GEO 154 CARTOGRAPHY II- PLOTTING USING AUTOCAD- ASSIGMENT HELP DOCUMENT.

For one to two reasons data may not be in a format that can be integrated into AutoCAD software, but coordinates may be separated by other text, spaces or symbols (e.g '='). MS Excel can allow us to separate data into the X,Y components and recombine them in a format that AutoCAD can plot on-the-fly (X,Y).

MS Excel

Splitting data to reveal X,Y data by using the Convert Text to Columns Wizard

1. Select the range of data that you want to convert.
2. On the **Data** tab, in the **Data Tools** group, click **Text to Columns**.
3. In Step 1 of the Convert Text to Columns Wizard, click **Delimited**, and then click **Next**.
4. In Step 2, select the **Space** check box, and then clear the other check boxes under **Delimiters**.

The **Data preview** box shows the first and last names in two separate columns.

CONCATENATE FUNCTION OR AMPERSAND OPERATOR IN EXCEL

The CONCATENATE Function joins several text strings into one text string. You can also use the Ampersand (&) calculation operator instead of the CONCATENATE Function.

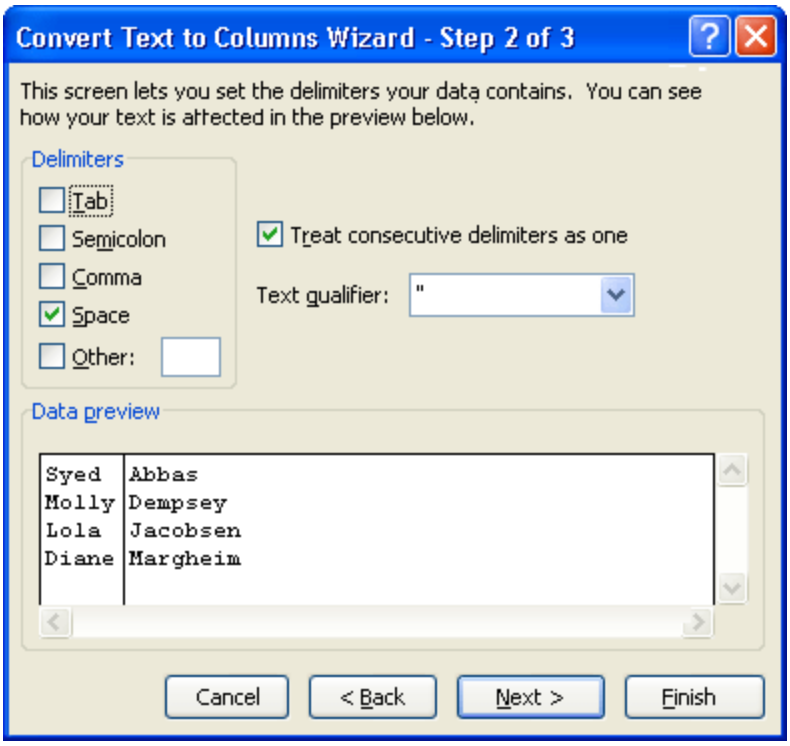
The CONCATENATE Function has one required argument and up to 255 arguments, all separated by commas. The arguments can be text strings, numbers, or single-cell references.

D2 =CONCATENATE(B2,", ",C2)

	A	B	C	D
1	**Date Export Values (Text)**	MID	RIGHT	Concatenate
2	Wed Jun 30 08:00:01 GMT 2010	Jun 30	2010	Jun 30, 2010
3	Tue Jun 29 08:00:01 GMT 2010	Jun 29	2010	Jun 29, 2010
4	Mon Jun 28 08:00:01 GMT 2010	Jun 28	2010	Jun 28, 2010

In my spreadsheet example, cell B2 could be the X-coordinate values and while cell C2 could be the Y- coordinate value. The following formula will combine these two in cell D2:

=CONCATENATE(B2,", ",C2)



5. Click **Next**.

N13

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2															
3	**Building**										**concatenate x,y**			**copy values here**	
4		at	point	X	1090.11	Y	321.0504	Z	0		1090.1099,321.0504			1090.1099,321.0504	
5		at	point	X	1087.436	Y	107.372	Z	0		1087.4361,107.372			1087.4361,107.372	
6		at	point	X	1242.515	Y	107.372	Z	0		1242.515,107.372			1242.515,107.372	
7		at	point	X	1242.515	Y	166.1335	Z	0		1242.515,166.1335			1242.515,166.1335	
8		at	point	X	1357.487	Y	166.1335	Z	0		1357.4873,166.1335			1357.4873,166.1335	
9		at	point	X	1357.487	Y	232.908	Z	0		1357.4873,232.908			1357.4873,232.908	
10		at	point	X	1261.231	Y	232.908	Z	0		1261.2314,232.908			1261.2314,232.908	
11		at	point	X	1261.231	Y	321.0504	Z	0		1261.2314,321.0504			1261.2314,321.0504	
12		at	point	X	1090.11	Y	321.0504	Z	0		1090.1099,321.0504			1090.1099,321.0504	
13	**Building**														
14															
15		at	point	X	1654.276	Y	1058.241	Z	0						
16		at	point	X	1360.161	Y	1058.241	Z	0						
17		at	point	X	1360.161	Y	1130.357	Z	0						
18		at	point	X	1654.276	Y	1130.357	Z	0						
19		at	point	X	1654.276	Y	1058.241	Z	0						

