

University of Sallahadin College of Engineering Electrical Engineering Dept.



# Electrical CAD Lecture Two Fundamentals

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## **Contents of This Lecture**

- Draw Arcs
- Drafting Settings
- Dynamic Input
- Display Control Commands
- Undo and Redo

The ARC command offers different options for drawing arcs:

- Three-point (3 points)
- Start, center, end (S,C,E)
- Start, center, included angle (S,C,A)
- Start, center, length of chord (S,C,L)
- Start, end, included angle (S,E,A)
- Start, end, direction (S,E,D)
- Start, end, radius (S,E,R)
- Center, start, end (C,S,E)
- Center, start, included angle (C,S,A)
- Center, start, length of chord (C,S,L)
- Continuation from line or arc (LinCont or ArcCont)

**Three-point (3 points)** 



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Start, center, end (S,C,E)



Start, center, included angle (S,C,A)



Start, end, included angle (S,E,A)



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Start, end, radius (S,E,R)



AutoCAD provides various tools that make it possible to create and modify objects more easily and accurately.



Tools Menu	Choose Drafting Settings
Shortcut Menu	Right-click Snap on the status bar and choose Settings
On-Screen prompt	dsettings (ENTER)

### Grid Settings related to Grid in the Drafting Settings dialog box

hap and Grid Polar Tracking	Object Snap	3D Object Snap	Dynamic Input	Quick Pro	pert
Snap On (F9)		Grid On (F	7)		
Snap spacing		Gid style			
Snap X spacing:	0.5000	Display do	otted grid in:		
0	0.5000	2D model space			
Shap Y spacing:	0.5000	Block e	ditor		
Equal X and Y spacing		Sheet/	ayout		
		Grid spacin	g	0.5000	_
Polarspacing		Grid X spa	icing:	0.5000	
Polar distance	0.0000	Grid Y spa	acing:	0.5000	
Snap type		Major line	every:	5	*
Grid snap		Grid behav	ior		
Rectangular snap     Isometric snap		Adaptive grid			
					() isometre shap
PolarSnap		Follow Dynamic UCS			

#### To toggle **Grid** feature ON/OFF, press the **F7** function key.



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grid (ENTER)

### Snap

### Settings related to Snap in the Drafting Settings dialog box

	- stationals					
Snap On (F9)		Grid On (F7)				
Snap spacing		Grid style				
Snap X spacing:	0.5000	Display dotted grid in:				
Snap Y spacing	0.5000	20 model space				
Club P Specing  Polar spacing		Shoot/layout				
						Grid X spacing
		Polar distance	0.0000	Grid Y spacing:	0.5000	
Snap type © Grid snap © Rectangular snap © Isometric snap © PolarSnap		Major line every:	5			
		Grid behavior				
		Adaptive grid	Adaptive grid			
		Allow subdivision below grid spacing Display grid beyond Limits				
						Follow Dynamic UCS

#### snap (ENTER)

### To toggle snap feature ON/OFF, press the **F9 function key**.

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### Ortho

The ORTHO feature lets you draw lines and specify point displacements that are parallel to either the X or Y axis.

ortho (ENTER)

In addition you can toggle Ortho feature ON/OFF by pressing the **F8 function key**.

### **Object Snap**

- The Object Snap (or Osnap, for short) feature lets you specify points on existing objects in the drawing, such as endpoint, center, midpoint, etc.
- Object snap modes can be choose while executing an AutoCAD command that prompts for a point.

#### **Object Snap Markers and Tooltips**

L Options	$\mathbf{X}$
Current profile: < <unnamed profile="">&gt;</unnamed>	🍋 Current drawing: Drawing1.dwg
Files Display Open and Save Plot and Publish System	User Preferences Drafting 3D Modeling Selection Profiles
AutoSnap Settings  Marker  Magnet  Display AutoSnap tooltip  Display AutoSnap aperture box  Colors  AutoSnap Marker Size	AutoTrack Settings  Display polar tracking vector  Display full-screen tracking vector  Display AutoTrack tooltip  Alignment Point Acquisition  Automatic  Shift to acquire  Aperture Size
Object Snap Options          Ignore hatch objects         Replace Z value with current elevation         Ignore negative Z object snaps for Dynamic UCS	Drafting Tooltip Settings Lights Glyph Settings Cameras Glyph Settings
(	OK Cancel Apply Help

### **Following are the various Object Snap modes available:**

✓ENDpoint	✓ PERpendicular
✓MIDpoint	✓ TANgent
✓CENter	✓ NEArest
√NODe	✓ APParent Intersection
✓OUAdrant	✓ PARallel
✓INTersection	✓SNAp From
✓ EXTension	✓MTP
✓ INSertion	✓NONe



### **Endpoint, Intersection, Midpoint, and Perpendicular**



### **Quadrant, Tangent, and Center**



#### **Apparent Intersection, Extension, and Parallel**



Dynamic Input provides a command interface near the cursor to help you keep your focus in the drafting area.

**Dynamic Input** can be toggled ON/OFF by choosing **DYN** on the status bar or press **F12**.



AutoCAD provides various tools that allows to view the drawing in different ways which in turn will allow to create the drawing faster and more efficiently.



### Zoom

The ZOOM command allows to control the viewing area of the drawing. You can increase or decrease the viewing area, although the actual size of objects remains constant.



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Following are the available options for ZOOM command:

**Window** – (default) specify two points represent diagonally opposite corners of a rectangle and the view in the rectangle is enlarged to fill the drawing area.

**Realtime** – lets you zoom interactively to a logical extent.

All – displays the entire drawing. In a plan view, it zooms to the drawing's limits or current extents, whichever is larger.

**Center** - select a new view by specifying its center point and the magnification value or height of the view in current units.

**Dynamic** – lets you see entire drawing and allows to select the location and size of the next view by means of the cursor manipulation.

**Extents** – displays the entire drawing extent immaterial of the limits of the drawing.

**Previous** – displays the last displayed view. Restores up to last 10 views.

Scale – displays to the set scale (or magnification) factor.

### Pan

The PAN command allows to view a different portion of the drawing in the current view without changing the magnification. Pan Realtime pan interactively to the logical extent (edge of the drawing space).



### **Redraw and Regen**

The **REDRAW** command is used to refresh the on-screen image and to remove the blip marks from the screen. A redraw is considered a screen refresh as opposed to database regeneration.

The **REGEN** command is used to regenerate the drawing's data on the screen and it goes through the drawing's entire database and projects the most up-to-date information on the screen. The REGEN command displays the most accurate image possible. The UNDO command undoes the effects of the previous command or group of commands, depending on the option employed. The U command reverses the most recent Operation.

The REDO command is reversal of the effects of the previous U and UNDO commands.





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### **Next Lecture**

• Advanced Drawing commands

# Assignment

• Draw the following diagram using AutoCAD.



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## **Questions and Thank you**



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