EXCEL GUIDE FOR PC USERS

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Introduction

Excel, a very powerful spreadsheet application produced by the Microsoft Corporation, is now considered to be the industry standard for spreadsheets. Excel is also part of the Microsoft Office range of programs which includes Word (a word processor), PowerPoint (a presentation package) and Access (a database). Computer spreadsheets can store, manipulate, analyze data, draw graphs and charts, as well as provide powerful database operations. Furthermore, frequently performed tasks can be automated by the use of macros. This User Guide has been designed to help you to get started with Excel; it covers all the basic operations and skills.

System requirements

The basic requirements to run Excel are any Pentium PC using Windows 95 or later with 16Mb of Ram. However, although Excel will run under such configuration, a Pentium machine with at least 32Mb of RAM is recommended for more serious work. Excel can also be run on Macintosh computers, although in this Guide we will only be dealing with PCs.

Starting Excel

Excel can only be run from within Windows. To run Excel simply double click the left hand mouse button when the cursor is on the Excel Icon.

Exiting Excel

To exit from Excel, select **Exit** from the **File** menu using the left hand mouse button. You will be asked if you want to save changes that you have made to any documents. Choose the **Yes** button to save changes. Choose the **No** button to quit Excel without saving any changes. Choose the **Cancel** button to return to Excel without quitting.

How to get help

While you are using Excel you can get contextual help at any time by selecting the **Help** menu, **Contents** or press the **F1** key. If you need assistance on using

the help facility itself, select the **Help** menu, **How to use Help** within the **Help window**. For some menu commands the software can give graphical demonstrations of how to use or undertake particular operations.

The spreadsheet

The spreadsheet is comprised of three basic areas, namely the worksheet, the menu bar and the tool bar. The worksheet is made up of cells defined by row numbers (these run from 1 to 8192) and column letters (these run from A to IV). There are over two million cells on the spreadsheet, which can store text, numbers or formulae.

Basic moves around the spreadsheet

You can move around the spreadsheet using either the cursor keypad or the mouse. The cursor keypad can be used to move the cursor up, down, left and right using the **arrow keys**. The cursor can also be moved from anywhere on the spreadsheet to cell A1 by pressing the **CTRL** and **Home** keys together. The toolbar and menu bar are activated by using the mouse to point to the area you wish to use and pressing the left hand mouse button.

The menu bar

The menu bar contains all the menus used to draw graphs, open files, save files, change the width of columns, copy and move blocks of information and much more. These menus are structured like a tree with secondary menus off the main menus and tertiary menus off the secondary menus.

The toolbar

The standard toolbar (which is shown above) is displayed across the top of the window below the menu bar to allow quick mouse access via its buttons to the most frequently used commands. This toolbar can be reposition, re-organized or extended by selecting it with the mouse pointer.

Shortcut menus

When you are more familiar with the spreadsheet many commands can be accessed by the short-cut menus when you click the right hand mouse button. The shortcut menus contain the most useful commands for the cell, chart, or other objects that you have selected. A list of the more commonly used short-cut

menus, are given in Appendix B at the end of this guide. When you become more familiar with using the spreadsheet the short-cut menus can be used to save time.

Entering data

Three types of data can be entered in any cell on the spreadsheet

1	Text	any string of information proceeded by a ',' or ^. This can be either a text string or number string, e.g. *'Month* or *'50S*
2	Numbers	any number, e.g. *12.89* or *–500.3*
3	Formula	a special function used to undertake calculations, e.g. =SUM(C1..C10) This adds all the numbers in the cells C1 to C10

Basic formulae

One major feature of using a spreadsheet is that basic calculations can be done between any cells which contain numerical data. Once the formula has been entered into a cell the result will automatically update if any of the cells referred to in the formula change.

To add the numbers in cells A1 to A2, and then put the result in A3, move the cursor to cell A3, either by using the cursor keys or by pointing to it with the mouse and clicking the left mouse button once. Then type in the formula which must start with an = sign or a special function.

```
A
1 29.2
2 33.1
3                  Formula in this cell is =A1+A2

Add cells          = A1+A2
Multiply cells     = A1*A2
Subtract cells     = A1–A2
Divide cells       = A1/A2
```

Advanced or special formulae

Over two hundred advanced formulae are available within Excel that allows the calculation of statistical, financial and mathematical functions (see Appendix A at the end of this Guide). Here is a list of the most common functions:

=AVERAGE(C1..C10)	calculates the arithmetic average
=SUM(C1..C10)	calculates the sum
=MAX(C1..C10)	finds the maximum number
=MIN(C1..C10)	finds the minimum number
=STDEV(C1..C10)	calculates the standard deviation
=SQRT(C1)	calculates the square root

Moving and copying blocks of data

A very useful feature of spreadsheets is the ability to repeat frequently used operations by copying, or to change the appearance of the screen and printed output by moving things around. The process for copying or moving data on spreadsheets is very similar.

Blocks

Not only is it possible to copy or move a single item, or cell, but also it is possible to do the same for a collection of cells, or block. A block is a collection of adjoining cells forming a rectangle on the spreadsheet. This block is identified by the top left and bottom right cells. When written in formulae these two cell references are separated by two dots, for example:

	A	B	C	D	E
1					
2					
3					
4					

The block above would appear in formulae as B2..D3.

