Western Technical College

10601112 HVACR Basic CAD

Course Outcome Summary

Course Information

Description	This is an introductory course in computer-aided drafting. Basic skills utilizing Auto CAD software will be emphasized. Course content includes: drawing setup, basic input procedures, drawing modifications and CAD concepts unique to producing drawings related to heating, ventilating and air conditioning. HVACR is a common reference to Heating, Ventilation, Air Conditioning and Refrigeration.
Career Cluster	Architecture and Construction
Instructional Level	Associate Degree Courses
Total Credits	2
Total Hours	54

Textbooks

No textbook required.

Success Abilities

1. Cultivate Passion: Expand a Growth-Mindset
2. Refine Professionalism: Participate Collaboratively

Program Outcomes

1. Evaluate HVACR system designs
2. Design HVACR systems

Course Competencies

1. Use various scales and measuring devices.

Criteria

You will know you are successful when

1.1. learner accurately measures angles and length

Learning Objectives

1.a. List the major instruments used in linear measurement
1.b. List the major instruments used in angular measurement
1.c. Measure lines and angles accurately

2. Develop office standards.

Criteria

You will know you are successful when

2.1. learner uses office standards on project documents as evidenced by project rubric

Learning Objectives

2.a. Identify the title block on a set of plans and explain the significance of the information on it
2.b. Explain how sheets are titled and numbered
2.c. Explain how drawings are titled and numbered
2.d. Summarize typical office standards
2.e. Develop office standards

3. Utilize the Autocad interface.

Criteria

You will know you are successful when

3.1. learner accurately and effectively uses the CAD interface to setup drawings as evidenced by project rubric

Learning Objectives

3.a. Describe the CAD screen layout and user interface
3.b. Identify the various methods to begin a command
3.c. Use the help menu to for assistance
3.d. Use commands to begin, edit, and save file drawings

4. Create and edit drawings using basic drawing and editing commands.

Criteria

You will know you are successful when

4.1. learner produces a drawing meeting the requirements of the rubric

Learning Objectives

4.a. Create a drawing with the proper units, drafting settings, limits, etc.
4.b. Locate and place points and lines using various methods including coordinate entry, direct distance, cursor entry, etc.
4.c. Activate object selection modes to select objects for editing
4.d. Use the basic draw and edit commands to create and change drawings
4.e. Create annotations and leaders in a drawing
4.f. Edit text in a drawing

5. Apply symbols and abbreviations.

Criteria

You will know you are successful when

5.1. learner uses appropriate symbols and abbreviations on project documents as evidenced by project rubric

Learning Objectives

5.a. Define and give examples of abbreviations

5.b. Define and give examples of symbols
5.c. Explain the purpose of a legend and symbol schedule
5.d. Draw commonly used symbols
5.e. Explain commonly used abbreviations

6. Draw with precision.

Criteria

You will know you are successful when

6.1. learner creates organized and accurate CAD drawings as evidenced by project rubric

Learning Objectives

6.a. Utilize layers, linetypes, color and lineweights in a drawing
6.b. Use the zoom and pan commands to effectively view a drawing
6.c. Activate object selection modes for drawing and editing

7. Organize and plot drawings.

Criteria

You will know you are successful when

7.1. learner accurately produces hard copies of drawings

Learning Objectives

7.a. Setup layouts using titleblocks and viewports
7.b. Differentiate between model space and paper space
7.c. Produce hard copy plots

8. Improve productivity incorporating AutoCad tools.

Criteria

You will know you are successful when

8.1. learner uses advanced productivity tools to create a drawing as evidenced by project rubric

Learning Objectives

8.a. Use inquiry commands to obtain information about a drawing
8.b. Utilize the BLOCK command to create and save symbols
8.c. Create a new linetype
8.d. Insert symbols and blocks into a drawing

9. Produce sections, elevations and details.

Criteria

You will know you are successful when

9.1. learner produces accurate drawings as evidenced by the project rubric

Learning Objectives

9.a. Recognize and define sections, elevations and details
9.b. Discuss reasons why sections, elevations and details are shown on plans
9.c. Use sections, elevations and details to find specific information
9.d. Draw sections, elevations and details