Western Technical College

10606163 AutoCAD Level 1

Course Outcome Summary

Course Information

Description	Students are introduced to the concepts, commands and techniques used to create two-dimensional drawings using current AutoCAD software. Topics covered are draw and modify commands, display and inquiry commands, layering, annotating, dimensioning, and symbol creation methods. Paper/model space, view ports and layouts are used for plotting.
Career Cluster	Science, Technology, Engineering and Mathematics
Instructional Level	Associate Degree Courses
Total Credits	2
Total Hours	54

Textbooks

No textbook required.

Course Competencies

1.   Explore the basic functions of the current release of software.

Assessment Strategies
1.1.   Skill Demonstration
1.2.   Written Objective Test

Criteria

You will know you are successful when
1.1.   you distinguish the various components of the Graphical User Interface utilized in the software and the operating system.
1.2.   you use menu structure, toolbars, dialogue boxes, tool palettes, windows and keyboard.
1.3.   you select and follow appropriate commands to perform specific tasks.
1.4.   you use commands to begin, edit, save and file drawings correctly.
1.5.   you manipulate the software to produce a drawing.

Learning Objectives
1.a.   Describe the screen layout and user interface.
1.b.   Interact with the screen using menu structure, toolbars, dialogue boxes, tool pallettes, windows and

keyboard.
- 1.c.   Select and follow appropriate commands to perform specific tasks.
- 1.d.   Assess information from the help menu.
- 1.e.   Use commands to begin, edit, save and file drawings correctly.
- 1.f.   Utilize the Zoom options to effectively view the drawing.
- 1.g.   Use the Pan command for movement about your drawing.

2.   Create 2D part geometry using basic applications of CAD.

Assessment Strategies
- 2.1.   Skill Demonstration
- 2.2.   Written Objective Test

Criteria

You will know you are successful when
- 2.1.   you set up a drawing with the proper units, drafting settings, limits, etc. to achieve desired results.
- 2.2.   you use an input method to locate points.
- 2.3.   you create desired shape using commands in the software.
- 2.4.   you use drawing aids and tools to create precision drawings.
- 2.5.   you use the software tools to speed up point specification.

Learning Objectives
- 2.a.   Set up a drawing with the proper units, drafting settings, limits, etc. to achieve desired results.
- 2.b.   Locate points utilizing various methods including coordinate entry, direct distance, screen cursor, etc.
- 2.c.   Manipulate basic drawing operations to create desired shapes.
- 2.d.   Use drawing aids and tools to create precision drawings (OBJECT SNAP).
- 2.e.   Use the software tools to speed up point specification.
- 2.f.   Use the software tools to locate points relative to other points in a drawing (TRACKING).

3.   Modify 2D part geometry using basic applications of CAD.

Assessment Strategies
- 3.1.   Skill Demonstration
- 3.2.   Written Objective Test

Criteria

You will know you are successful when
- 3.1.   you identify objects that need editing.
- 3.2.   you determine if a part or the whole object needs editing.
- 3.3.   you utilize automatic editing features available in the software (GRIPS).
- 3.4.   you create modifications to selected objects.

Learning Objectives
- 3.a.   Activate object selection modes to select entities for editing.
- 3.b.   Operate the modify and edit commands to create and change drawings.
- 3.c.   Utilize automatic editing features available in the software (GRIPS).

4.   Use inquiry commands to obtain information about the model.

Assessment Strategies
- 4.1.   Skill Demonstration
- 4.2.   Written Objective Test

Criteria

You will know you are successful when
- 4.1.   you locate the inquire command group on the ribbon.
- 4.2.   you join multiple lines into one object.
- 4.3.   you apply inquiry commands to an object.
- 4.4.   you measure objects using the properties panel.

Learning Objectives
- 4.a.   Calculate the area and perimeter of an object.
- 4.b.   Use the ADD and SUBTRACT options in the AREA command.

4.c.   Measure the distance between points.
4.d.   Identify the location of a point.
4.e.   Utilize appropriate commands to obtain information about an entity or drawing file.

5.   Use layers to organize drawings.

Assessment Strategies
5.1.   Skill Demonstration
5.2.   Written Objective Test

Criteria

You will know you are successful when
5.1.   you create multiple layers in the drawing file.
5.2.   you assign different line types to layers.
5.3.   you change the default color of a layer.
5.4.   you create objects using different layers.
5.5.   you create annotations using different layers.

