NEW SOUTH WALES
DEPARTMENT
OF EDUCATION
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TAFE NSW
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CAD THEORY

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Auto CAD is a tool for drawings lines: It replaces the pen. It transforms a the skill of drawing neat lines into the skill of remembering how to define lines.

It is most useful when there is repetition or where there are many printouts and changes. Good architecture even if it does have repetition, will involve subtle variation. Good designers get their design right with exploration. Changes usually signal compromise and budget cutting. Sophisticated 3D has proven to be a design aid but makes for poor translation to the lines that are the *language* of building.

Lines must be defined. AutoCAD has three ways of doing things:

1.   There are pull down menus

2.   There are buttons on toolbars

3.   There are word commands (often these have 2 or 3 key shortcuts)

In architecture we draw in mm. Therefore 1m is "1000". This is an incredible level of accuracy. This could only be achieved by prefabrication and even then a temperature change will make a 1.2m panel expand by at least 2mm! On a traditional building site the accuracy is about 100mm at footings, 20mm at framing, 2-5mm at joinery.

Some Basic Commands:

arc: a

Copy: copy   - or use the same as for MSWord = ctrl +C

Circle: c

Erase: e (also the delete button)

Extend ; extend you need a l;ine t oendtend to select this first then the object to extend to. (best just grab the line and drag the end of it- you will need to lock the angle if its not at 90)

Fillet: f (enter) – this is useful for tidying junctions

Hatch   h (beware of this – you must have a polyline already drawn.)

Line: l (enter) either click or type a length.

Offset: o (enter)   ABSULTELY MOST USEFUL COMMAND after line

Move: m

Polyline: pl (line that defines a shape – finish it with "close" or (enter))

Trim: trim (enter) Note you have to select the line/s you want to trim to first then press ENTER then the line you want to trim

Text: t   (you'll want to define the text types you want to use)

If you are in a command you do not want – hit the "esc" key on the keyboard.

If you want to change the property of a line. Select it change the property on the toolbars or "properties" under menu "Modify". You then must press "esc" to deselect (do not worry it has updated).

Angled lines

Type l select " polar from the bottom bar. Type @ the distance you want < then the degree

Eg: l (enter) {polar} @3000< 30d15'10" (enter)

Other drawings can be inserted –

go to "Insert" on the menu and "blocks". You may like to explode these into lines. Type 'explode' (enter). If you do explode them - be careful they may be made of so many little lines they become hard to move intact....the web is a good source of blocks for standard products.

Drawing a Titleblock

There are three ways:

1. Draw in model space and copy and make all your pages in model space, To keep it together you can make it a "block"

2. Make a template

3. Use another drawing and insert a reference

Text: Hint keep it aligned.

Lines: Hint the more lines and borders you have if they print they may print skew. Engineers will often use borders, many architects will use minimal lines and a combination of alignments.

Text is dependant on the scale of the drawings.

Go to menu "format" - "text style"

Make up a set of fonts you will use at common scales, 1:100, 1:50, 1:10.

A good size for notes is 1.8 or 2mm high, room labels 2.5mm, plan, elevation etc labels 3.5mm, major titles 5mm. (feel free to test this out).

Pick any font – but Arial, Iso and the .shx fonts are safest (others may not have your font).

You may insert images, menu "Insert" "raster image" then click a box which will define how big it is.

You can print from model space by selecting a window in "print" But layout means you can put drawings at different scales together while keeping them at 1:1 in model space.

Making a Layout.

Go to Menu "insert" "layout" - "layout wizard" or

"New layout" Type name or accept (enter). Go to tab and click.

There may be your drawing there. If not select the box that is there by its active corners and drag it into the grey area until you see the drawing bit you want.

The box has properties – in that you type in the scale you want it printed at

A tip go to properties box and select "display locked" and change "no" to "yes". This means the scale you select will be retained as you scroll in model space.

New drawings can be added by copying the box and dragging the edges to the bit you wish for.

Printing:

The printer will already be there. You will need to select paper, scale.

ALWAYS go to tab "plot device" and select plot style

For sharp lines – pick "monchrome ctb"

Many companies they will have their own.

In fact be flexible, always, every place you will work or will have a different way of setting up a drawing and slightly different conventions.