

## AutoCAD 2010 **HELP!** Sheet

### I. How to Make Your Own Folder on the Hard Disk Drive – On Site Storage

1. Use the **Start** menu's **Programs** sub-menu to execute the **Windows Explorer** or **My Computer** programs.
2. Use the **mouse** to point and **double click** on drive partition **C:** or **M:** (at our college it is **M**).
3. Use the Windows Explorer's menu-command sequence **File-New-Folder** to open a new folder.
4. Use the **mouse** to point and **click** on **New Folder** in the right screen of this program and rename it to the initials of your own name such as XXX (XXX represents your initials in this handout).  
**Mouse click behind your initials in the text box to make the change.**
5. Use the **mouse** to point and **click** on the Windows **X icon** to exit this program.

### II. Off Site Backup Files – Off Site Storage

Students should use one of the following options to take drawings complete or as a work-in-progress home (drive letters may vary by computer workstation locations):

1. (A:) high density 3.5 inch 1.4Mb Floppy diskette.
2. (F:) CD/RW 700Mb (designation letters vary)
3. (G:) Jump Drive (designation letter and drive sizes vary)

**SPECIAL NOTE: YOU SHOULD NEVER START A DRAWING SESSION FROM A PORTABLE STORAGE DEVICE! ALWAYS RETRIEVE CAD DRAWINGS FROM THE CAD SYSTEM!**

### III. How to Start a New AutoCAD Drawing Session

1. **Double mouse click** the **AutoCAD** icon on the desktop or find it in the Program list of the Start Menu.
2. When AutoCAD's Drawing Editor appears, **select the Application Menu icon (under the "A") the top left corner of the screen.** Then, **find the New pull out menu option.** A fly out window will appear for you to locate a template file to begin a new drawing. Start each new drawing session by finding the **asize.dwt** template file that can be downloaded from the FORMS page of the CAD program website ([www.KishwaukeeCollege.edu/cad](http://www.KishwaukeeCollege.edu/cad)) to your file folder created above.
3. Use the **down arrow of the "Look in:" prompt area** at the top of the popup window to search.
4. **Search for the following drawing and path, m:/XXX/ASIZE.DWT** (xxx represents your initials).

### IV. How to Save a New Drawing to Your Hard Drive File Folder

1. **Select the Application menu icon (under the "A") at the top left corner of the screen.** Then, **find the Save as pull out menu options.**
2. **Use the mouse to locate** the root of hard disk drive **Local Disk C:** (or **M:**) by mouse **clicking the down arrow** next to the **"Save in"** prompt near the top of this popup window.
3. **Locate the file folder named with your initials** from step I-4 above such as XXX, and **double mouse click on this folder.** (Hint: You might have to use the scroll bar.)
4. Confirm the drawing location, file name and file extension before saving (M:/XXX/151-1.DWG).

### V. How to Back Up to Removable Memory Storage

1. Use the AutoCAD menu-command sequence **Save As** by use of **single mouse clicks.**
2. **Use the mouse to locate** your portable storage device from number II. above and **mouse clicking the down arrow next to the "Save in"** prompt near the top of this window.

3. Confirm the drawing name, extension and disk location before **clicking on the Save button.**
4. **You should never remove a jump or flash drive without telling the computer to Eject it for its safe removal! If the light is lit, it is NOT safe to remove it.**

## VI. AutoCAD Interface

The new AutoCAD interface that was made to parallel Windows Vista development contains the following important parts by default:

("A") < Application Menu	Quick Access Toolbar	<b>Program Title</b>	Info Center	- □ X
<b>Menu Bar Tabs</b>				
<b>Menu Ribbon</b>				

The ribbon contains Menus with command or tool icons. It can be expanded and tacked open. It can also be dragged, dropped and customized in other ways. By default it is docked at the top of the screen under the Menu Bar. The best part of this new feature is the heads up help display.

Those who wish to restore the AutoCAD 2008 interface may do so by changing back to the Classic interface under the gear icon found in the bottom right corner of the screen in the Status bar.



