# Introduction to AutoCAD

Academic Resource Center



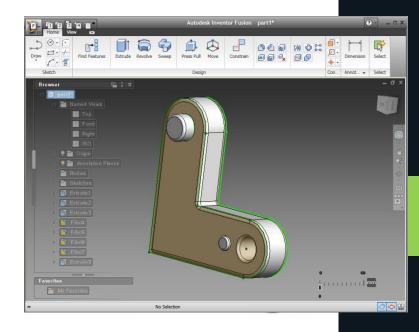
# What is CAD?

Autodesk

- Computer Aided Drafting
- Autodesk is the most popular drawing program
- Many student versions available for free online at <u>students.autodesk.com</u>
  - o AutoCAD
  - o Architecture
  - Mechanical
  - Revit
  - o Inventor
  - $\circ$  Civil
  - MEP
  - $\circ$  etc.



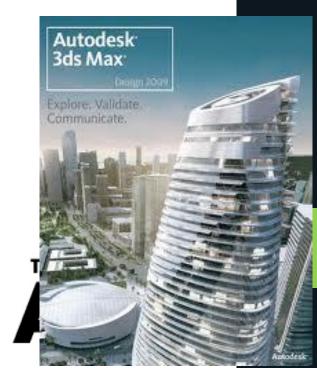
- Capabilities:
  - 2D line drawings
  - 3D constructions
  - Rendering
  - Part Assemblies



#### Workshop Goals

- What we'll cover:
  - Setting up the workspace
  - Basic/common commands
  - Manipulating properties
  - $_{\odot}~$  Viewports and printing

- What we won't cover:
  - Rendering
  - External References
  - Block creation
  - Parts/assemblies





# Starting a New Drawing

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	Q	itput
56	Create a new drawing	6
New +	Drawing Starts a new drawing with a selected	
Open 🔸	drawing template file	
Save	Sheet Set Creates a sheet set data file that manages drawing layouts, file paths, and project data	
Save As		
Export •		
Print •		
Publish •		
Send •		
Drawing Utilities		
Close +		
	Options Exit AutoCAD	
	ويحتجيها ويعتم والمتحد والمتحد والم	

The big A is like the home button in MS Office or the File menu in most programs

#### • The default template is good

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## Setting Up the Workspace

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Publish I		
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Drawing Utilities		
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The options window lets you set all your preferences within the drawing Snap and Aperture settings are on totally personal basis

urrent profile: < <unnamed profile="">&gt;</unnamed>	🔄 Current drawing: 🛛 🛛	Drawing2.dwg		
Files Display Open and Save Plot and Publish Syste	m User Preferences Drafting	3D Modeling	Selection Profile	es
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AutoSnap Marker Size	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	When Dis APBOX is the crossl determin magnet k	play AutoSnap set to 1), the a hairs when you es how close to ocks the apertu	the object snap target box, in pixels. Aperture Box is selected (or when perture box is displayed in the center snap to an object. The aperture size a snap point you can be before the re box to the snap point. Values rang RTURE system variable)

## **Right Click Customization**

urrent profile: <	Current drawing: Drawing2.dwg
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Windows Standard Behavior          Image: Windows Standard Behavior         Image: Double click editing         Image: Shortcut menus in drawing area         Right-click Customization	Priority for Coordinate Data Entry Running object snap Keyboard entry Keyboard entry except scripts
Default settings when units are set to b	isplays the Right-Click Customization dialog box. This dialog ox provides further definition for the Shortcut Menus in rawing Area option. (SHORTCUTMENU system variable)
Target drawing units:	Hyperlink           Image: Display hyperlink cursor, tooltip, and shortcut menu
Fields	Undo/Redo
Display background of fields	Combine zoom and pan commands
Field Update Settings	Combine layer property change
Block Editor Settings	Lineweight Settings
Initial Setup	Default Scale List
	OK Cancel Apply Help

#### Right-click settings are also personal preference

Unnamed Profile>>	Current drawing:	Drawing2.dwg
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Command Mode If a command is in progress, r ENTER Shortcut Menu: always er Shortcut Menu: enabled		present
Apply & C	lose Cancel	Help