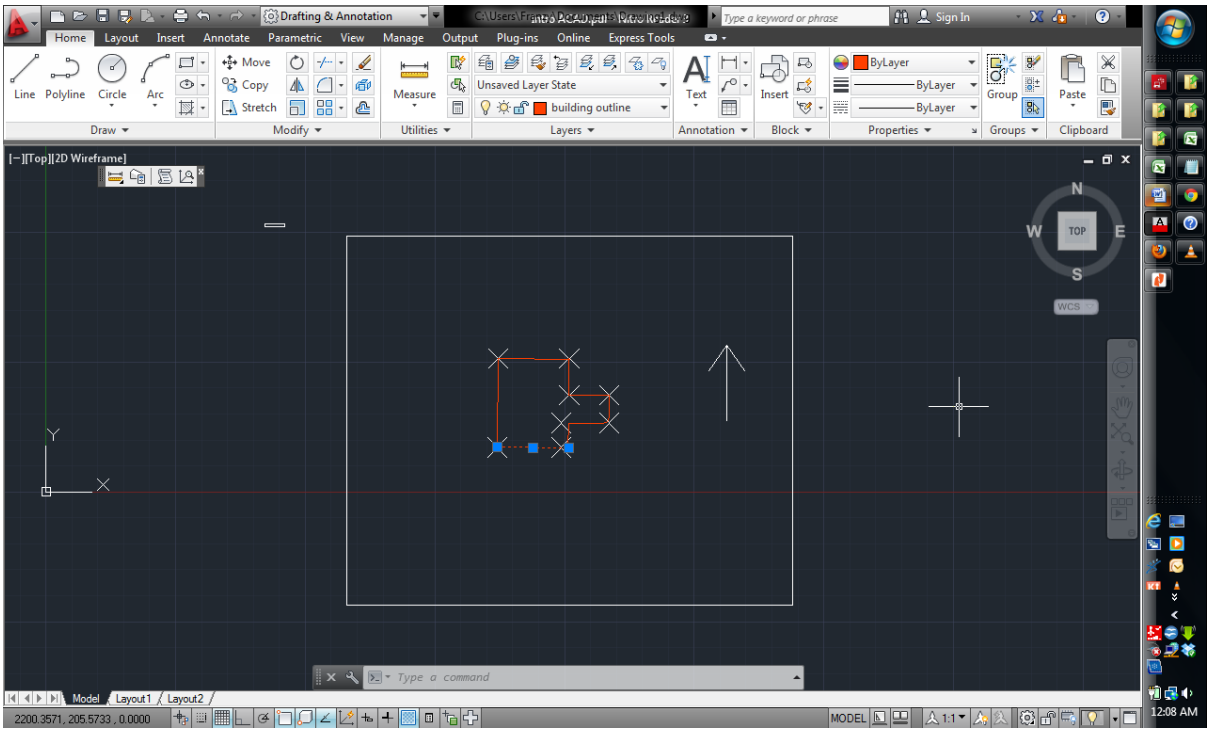
AutoCAD

AutoCAD is a Computer Aided Design software which can replace the traditional drawing board, ruler, set squares, French curves, pencils, erasers, etc that were used for making a map.

The basic Information Technology knowledge required to use AutoCAD is how computers work and the Windows Operating System. The user needs to understand the concept of the graphical user interface whiles appreciating the alternative of using a command to instruct the computer to get a particular task done. The characteristics of the Windows operating system (Windows 8, Vista, etc) comprises, menus, forms, text boxes, buttons, toolbars, listboxes, etc.

Most tools available in AutoCAD and alternate commands used are self explanatory. For example the line command or line command draws a line. This command can be accessed via the graphical user interface or by the ‘Line’ command. AutoCAD is has a very interactive interface and help menu (Press F1) so the user is encouraged to explore the possibilities with this software. Also there are options for any particular command. For example the fillet command gives you the option to define a fillet radius which means you do not get the right angle corner but a curve joining the two lines being filleted.

