151222126 - Engineering Graphics

Lecture 4 Introduction to AUTOCAD



Menus and Toolbars

- You can use several menus, shortcut menus, and toolbars for access to frequently used commands, settings, and modes.
- <u>Toolbars</u>

Use buttons on toolbars to start commands, display flyout toolbars, and display tooltips.

• <u>The Menu Bar</u>

Display pull-down menus from the menu bar using one of several methods. You can also specify alternate menus.

• <u>Shortcut Menus</u>

Display a shortcut menu for quick access to commands that are relevant to your current activity.

• <u>The Object Snap Menu</u>

Specify an object snap quickly and conveniently from a shortcut menu.

The Command Window

- You can display commands, system variables, options, messages, and prompts in a dockable and resizable window called the *command window*.
- Enter Commands on the Command Line

You can enter a command by using the keyboard. Some commands also have abbreviated names called command aliases.

• <u>Enter System Variables on the Command Line</u> System variables are settings that control how certain commands work.

The Command Window

- <u>Navigate and Edit Within the Command Window</u>
 You can edit text in the command window to correct or repeat commands.
- <u>Switch Between Dialog Boxes and the Command Line</u> You can display prompts on the command line instead of using a dialog box, or switch back again. This option is useful primarily when using scripts.
- <u>Dock and Resize the Command Window</u>
 To relocate and resize the command window for your convenience, drag it or use the splitter bar.

Command Entry



• Command Entry

Command : _

This prompt signals that AutoCAD is ready to accept a command. You can use AutoCAD commands to create, view, modify, and plot drawings.

Commands entry:

From the keyboard

From a Pull-down menu

From a Button Menu / toolbars

Repeated Comands: You can press the ENTER at the Commnad : prompt to repeat the previous command.

• Data Entry

When entering numeric vales from the keyboard, you can use the following characters.

• Numeric Values : + - 0 1 2 3 4 5 6 7 8 9 E . /

Creating a Drawing

 Begining a New Drawing The NEW command allows to specify a filename for the new drawing before beginning work.

Command : new



• File Menu \rightarrow New

Opening a Drawing

Opening an Existing Drawing
 The OPEN command allows you to open an existing drawing.
 Command : open

| andart Araç Çubuğu 🖼 | Command: Open | File Menüsü:Open |
|----------------------|---------------|------------------|
|----------------------|---------------|------------------|

Saving a Drawing

- Saving the Current Drawing
 - These commands allow to save the current drawing.
 - SAVE : Requests a filename and saves the drawing
 - SAVE AS : Same as SAVE, but also renames the current drawing
 - QSAVE : Saves the drawing using its current name. If the drawing hasn't been name, it requests a filename
- File Menu \rightarrow Save as
- You can save drawing as a pdf file.

Printing a drawing

• Command entry : *Print*

| An Plot - Model | | | |
|---|----------------------|------------------------------|---|
| Page setup | | (i) Plot style table | Learn about Plotting (pen assignments) |
| Name: <pre></pre> | ▼ Add | None | - |
| Printer/plotter | | Shaded viewpo | ort options |
| Name: ONNe | Properties | Shade plot | As displayed 🔹 |
| Plotter: None | - <u>+ 210 mm k-</u> | Quality | Normal 👻 |
| Where: Not applicable | | DPI | |
| Description: The layout will not be plotted unless a new configuration name is selected. | plotter 7 | Plot options | |
| Plot to file | | 📃 Plot in bac | kground |
| Paper size | Number of copies | √ Plot objec | t lineweights |
| ISO A4 (210.00 x 297.00 MM) | ▼ 1 <u>*</u> | Plot with p | lot styles |
| Plot area | Plot scale | ✓ Plot paper | space last |
| What to plot: | 📝 Fit to paper | Plot stamp | rspace objects |
| Display 🔹 | Scale: Custom | Save char | nges to layout |
| Plot offset (origin set to printable area) | 1 mm = | | ation |
| v. 11.55 mm Center the plot | | Portrait | |
| | 20.92 units | C Landscape | • A |
| Y: -13.65 mm | Scale lineweights | Plot upside | e-down |
| Preview | Apply to Layout OK | Cancel | Help |
| | | • | |

Exiting from a Drawing

- Exiting AutoCAD
 - Quit: exits AutoCAD if you have saved your mostrecent changesEnd: saves changes to your current drawing and

exits AutoCAD

Some AutoCAD file types;

- .adt Audit report file
- .bak Drawing file backup
- .cfg Configuration file
- .dwg Drawing file
- .dxb Binary drawing interchange file
- .dxf Drawing interchange file (ASCII or binary)
- .eps Encapsulated PostScript file
- .err Report generated listing errors if AutoCAD crashes
- .hlp Help file
- .mnu Menu source file
- .mnx Compiled menu file
- .plt Plot output file
- .ps PostScript file
- .scr Command script file

Command Entry

Command : _

- This prompt signals that AutoCAD is ready to accept a command. You can use AutoCAD commands to create, view, modify, and plot drawings.
- Commands entry:
 - From the keyboard
 - From a Pull-down menu
 - From a Button Menu / toolbars
- Repeated Comands: You can press the ENTER at the Commnad : prompt to repeat the previous command.