 Repeating commands and meaning *enter* make the drawing process faster

#### Preferences

	Drawing Window Colors		
Current profile: < <unnamed Files Display Open and Save Window Elements Color scheme: Dark</unnamed 	Context: 2D model space Sheet / layout 3D parallel projection 3D perspective projection Block editor Command line	Interface element: Uniform background Crosshairs Grid major lines Grid minor lines Grid axis lines Autotrack vector	Color: 33,40,48 Red Yellow Green
<ul> <li>Display scroll bars in drawin</li> <li>Display Drawing status bar</li> <li>Display screen menu</li> <li>Use large buttons for Toolt</li> <li>Show ToolTips</li> <li>Show shortcut keys in</li> </ul>	Plot preview	Autosnap marker Dynamic dimension lines Drafting tool tip Drafting tool tip contour Drafting tool tip background Control vertices hull Light glyphs Light hotspot Light falloff	Cyan Blue Magenta White Black 33,40,48
Show extended Tool  Number of se  Show rollower TeelTips Colors Layout elements Display Layout and Model Display printable area	Preview:		Current profile: < <unnamed profile<br="">Files Display Open and Save Plot Pickbox size</unnamed>
<ul> <li>Display paper background</li> <li>Display paper shadow</li> <li>Show Page Setup Manage</li> <li>Create viewport in new layer</li> </ul>		280 6.0884	Selection preview           When a command is active           When no command is active           Visual Effect Setting
		Apply & Clos	Selection modes           Image: Noun/verb selection           Image: Use Shift to add to selection
The pick		• •	<ul> <li>Press and drag</li> <li>Implied windowing</li> <li>Object grouping</li> <li>Associative Hatch</li> </ul>

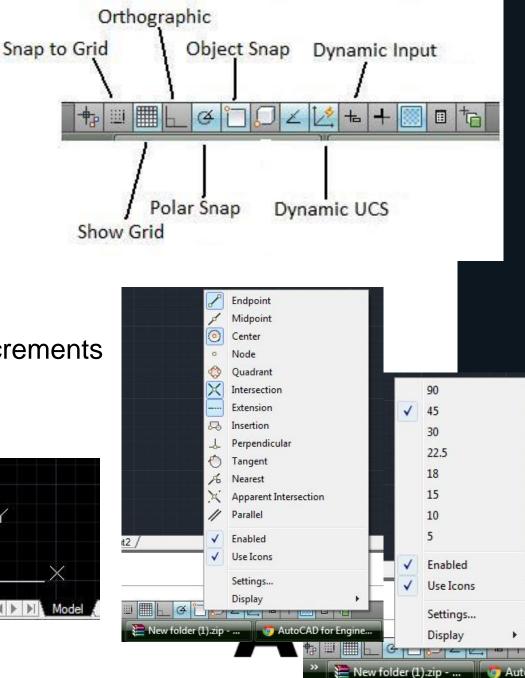
manipulate your drawing

#### You can set the col of just about anythi in the drawing

profile:	< <unnamed f<="" th=""><th>Profile&gt;&gt;</th><th></th><th>🤄 Current drawing</th><th>g: [</th><th>Drawing2.dwg</th><th>-</th><th></th></unnamed>	Profile>>		🤄 Current drawing	g: [	Drawing2.dwg	-	
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Associativ		States		ОК	Cancel	Apply		Help

## Snaps, etc.

- Snap to Grid
  - cursor snaps to grid points
- Show Grid
  - displays grid in model space
- Orthographic
  - constrains lines to 90deg angles
- Polar Snap
  - constrains lines to other angle increments
- Object Snap
  - cursor snaps to points on objects
- Dynamic UCS
  - shows UCS at all times
- Dynamic Input
  - displays input text in space



