

**AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)**

Faculty of Engineering

Bachelor of Science in Electrical and Electronic Engineering (EEE)

BAE 2101: Computer Aided Design and Drafting

Experiment # 02: Familiarization with different toolbars and command of AutoCAD software.

Objective: To familiarize the students with the most important toolbars of AutoCAD Software and use of some useful commands.

Drawing Toolbar:**1. Line**

Drawing Procedure:

- a. Input Line command
- b. pick any point as first point of line (just click or input x,y value of first point)
- c. pick another point as last point of line (just click or input x,y value of last point)
- d. Press enter to terminate.

2. Polygon

Drawing Procedure:

- a. Input polygon command
- b. Input number of sides
- c. Pick any point as center (just click)
- d. Input I or C for Inscribed or Circumscribed option
- e. Input value for the radius

3. Rectangle

Drawing Procedure:

- a. Input rectangle command
- b. Pick any point as first corner
- c. Pick other corner point of the rectangle (click or input value)

4. Arc

Drawing Procedure:

- a. Input arc command
- b. Pick any point as first point
- c. Pick another point as second point
- d. Pick another point as third point

5. Circle

Drawing Procedure:

- a. Input circle command
- b. Pick any point as center point
- c. Input value for the radius

6. Ellipse

Drawing Procedure:

- a. Input Ellipse command
- b. Input C for center
- c. Pick any point as center point
- d. Input value for maximum axis
- e. Input value for minimum axis

7. Donut

Drawing Procedure:

- a. Input Donut command
- b. Input value for inside diameter
- c. Input value for outside diameter
- d. Pick point to place donut
- e. Press Enter to terminate

8. Point

Drawing Procedure:

- a. Input Point command
- b. Pick desire point
- c. Press Esc for

9. Hatch

Drawing Procedure:

- a. Input Hatch command
- b. Open pattern box
- c. Choose any pattern and select OK
- d. Select pick point button and pick any point inside closed object, then press enter
- e. Select preview button to see the view of hatch and press spacebar to return
- f. If necessary, change Scale and Angle
- g. Press Enter to terminate

10. Text

Drawing Procedure:

- a. Input Multiline Text command
- b. Pick two corner points for text area

- c. Write text and press enter
- d. Change font if necessary
- e. Change height if needed
- f. Change text format
- g. Press OK to terminate

Modify Toolbar:

1. Erase

Drawing Procedure:

- a. Input Erase command
- b. Select object and press enter

2. Copy

Drawing Procedure:

- a. Input Copy command
- b. Select object (objects) and press enter
- c. Input M for multiple copy (for single copy, no need this step)
- d. Pick a point as base point
- e. Pick displacement point
- f. Press enter to terminate

3. Mirror

Drawing Procedure:

- a. Input Mirror command
- b. Select object (objects) and press enter
- c. Draw a line as a mirror line by picking two points
- d. Press enter to retain source object or input Y to delete source.

4. Offset

Drawing Procedure:

- a. Input Offset command
- b. Input value for offset distance
- c. Select object (objects) and then click on desired side
- d. press enter

5. Array

Drawing Procedure 1(for rectangular Array):

- a. Input Array command
- b. Click rectangular Array button
- c. Click select object button then select object and press enter
- d. Input value for number of Rows
- e. Input value for number of Columns

- f. Input value for row offset
- g. Input value for column offset
- h. Input value for Angle
- i. Click OK button

Drawing Procedure 2 (for polar Array):

- a. Input Array command
- b. Click polar Array button
- c. Click select object button then select object and press enter
- d. Pick center point
- e. Choose one method and input values
- f. Tick the box rotate items as copied or not
- g. Click OK button

6. Move

Drawing Procedure:

- a. Input Move command
- b. Select object (objects) and press enter
- c. Pick a point as a base point
- d. Click on the point where object will be moved

7. Rotate

Drawing Procedure:

- a. Input Rotate command
- b. Select object (objects) and press enter
- c. Pick a point as a base point
- d. Input value in angle for rotation

8. Scale

Drawing Procedure:

- a. Input Scale command
- b. Select object (objects) and press enter
- c. Pick a point as a base point
- d. Input value for scaling (for example 2 for double)

9. Trim

Drawing Procedure:

- a. Input Trim command
- b. Select object (from where objects to be trimmed) and press enter
- c. Select objects to trim

10. Extend

Drawing Procedure:

- a. Input Extend command
- b. Select object (limits upto objects to be extended) and press enter
- c. Select objects to extend

11. Explode

Drawing Procedure:

- a. Input Explode command
- b. Select object and press enter

Print or Plot a Drawing

Procedure

1. Input plot command
2. From plot device tab option, select the printer/ploter
3. From plot style table option, select monochrome.ctb
4. From plot setting tab option, select the paper size and choose the unit
5. From drawing orientation option, select the Portrait or Landscape
6. From plot scale option, select scaled to fit
7. From plot offset option, select center the plot
8. From plot area option, click on Window button
9. Click two corner point to make a window for necessary part of drawing
10. If necessary, click on Full Preview button to view the drawing and press spacebar
11. Click ok button to print the drawing.

Some useful commands in Auto CAD

Command Name	Shortcut	Uses
Unit	UN + Enter	To set the unit system
Dimension	D + Enter	To set dimension system
Limit	Limits + Enter	To set the size of drawing sheet
Line	L + Enter	To draw line
Erase	E + Enter	To erase or delete selected part of the drawing
Trim	Tr + 2Enter	To cut unwanted extra line
Move	M + Enter	To move drawing object
Copy	Ctrl + C	To make other copy of the drawing object
Rectangle	Rec + Enter	To draw rectangle
Circle	C + Enter	To draw circle
Arc	Arc + Enter	To draw arc
Ellipse	El + Enter	To draw ellipse
Donut	Do + Enter	To draw the cross section of pipe or reinforcement

Fill	Fill + Enter	To fill the inside area of a boundary
Point	Po + Enter	To draw point
Point Style	Pointstyle + Enter	To modify Point
Scale	Sc + Enter	To increase or decrease the size of the drawing object using factor
Divide	Div + Enter	To divide the object in multiple segment
Measure	Me + Enter	To divide the object in multiple segment using measurement
Hatch	H + Enter	To hatch or insert different symbol inside a boundary
Line weight	Lw + Enter	To modify line
Array	Ar + Enter	To copy a object in different row and column
Drafting Setting	Ds + Enter	To modify the drafting elements
Linear Dimension	Dli + Enter	To show the length of drawing
Regen	Re + Enter	To make the circle and arc smooth
Block	B + Enter	To save any object in computer with definite name.
Insert	I + Enter	To insert the objects those were saved using block command
Minsert	Minsert + Enter	To insert the objects those were saved using block command and modify them
Extend	Ex + Enter	To increase the length of line up to the next perpendicular line.

Reference:

1. Kristen S. Kurland , “AutoCAD 2004, 2D Training Manual”.
2. Bob McFarlane, “Beginning AutoCAD 2004”
3. David Byrnes and Mark Middlebrook, “AutoCAD 2007 For Dummies”.