Also view the following helpful resources:

[http://images.autodesk.com/adsk/files/autocad\\_2010qa\\_final.pdf](http://images.autodesk.com/adsk/files/autocad_2010qa_final.pdf)

[http://www.rand.com/imagin1/1/pdfs/technology/software/acad10\\_prev\\_guide1.pdf](http://www.rand.com/imagin1/1/pdfs/technology/software/acad10_prev_guide1.pdf)

<http://www.cadtutor.net/tutorials/autocad/ribbon-basics/>

## VII. AutoCAD Command Selection Methods

1. Type the command in at the Command: prompt.
2. Point and select the command from a screen icon in the Menu Ribbon.
3. Key missing Ribbon commands at the Info Center, like Aerial View, to determine how to use it.

## VIII. NEW AutoCAD Users **Most Used Commands and Features!**

Esc – to cancel a command in progress

U – undoes the last command completed

Space Bar or Enter Key – to both conclude a command and repeat it again (tap-tap)

Shift+Right Mouse – over drawing editor reveals popup menu of Osnap commands

Right Mouse – over drawing editor to reveal Drafting Options dialog box

Double Left Mouse – over Paper Space or Model Space to Activate

Zoom Window – to enlarge a smaller portion of the drawing screen

Zoom All – to restore the entire drawing to screen

Regen – to refresh the screen and get rid of the jags in the geometry

Tab Key – to scroll list of commands or variables if you forgot the exact name

## IX. Input Device Button Functions

- |  |                                       |
|--|---------------------------------------|
| 1. Left Button – Selects               | 2. Right Button – Shortcut Menu       |
| 3. CTRL+Right Button – OSNAP Options   | 4. SHFT+Right Button – OSNAP Options  |
| 5. Center Wheel Down – Pans the screen | 6. Center Wheel Up – Zooms the screen |

X. Function Key Functions

ESC - Cancel	
F1 - Help	F7 - Grid Toggle
F2 - Text Window Toggle	F8 - Ortho Snap Toggle
F3 - Running Osnaps Screen	F9 - Increment Snap Toggle
F4 - Tablet On/Off Toggle	F10 - Polar Coordinate Toggle
F5 - Isoplane Toggle	F11 - Object Snap Tracking Toggle
F6 - Dynamic UCS On/Off Toggle	F12 - Dynamic Input

XI. Single Stroke Command Keys

A – Arc	F – Fillet	K -	P - Pan	U – Undo	Z - Zoom
B – Block	G – Group	L - Line	Q -	V- Views (named)	
C – Circle	H – Hatch	M - Move	R - Redraw	W – Write (Block)	
D – Dimension	I – Insert	N -	S - Stretch	X – Explode	
E – Erase	J - Join	O - Offset	T - Text	Y -	

XII. Control Key Functions - Ctrl + Letters As Follows

A - Group	I - Cursors Coordinates	Q - Quit
B - Increment Snap Toggle	J - Repeat Last Command	S - Save
C - Copy/Clip to the Clipboard	K - Hyperlink	T - Tablet
D - Dynamic UCS	L - Ortho Toggle	U - Polar Toggle
E - Isoplane Toggle	M - Hyperlink	V - OLE Paste/Clip
F - Running Osnaps Screen	N - New	W - Object Snap Tracking
G - Grid Toggle	O - Open a File	X - Cutclip Group
H - Pick Style	P - Plot	Y/Z - Redo/Undo

OSNAP Functions (Shift + Right Mouse Button)

Temporary Track Point	-	Temporary Object Tracking Point (Target to shoot at)
From	-	Snaps from a base point to an offset distance.
m2p	-	Middle of Two Points
Endp	-	Snaps to the endpoints of lines.
Mid	-	Snaps to the midpoints of lines.
Int	-	Snaps to the intersecting point between differing 2-d geometry.
Apprnt	-	Snaps to the apparent intersecting points of differing 3-d geometry.
Ext	-	Extension to nearest point.
Cen	-	Snaps to the centers of arcs and circles.
Quad	-	Snaps to points every 90 degrees about circles and arcs.
Tan	-	Snaps to a point tangent to circles, arcs and curves.
Perp	-	Snaps to a point perpendicular to existing geometry.
Para	-	Parallel to existing geometry
Node	-	Snaps to a point.
Ins	-	Snaps to insertion points of blocks and shapes.
Nea	-	Snaps to the apparent nearest point.
None	-	Turns off running Osnap feature.
Settings	-	Drafting Settings