#### Some Common Commands

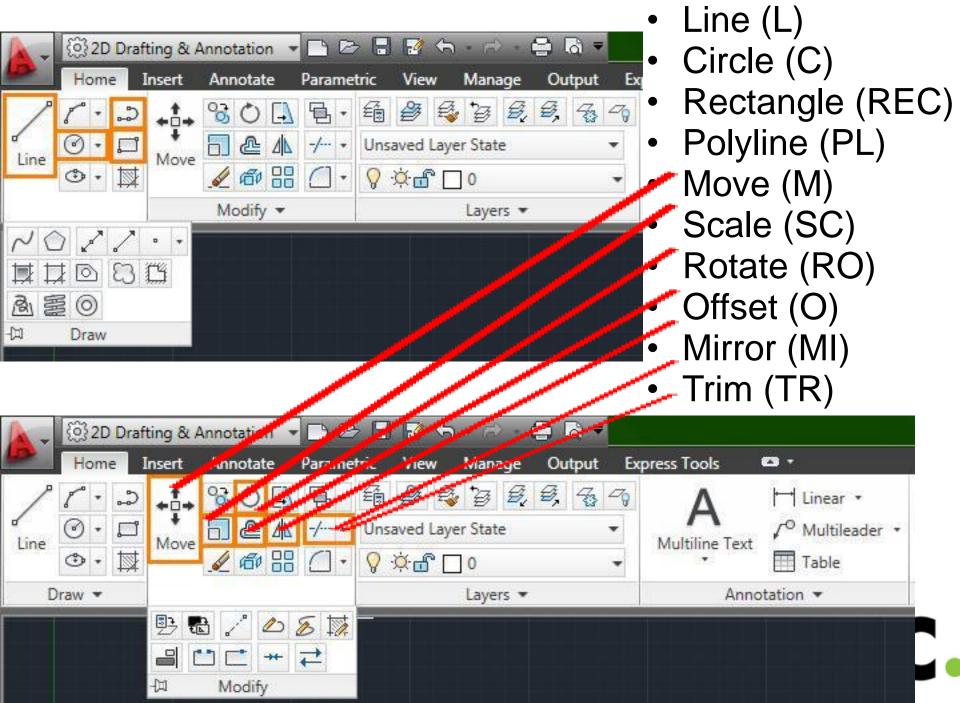
- 2D Commands
  - ∘ Line
  - o Rectangle
  - Circle
  - Polyline
  - ∘ **Trim**
  - Extend
  - Offset
  - Move
  - Mirror
  - Scale
  - o Rotate

- 3D Commands
  - o Extrude
  - $\circ$  Union
  - Subtract
  - o 3D Rotate
- Helpful Commands

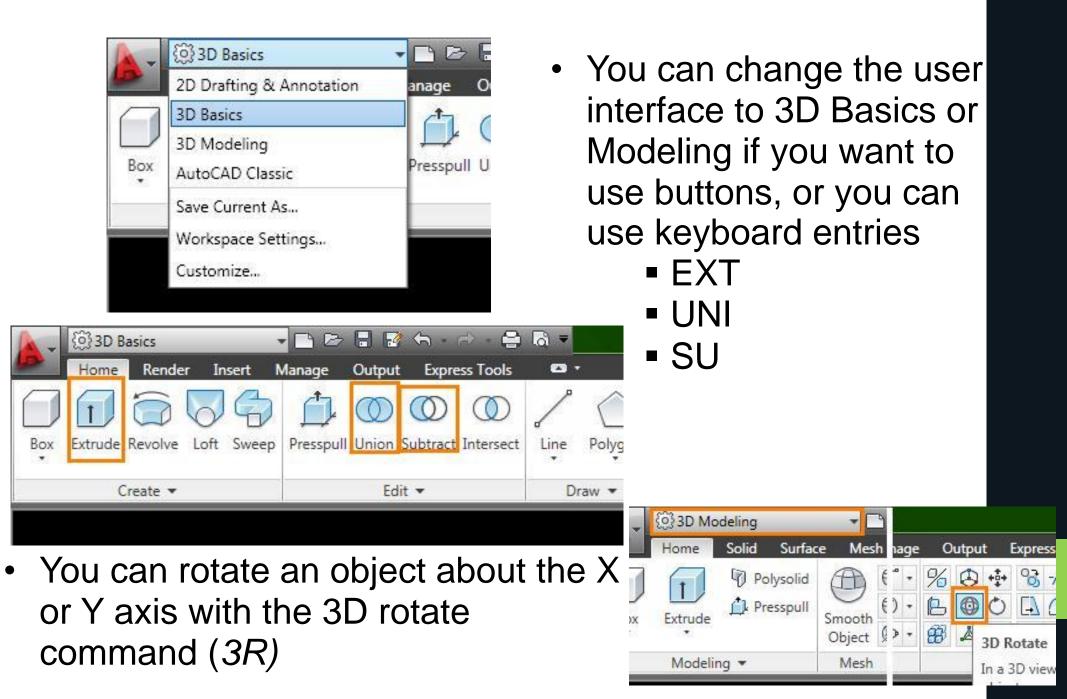
   Units
  - Properties
  - Measure
  - Dimension