1. If you want to plot your points using the coordinates: In excel get your data in x,y format as described above (Splitting data to reveal X,Y data by using the Convert Text to Columns).
2. This can be done by creating an equation to concatenate the data; e.g =A1&","&B1 where cells A1 and B1 hold the x, y values.
3. Highlight the new column and press Ctrl+C (copy).
4. In autocad start the multiple command and follow it with the point command, when it prompts you for a start point, paste the coordinates (Ctrl+V) at the command line. Zoom to extents to view all the points plotted.
5. We will now join the points with lines that are perpendicular as shown in the assignment (buildings have right angled corners).
6. To do this draw the first line and let this be the base line based on which all other lines should be drawn either parallel or perpendicular to (you will have used the T-square and set squares to do this if plotting manually).
7. Next the copy command will be used to [multiple] copy this line (and its orientation) and paste to all other points (by snapping).
8. To obtain a perpendicular line either;
9. Rotate one of the lines drawn above by 90 degrees in a clockwise or anticlockwise direction or
10. Draw a line and snap perpendicular to the existing base line (see snapping command).



AUTOCAD COMMANDS FOR THE ASSIGNMENT

FILLET	Constructs an arc of specified radius between two lines, arcs, circles, or will create arcs of the specified radius at the vertices of a polyline. Radius of the arc to be constructed may be set to 0, which will make a sharp corner	P Fillets an entire Polyline at the vertices R Allows setting of the fillet radius. Default value is 0. Radius remains set until changed again
EXTEND	Lengthens a line, arc, or polyline to meet a specified "boundary edge"	U Undoes effect of last Extend command
ERASE or E	Erases selected entities from the drawing	
LINE or L	Draws straight lines	<RET> In reply to From Point: prompt, line begins at end of previous line or arc C In reply to To point: prompt, closes the polygon back to first "From Point" U In reply to To point: prompt, undoes last line segment
MIRROR	Reflects designated entities about a user-specified axis	Use this command to draw the North arrow

MOVE	Moves designated entities to another location	
or		
M		
ORTHO	Constrains drawing so that only lines aligned with the grid can be drawn -- usually means only horizontal or vertical lines, however, if the crosshairs are rotated through the "Snap" "Rotate" command sequence, the lines drawn are constrained to being parallel with the crosshair rotation. Constraint can be overridden by snapping to a point or by entering exact coordinates for endpoints.	Shortcut- F8
OSNAP	Enables points to be precisely located on reference points of existing objects. This is the so-called "Running Mode" of OSNAP, which sets selection method to run continuously until set to NON (none) or until overridden by selecting another "Interrupt Mode" OSNAP method from the cursor menu. Combinations of OSNAP methods can be used by selecting a series of options separated by commas. For instance, if you want ot always pick either endpoints or intersection points when locating endpoints of lines, you would issue the command as follows: OSNAP <RET> END,INT <RET>	can be transparent CEN CENter of arc or circle END closest ENDpoint of arc or line INS INSertion point of Text or Block INT INTersection of line, arc, or circle MID MIDpoint of line, arc, rectangle side, or polygon side NEA NEArest point selected by aperture on line, polyline, arc, or circle NOD NODe (another name for a Point) NON NONe -- used
PAN	Moves the display window without changing the magnification factor	can be transparent
POINT	Draws single points. Appearance of the points is set by the Variable PDMODE	
POLYGON	Draws regular polygons with a specified number of sides. Polygons are Polyline entities.	E Specifies size and rotation of polygon by picking endpoints of one edge C Circumscribes polygon around a circle I Inscribes polygon within a circle
QUIT	Exits AutoCAD -- if the current drawing has not been Saveds in its	

		current state, a dialogue box will appear asking if you want to Save the drawing, Discard the changes, or Cancel the Exit command
SAVE	Requests a filename and saves the drawing	
SAVEAS	Same as SAVE, but also renames the current drawing and keeps the new name current	
SELECT	Groups objects into selection sets for use in subsequent commands	You can also click (graphically) to select
TEXT	Draws text characters of any size with selected styles	J Prompts for justification options
TRIM	Erases a portion of selected entities that cross a specified "cutting edge"	U Undoes last trim operation
ZOOM	Enlarges or reduces the display magnification of the drawing, without changing the actual size of the entities	can be transparent <number> multiplier from original magnification <number X> multiplier from current magnification <number XP>multiplier of magnification relative to paper space -- used for plotting to get right plot scale in each viewport A ("All") fills limits of drawing to screen C ("Center") makes picked point the center of the screen D ("Dynamic") makes an adjustible rectangular lens appear on the screen which is capable of being made smaller or larger and moved to different positions over the drawing and once set by the user, the drawing will quickly zoom to the location and magnification set for the lens. This sub-command is no longer useful because all computers have very fast zooms naturally now. E ("Extents") makes the farthest edges of the actual visible drawing fill up the graphics screen L ("Lower-Left") makes the point picked become shoved to the lower-left corner of the graphics screen P ("Previous") zooms back to whatever

the last zoom, previous to the current zoom was -- AutoCAD stores about 10 of these, so you can walk backward in zoom magnification 10 times
V ("Virtual Screen") makes the largest area available to the graphics card fill the graphics screen -- this varies with the quantity of graphics RAM that your graphics card has
W ("Window") asks you to pick the lower left corner and the upper right corner of a zoom window and then fits that window to the graphics screen