Specifying Points

- When AutoCAD asks for a point, it expects you to enter the coordinates of a location in the drawing.
- There are several different ways to specfy point. You can
- Type in absolute coordinates on the keyboard
- Type in relative coordinates on the keyboard
- Pick a point on the screen with your pointing device
- Pick a point on the screen using the keyboard's arrow keys
- Use object snap to specify a point based on existing geometry
- Employ a combination of these techniques

Status Line

SNAP GRID ORTHO POLAR OSNAP OTRACK LWT MODEL

| F1 | Help Menu |
|-----|-------------------------------|
| F2 | Autocad Text Window |
| F3 | Osnap ON / OFF |
| F4 | Tablet ON / OFF |
| F5 | Isoplane |
| F6 | Dynamic UCS ON / OFF |
| F7 | Grid ON / OFF |
| F8 | Ortho ON / OFF |
| F9 | Snap ON / OFF |
| F10 | Polar ON / OFF |
| F11 | Object Snap Tracking ON / OFF |
| F12 | Dynamic Input ON / OFF |

Object Snap

Drafting Settings

| Drafting Settings | | ? 🔀 |
|--|---------------------------|------------|
| Snap and Grid Polar Tracking | Object Snap | |
| 🔲 Object Snap On (F3) | 🔲 Object Snap Tracking | g On (F11) |
| Object Snap modes | | |
| 🗆 🔲 Endpoint | ጜ 🔲 Insertion | Select All |
| 🛆 🔲 Midpoint | 占 🔲 Perpendicular | Clear All |
| 🔿 🗖 Center | 🕤 🔲 Tangent | |
| 🛛 🗖 Node | 🔀 🔲 Nearest | |
| 🔷 🗖 Quadrant | 🛛 🥅 Apparent intersection | |
| $	imes$ \square Intersection | 🥢 🥅 Parallel | |
| 🔲 Extension | | |
| To track from an Osnap point, pause over the point while in a command. A tracking vector appears when you move the cursor. To stop tracking, pause over the point again. | | |
| Options | OK Cance | l Help |

Polar Tracking

| 💏 Drafting Settings | | ? 🔀 |
|--|---|------|
| Snap and Grid Polar Tracking Obj ✓ Polar Tracking On (F10) Polar Angle Settings Increment angle: 45 ✓ Additional angles 12 New Deleter | ject Snap Object Snap Tracking Settings Track orthogonally only Track using all polar angle settings Polar Angle measurement Absolute Relative to last segment | |
| Options | OK Cancel | Help |

Command Entity : limits

- Command entry : *limits*
- Format menu \rightarrow Drawing limits
- Sets and controls the limits of the grid display in the current Model or layout tab.

Command Entity : limits

Command: '_limits Reset Model space limits:

Specify lower left corner or [ON/OFF] <0.0000,0.0000>:

Specifying A4 paper (210 x 297 mm)

Reset Model space limits: Specify lower left corner or [ON/OFF] <0.0000,0.0000>:

Specify upper right corner <420.0000,297.0000>: 210,297

Coordinates

- Absolute Coordinates (Mutlak Koordinatlar)
- Relative Coordinates (Nispi, ArtıŞlı Koordinatlar)
- Relative Polar Coordinates (Nispi Kutupsal Koordinatlar)

Absolute Coordinates

- Cartesian : specify a point by typing its X,Y, and Z values. Examples
 - 3.5,7.25,4.75

3-1/2,2,7-1/2,4-3/4

3.5,7.25 if you omit the Z value, the current elevation is used as the Z value.

Relative Coordinates

Polar : specify a point by entering its distance from the current UCS origin and its angle in the XY plane, separated by <.

Example 8.5<45

Command Entity : line

- Command entry : *line*
- DrawingToolbars : 🖊
- Draw menu \rightarrow Line
- Creates straight line segments.

Command Entity : line

Drawing line on absolute coordinates

```
Command: I LINE Specify first point: 0,0
```

Specify next point or [Undo]: 50,50

Specify next point or [Undo]: 50,50

Drawing line on relative coordinates

Command: 1 LINE Specify first point: 0,0

Specify next point or [Undo]: 50,50

Specify next point or [Undo]: @50,50

Command entity : xline

- Command entry : *xline*
- Creates a line of infinite length.

| Draw tool bar 🖊 | Command : Xline | Draw menü - Ray |
|-----------------|-----------------|-----------------|
|-----------------|-----------------|-----------------|

Command entity : mline

- Command entry : *mline*
- Creates multiple parallel lines.

| Draw tool bar 🥢 🛛 Command : mlir | e Draw menü - MultiLine |
|----------------------------------|-------------------------|
|----------------------------------|-------------------------|

Command entity : poliline

- Command entry : *pline*
- Drawing Toolbars :



• Creates a 2D polyline.

Command entity : dtext

- Command entry : *dtext*
- Draw Menu \rightarrow Text \rightarrow Single Line
- Creates a single-line text object.

Command entity : mtext

- Command entry : *mtext*
- Drawing Toolbars: **A**
- Draw menu \rightarrow Mtext
- Creates a multiline text object.

Command entity : circle

• Command entry : *circle*



- Draw menu \rightarrow Cirlce
- Creates a circle.

Command entity : rectangle

- Command entry : *rectangle*
- Drawing toolbars :
- Draw menu \rightarrow Rectangle
- Creates a rectangular polyline.

Command entity : polygon

- Command entry : *polygon*
- Drawing toolbars : 🔷
- Draw menu \rightarrow Polygon
- Creates an equilateral closed polyline.

Command entity : arc

- Command entry : *arc*
- Drawing toolbars :
- Draw menu → Arc
- Creates an arc.

Command entity : ellipse

- Command entry : *ellipse*
- Drawing toolbars :
- Draw menu \rightarrow Ellipse
- Creates an ellipse or an elliptical arc.