# **ARC**

#### **Command Interface**



## **3D Commands**

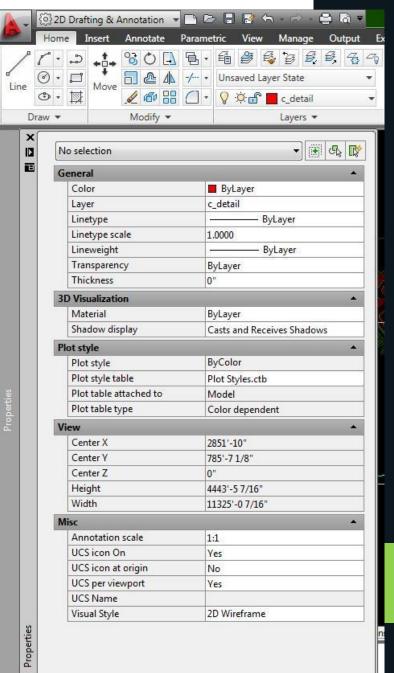


## **Units and Properties**

 The units command will let you change the primary units you will be drawing in

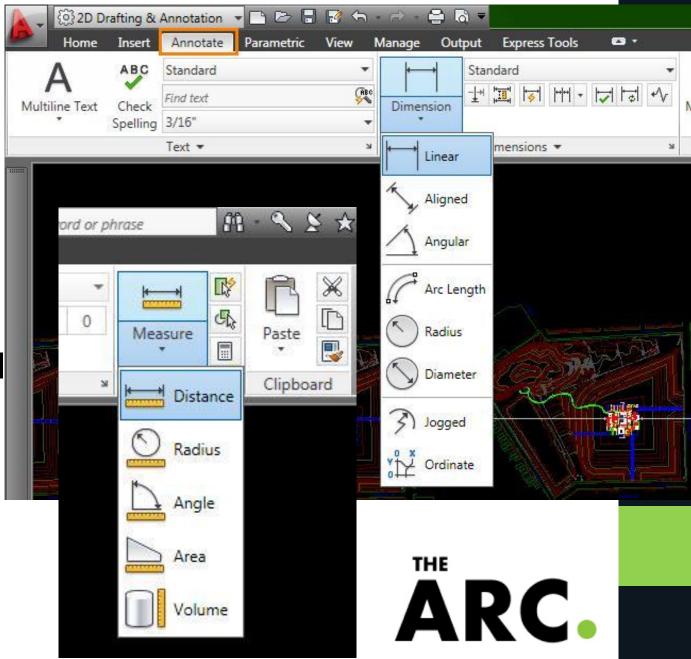
Length	Angle
Type:	Туре:
Architectural	Decimal Degrees
Architectural	Precision:
Decimal Engineering	0 🗸
Fractional Scientific	
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Inches	•
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Sample Output	
1/2",2",0"	
1 1/2",2",0"	
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1 1/2",2",0" "<45,0" Lighting Jnits for specifying the inte	nsity of lighting:
l 1/2",2",0" 3"<45,0" Lighting	nsity of lighting:

Properties wil I let you change just about anything with respect to the selected item

