Portfolio
- Group Problems
- Term Paper
- Other (describe below)

Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

The information in this course outline is subject to revision

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or via your preferred Telecommunications Relay Service.

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