XIII . Point Filter Selections

Point filters extract known desired coordinate locations already on the screen. If you filter X-Y you are prompted for a "Z" value. **Make sure Dynamic Input is turned off when using this feature.**

#### XIV. Edit Menu Command Selection Methods

- A - Allows addition of more objects to a previously started selection set.
- All - Selects all objects on the screen.
- C - Selects a crossing window.
- CP - Selects objects within an irregular crossing polygon
- F - Selects objects within a user-defined fence.
- G - Selects objects within a predefined group.
- L - Selects the last object added to the screen.
- M - Selects multiple points without highlighting for increased speed.
- P - Selects the previous selection set.
- R - Allows removal of objects from a selection set started by methods listed above
- SI - Allows for single object selection.
- U - Allows selections to be undone.
- W - Selects objects within a rectangular window.
- WP - Selects objects within an irregular window polygon.  
[Filters - allows object selection by filtering (extracting) by properties such as color, layer, etc.]

#### XV. How to Plot a Scale Drawing – Model Space Only

1. Be sure your drawing is completely on the screen (Zoom-All) and saved to disk!
2. Use the AutoCAD Application menu's Print option to begin the operation.
3. Check that the "Printer/Potter" name selected is what is connected to the computer.
4. Check to make sure after "Plot Device" is selected you are going to plot using a "monochrome.ctb" (Located under Plot Style Table of the Plot window) found on the expandable Plot fly out window under the > button.
5. Check to make sure in "Plot Settings" that you are plotting to the "Extents".
6. Check that "Plot Settings" paper size is correct (large enough).
7. Check that the "Plot Settings" plot scale factor is correct, usually 1=1 for full scale.  
**Do not plot to fit!**
8. Conduct a full plot preview to examine what the drawing will look like when printed.

**SPECIAL NOTE: IF STEP 5 ABOVE FAILS, PLOT TO WINDOW AND OSNAP TO OPPOSING CORNERS OF THE SHEET BORDER.**

#### XVI. How to Plot a Scale Drawing – Paper Space/Model Space

In this example we will assume a SI metric drawing field is to be plotted in Model Space in a Customary U.S. inch layout in Paper Space. Remember, there are 25.4 millimeters to the inch.

1. Start with the template file drawing asize.dwt from the opening Startup window or using the Application New – menu/command sequence.
2. Screen lineweights can be pre-set by layer in this template drawing (Format-Lineweight menu-command sequence). Confirm lineweights in the Layer dialog box.
3. The drawing is created full scale in model space with units thought of as millimeters and rounded to one decimal place of accuracy in the **Units** command. Text should be **Styled** to 3 units of height (millimeters). **Ltscales** and **Dimscales** will need to be adjusted accordingly in Model Space as well as Paper Space independently.
4. When the drawing is complete, looking from Paper Space into Model Space (model space viewport active), establish a **Zoom** scaling factor of 1 in Model Space to 25.4 Paper Space (**.0393XP**) to scale the Model Space viewport window to appear (METRIC-FULL SCALE) in the hard copy plot from Paper Space.
5. Set the Model Space/Paper Space toggle tab to **Paper Space** and **Freeze out the Vports Layer** so the viewport does not appear in hard copy.

6. Execute the **Print** command from the **Application** menu.
7. Plot Device should be set to your printer/plotter and "monochrome.ctb" is the Plot Style Table.
8. Under the **Plot Settings** tab, make sure that the **Paper Size** is correct 8.5x11 or "Letter". The **Drawing orientation** should be in Landscape mode. **Layout, Scale** should be 1:1 and the Plot should be **Centered**.
9. Under the **Plot Settings** tab, you have options of plotting to Layout, Extents, Display. You will want to **Plot to Display in most instances**.
10. Be sure to do a **Plot Preview** before selecting **OK** to receive final copy to check your plot settings and conserve paper.

#### XVII. Plotting 3-D Objects with Hidden Lines Removed in AutoCAD

Autodesk encourages the use of Paper Space/Model Space for true three dimensional modeling with, or without, two-dimensional views as well. To make the model appear with background (hidden) lines removed in hard copy requires three steps as follows:

1. From Paper Space, make sure the Vports layer is not frozen and execute the **Mview** command. Execute the **Shadeplot/hidden** command/subcommand. When prompted for what to pick, select the edges of all available Model Space viewports.
2. With the Model Space viewport active from Paper Space, execute the **Hide** command. Click on the Paper Space tab and Freeze the Vports layer out before plotting.
3. Finally, make sure the **Hide Objects** check box is checked in the **Plot Settings** tab of the Plot window under **Plot options**.