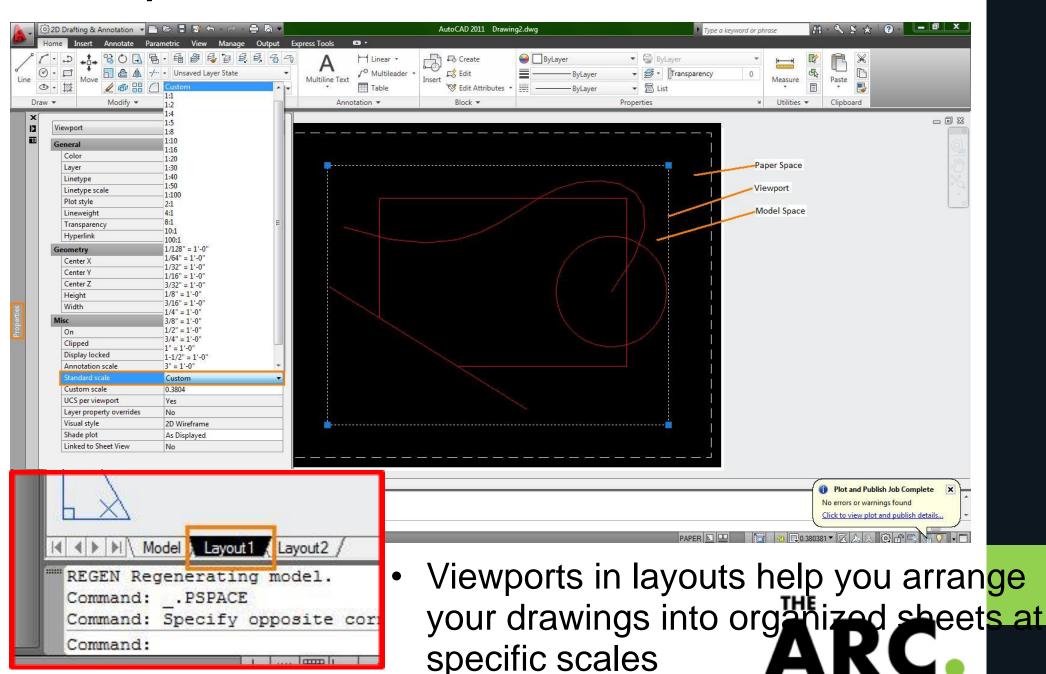


## Measure and Dimension

- The measure option has two important subcommands:
  - Distance (DI)
  - Area (AREA)
- The dimension tool has many options, and displays the measurement in the drawing



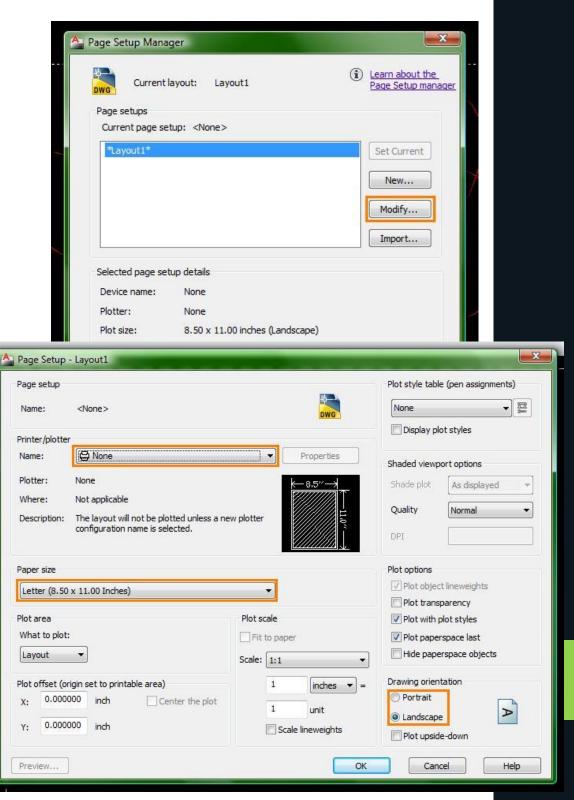
#### Viewports



# Setting up to Print

 You can apply a page setup to your layout to make the printing process quicker every time

	New layout	
	From template	
	Delete	
	Rename	
	Move or Copy	
	Select All Layouts	
	Activate Previous Layout	
	Activate Model Tab	
l l	Page Setup Manager	
	Plot	
	Import Layout as Sheet	
X	Export Layout to Model	
	Hide Layout and Model tabs	



#### More Topics to Investigate

- CAD has lots of options and possibilities that you should explore on your own
  - $_{\odot}$  Lineweights and types
  - $_{\circ}$  Interface options
  - $_{\circ}$  Complex shapes
  - $_{\circ}$  3D modeling
  - Rendering
  - External References
  - 。 **BI**

- To download student versions or trials, go to <u>http://students.autodesk.com</u>
- You can also find tutorials and help on their website on forums, or by pressing F1 in CAD

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• Questions?