Learning Objectives
5.a.   Create, modify, copy, delete layers utilizing the appropriate dialogue boxes.
5.b.   Utilize layers, linetypes, color and lineweights in a drawing.
5.c.   Manipulate display and plots by turning layers on/off, freeze/thaw, locking, etc.
5.d.   Change the properties of an entity.

6.   Perform dimensioning using proper commands.

Assessment Strategies
6.1.   Skill Demonstration
6.2.   Written Objective Test

Criteria

You will know you are successful when
6.1.   you identify baseline, ordinate, chain, and directional dimensioning styles
6.2.   you set up annotative dimension styles.
6.3.   you apply dimensions to objects on a drawing.
6.4.   you use layers to visually separate dimension from objects.

Learning Objectives
6.a.   Interpret and use ANSI Y14.5 drafting standards and symbology on all drawing assignments.
6.b.   Add numerical values to drawings utilizing the dimensioning commands.
6.c.   Use the BASELINE and CONTINUE dimensioning options where applicable.
6.d.   Utilize the LEADER command to place local notes on a drawing.
6.e.   Adhere to ANSI standards when determining text size and style.
6.f.   Use the proper character codes to display symbols with dimensioning text.
6.g.   Explore the quick dimension option.
6.h.   Edit dimension placement using GRIPS and appropriate commands.
6.i.   Edit dimension text and appearance on a drawing using the properties window and other appropriate commands.
6.j.   Create, modify and copy dimension styles.
6.k.   Use hatch command to add section views to drawings.

7.   Add text to an engineering drawing.

Assessment Strategies
7.1.   Skill Demonstration
7.2.   Written Objective Test

Criteria

You will know you are successful when
7.1.   you identify the difference between single- and multi-line text commands.
7.2.   you create text notes on drawings.
7.3.   you edit text notes on drawings.

7.4.   you apply different layers to text objects.

Learning Objectives
7.a.   Add text to a drawing.
7.b.   Change text using appropriate commands and/or dialogue boxes.
7.c.   Create, modify, copy and delete text styles in a drawing.

8.   Create symbols for multiple use in engineering drawings.

Assessment Strategies
8.1.   Skill Demonstration
8.2.   Written Objective Test

Criteria

You will know you are successful when

8.1.   you create blocks to be used in drawings.
8.2.   you edit currently existing blocks.
8.3.   you create a custom tool palette.
8.4.   you use blocks to create diagrams.

Learning Objectives
8.a.   Utilize the BLOCK command to create and save symbols.
8.b.   Insert symbols and libraries into a drawing.
8.c.   Modify a symbol and update the current block definition to reflect changes.
8.d.   Copy symbols from one drawing file to another using the appropriate dialogue box.
8.e.   Use tool pallettes effectively including, creating, renaming, deleting them and setting up the desired properties.
8.f.   Set up tool palettes with symbology used in the drawing.

9.   Utilize layouts and viewports for plotting.

Assessment Strategies
9.1.   Skill Demonstration
9.2.   Written Objective Test

Criteria

You will know you are successful when

9.1.   you make a viewport in paper space.
9.2.   you activate model space and paper space.
9.3.   you determine which objects go in paper space and which go in model space.
9.4.   you set a scale factor for the drawing in paper space.
9.5.   you set up a plotter for an accurate print of the drawing.

Learning Objectives
9.a.   Set up layouts using titleblocks and viewports.
9.b.   Differentiate between model space and paper space.
9.c.   Use dimension styles and proper techniques to dimension in paper space.
9.d.   Produce hard copy plots with multiple viewports at various scale factors.
9.e.   Explore viewports, 3D vpoints and orbit features.
9.f.   Set the proper parameters in the print dialogue box to obtain proper results.

10.   Create 2D working drawings in CAD.

Assessment Strategies
10.1.   Skill Demonstration
10.2.   Written Objective Test

Criteria

You will know you are successful when

10.1.   you create a dimensioned drawing.
10.2.   you add notes to a drawing.
10.3.   you use appropriate layers to differentiate objects.
10.4.   you update drawing title blocks.

Learning Objectives

10.a.   Define working drawings, i.e. detail drawings and assembly drawings.
10.b.   Utilize CAD commands to produce the necessary views to descibe the part to be manufactured.
10.c.   Utilize CAD commands to add the dimensions required to manufacture the part.
10.d.   Utilize CAD commands to add the specifications required to manufacture the part.
10.e.   Define the function of external references.
10.f.   Construct a multiview layout utilizing xrefs.
10.g.   Apply appropriate scale and visibility to the viewports.
10.h.   Apply visible or hidden attributes to blocks.
10.i.   Edit attributes defined for existing blocks.