#### XVIII. How do I Undo Settings of the 3-D Orbit Command?

From time-to-time we have trouble undoing Shadings, Renderings or Hides when using the 3-D Orbit command. Options are available to terminate this command as well as change its settings by using the View menu's Visual Styles option. Use the Plan command to return the screen to a point of view directly over the object to eliminate an unwanted Global Orbit position.

#### XIX. How do I Make a DWF File for Electronic Transmission?

1. With the saved drawing (DWG) file on the screen to convert, **select the Application menu's Print option**.
2. **Under the Printer/Plotter** option of the Plot command popup window, use the down arrow to scroll down and **select DWF6ePlot.pc3** option.
3. Check Paper Size, Plot Area and Plot Scale options for appropriateness to your drawing.
4. **Select the Ok option** and when prompted for a directory path, **set the path to your Windows Desktop**.

**SPECIAL NOTE: You can use the Printer/Plotter Properties option to make adjustments to your DWF file's resolution/file size, background color and other variables between steps 2 and 3 above.**

#### XX. How do I Open and Read a DWF File after Electronic Transmission?

1. You need to have either AutoCAD installed to your computer with DWF viewing capabilities installed or Autodesk's Design Review which is a free Internet download redline program. This free browser plug-in works with or without AutoCAD installed.
2. Download the DWF file as an email attachment to your Desktop.

3. Double click on the file on the Desktop to open it in the program appropriate to your version of AutoCAD or browser plug-in.

XXI. What things do I need to consider when establishing a new drawing field?

You need to examine the object to be drawn and decide whether it needs to be plotted on media enlarged or reduced from actual size viewed. You need to determine a standard scale to display the object on a given standard size plot media.

1. Template Selection or Creation (DWT) – Paper Space or Model Space Drawing
2. Units
3. Limits
4. Grids
5. Snap
6. Style (text)
7. Dim Style (Set a new dimension Scale, text Style & dimension Units - ONLY)
8. LTScale
9. Layer Usage
10. Plot Scale Factor

XXII. Repairing Your AutoCAD System's Defaults, Etc.

The following files can be saved to a portable memory device with a “read me” file you can make to remind you of the correct path where they are found on your system for later replacement if the system fails. The path where these files are usually found is also noted. Also: Visit the Autodesk web site data and download section for updates.

**C:\Documents and Settings\<username>\Application Data\Autodesk\AutoCAD 20010\18\enu\Support\**

Menu File – ACAD.cui  
Program parameters – ACAD.pgp  
Script File – MASTER.scr  
User Profile – DEFAULT.arg

XXIII. Geometric Constraints

AutoCAD 2010 geometric constraints are discussed in CAD151 in conjunction with both Osnaps and Grips. This is covered as part of AutoCAD's 2-dimensional drafting capabilities.

See this video for more information:

[http://www.youtube.com/watch?v=yZYo8\\_12hdo](http://www.youtube.com/watch?v=yZYo8_12hdo)

XXIV. Dimensional Constraints

AutoCAD 2010 dimensional constraints are discussed in CAD152 in conjunction with three-dimensional modeling. Dynamic, Annotational, and Reference methods are covered.

See this video for more information:

<http://www.youtube.com/watch?v=SpZgill0g8E>

XXV. Shortcut Keys

ALT+F11	Displays the Visual Basic Editor
ALT+F8	Displays the Macros dialog box
CTRL+0	Toggles Clean Screen
CTRL+1	Toggles Properties palette
CTRL+2	Toggles DesignCenter
CTRL+3	Toggles the Tool Palettes window
CTRL+4	Toggles Sheet Set Manager
CTRL+6	Toggles dbConnect Manager
CTRL+7	Toggles Markup Set Manager
CTRL+8	Toggles the QuickCalc palette
CTRL+9	Toggles the Command Line window
CTRL+A	Selects all the objects in drawing that are not locked or frozen
CTRL+SHIFT+A	Toggles Groups
CTRL+B	Toggles Snap
CTRL+C	Copies objects to the Windows Clipboard
CTRL+SHIFT+C	Copies objects to the Windows Clipboard with Base Point
CTRL+D	Toggles Dynamic UCS
CTRL+E	Cycles through isometric planes
CTRL+F	Toggles running object snaps
CTRL+G	Toggles Grid
CTRL+H	Toggles PICKSTYLE
CTRL+SHIFT+H	Toggles the display of palettes with HIDEPALETTES and SHOWPALETTES
CTRL+I	Toggles the Coordinates display
CTRL+J	Repeats last command
CTRL+K	Inserts a hyperlink
CTRL+L	Toggles Ortho mode
CTRL+M	Repeats last command
CTRL+N	Creates a new drawing
CTRL+O	Opens an existing drawing
CTRL+P	Plots the current drawing
CTRL+SHIFT+P	Toggles the Quick Properties interface
CTRL+Q	Quits AutoCAD
CTRL+R	Cycles through the viewports on the current layout
CTRL+S	Saves current drawing
CTRL+SHIFT+S	Displays up the Save As dialog box
CTRL+T	Toggles Tablet mode
CTRL+V	Pastes data from the Windows Clipboard
CTRL+SHIFT+V	Pastes data from the Windows Clipboard as a Block
CTRL+X	Cuts objects from the current drawing to the Windows Clipboard
CTRL+Y	Cancel the preceding Undo action
CTRL+Z	Reverses the last action
CTRL+[	Cancel current command
CTRL+\	Cancel current command
CTRL+PAGE UP	Moves to the next layout tab to the left of the current tab
CTRL+PAGE DOWN	Moves to the next layout tab to the right of the current tab

XXVI. AutoCAD's 3-D System Variables that Control View Smoothness

Isolines are the tessellation lines of something such as an extrusion such as a cylinder.

The SURFU and SURFV system variables control the U and V facet lines for solids and

surfaces converted to meshes. This is generally a solid modeling variable. The FACTER\*\*\*\*\* system variables are used to control these.

SURFTAB1 and SURFTAB2 sets individual vertices of REVSURF and EDGESURF polygon meshes that can be seen as a rectangular  $M$  by  $N$  array 90 degrees apart, where  $M$  and  $N$  are the dimensions in 3-D meshes. These are surface modeling variables. PEDIT (Edit Vertex) is used to edit these variables after creation.

#### XXVII. Facet or Tessalation Line Removal

There are several ways to remove the tessellation and isolines of facet meshes of AutoCAD 2004 and above, to create a silhouette model of a surface or solid model.

- One option is to view the model in a pictorial viewport and Explode the model and manually go in and Erase the undesirable lines. If you opt to do this, be prepared to devote some time to the task. SAVE THE ILLUSTRATION IN A FILE NAME OTHER THAN THE ORIGINAL SO AS NOT TO DESTROY THE 3-D MODEL!
- A second option is to use a combination of an AutoCAD command and system variable setting as follows:

The 3DCONFIG command provides a command line interface to the 3D graphics system's configuration settings. This command option offers an obvious set of options of [Adaptive degradation/Dynamic tessellation/Render options/ Geometry/ acceLeration/eXit] <Adaptive degradation>:

The 3DCONFIG command offers an undocumented set of advanced options at this point by entering a "V" for "adVanced". This hidden feature offers a second set of options as: [Redraw on window expose/Cache viewport draw geometry/ Display lists/Fast hidden line only/Pixel Deviation/eXit] When the "Fast hidden line only option" is activated, isolines and tessellation lines are removed from the viewing screen. This will have no affect on the plotting of hard copy though.

The system variable (SETVAR) for the Display Silhouette (DISPSILH) will plot hard copy with isolines and tessellation lines removed. This command needs to be set to "1" for plotting hard copy and "0" for plotting soft copy such as DWF files.

- A third option is to use AutoCAD's Render command's Hidden option.

Attention may also need to be given to the Mview command's Hideplot option. AutoCAD will remove hidden lines from viewports at plot time after using the Mview command from Paper Space back to Model Space. To do this, enter Paper Space and use the MVIEW command's HIDEPLOT option and select the viewport you desire to remove the isolines and tessellation lines from. You will need to make sure the viewport is unfrozen and turned on if it is on its own layer prior to executing this command. Don't forget to check the PLOT command's "Hide Paper Space Objects" option before plotting!