Defining blocks

Blocks can be highlighted using the cursor keys or the mouse.

With cursor keys:

Move to any corner of the block. Hold down the **shift key** and use the cursor keys to move to the opposite corner of the block. As you move the current cell the block will appear in reverse highlighting. Release the **shift key** once the desired block is highlighted.

With the mouse:

The process is similar. Move the mouse to point at one of the corner cells and then press the left mouse button. Keep holding this down while moving the mouse to the opposite corner before releasing it. As with the cursor keys the defined block will appear reverse highlighted. This method of defining a block works best when the whole of the block is displayed on one screen.

Moving a block

A block may be moved or copied using a two-stage process. First the original block is highlighted and then it is either cut or copied from the spreadsheet by selecting the **Cut** or **Copy** option from the edit menu. The **delete key** will also have the same effect as the cut option. If no block is highlighted the action will be performed on the current cell. Once the block is in the clipboard it may be pasted as many times as desired to new locations in the spreadsheet using the **paste icon** or the **Paste** option from the **Edit** menu. The block will appear with the top left of the copied block being placed at the position of the current cell when the pasting was performed.

Special note about copying formulae and fixing cells

Excel will automatically update the referencing of formulae when the copy command is used, incrementing cell references. However, sometimes you do not want this to happen so the anchor or dollar command is used. A $ sign before a letter, in a formula, will fix the column, a $ sign before the number will fix the row. So the formula A2 will fix both the column and row i.e. the cell.

Saving files

Excel will always ask you whether you wish to save any changes when you exit the spreadsheet. There will, however, be other times when you may wish to save the spreadsheet. **It is good practice to save your work frequently and on more than one disk**. This will protect you from computer failures and from errors which you introduce when trying new features or functions. It is always a good idea to save the spreadsheet before attempting to sort data since this process often produces unforeseen results and can be very difficult to undo.

There are many ways of saving your work to a file. The easiest methods are to click on the icon which shows a **floppy disk** or to hold down the control button and type **S** on the keyboard, **Ctrl** + **S**. Both these methods will automatically save an existing file with the same name. They will, therefore, replace your previously saved version, so check that this new version is what you want before saving it. If you have never saved the file before, Excel will automatically ask you to specify the name you wish to give the file, its type and the drive on which you wish to save it. It is always worth saving your files onto one or more floppy disks, as well as the hard disk of your machine – if you have spent many hours

creating a spreadsheet the last thing you want to do is lose it all. To save it, point to the down arrow beside the drives box and highlight the option which says **A:** by clicking the left mouse button while pointing to it. Unless you have a special requirement for one particular file format, ignore the file type option; Excel will automatically select its own. You must, however, give the file a name. Try to make your names meaningful so that you can remember them in the future. You don't need to specify the file extension (the three characters following the full stop) as Excel will insert them automatically depending on the file type. Your Excel files will normally be given the extension **.XLS**.

Occasionally you won't want to replace an existing copy of your spreadsheet but you will want to add a similar copy to disk. In this case you will need to save the spreadsheet with a new name. The process to do this is slightly more complicated than before. Point to the **File** menu with the mouse, single click on it to reveal the options. There is a **save option** which will save the spreadsheet with its current name, as above, but there is also and option, **Save As**. If you choose this option Excel will always ask you for a file name, type and location. Type the new name and then double click the mouse or choose **OK** to save the file. You can also use the keyboard to save the file to a new name as above. Type **Alt** + **F** together to bring up the file menu. Then press **A** to choose the **Save As** option. Note that you can always select an option on these menus by typing the underlined character in the option description.

Opening files

Previously saved files may be opened and worked on again. Since Excel allows you to work on more than one spreadsheet at once, there are two possibilities. You may retrieve a file, which first closes any current files, or you may open a new file, which retains all current files until you either close them or exit from Excel. If the current file has been altered since it was last saved and you attempt to retrieve a file you will be warned that any changes that you made to the current file will lost if you proceed. You may choose to continue and lose your changes or cancel the retrieve command so that you can first save your current work. To retrieve an existing file, use the **File** menu. You can click on this menu at the top of the screen with the mouse or you may press **Alt** + **F** together. Choose the **Open** option by clicking the left mouse button while pointing to this option or by typing **O** on the keyboard.

Drawing graphs

Graphs provide a very effective means of presenting information. Excel has powerful charting facilities that allow professional-looking graphs to be produced very quickly and easily. Graphs may be produced in their own windows, separate from the data on which they are based, or they may be inserted into a spreadsheet to support the text and figures around them.

Creating a new graph

A graph can be created in one of two ways, either by selecting the **Insert** option on the **menu bar** and then selecting **chart**, or by using the **chart wizard** speed button icon on the tool bar. The **chart wizard** button looks like a bar chart. Once the chart option has been chosen there are five steps to creating a graph using data on the spreadsheet.

Five steps to draw a graph

*You will need to press the **Next** button with your mouse pointer to move from one step to another.*

1 Enter the range (top left corner and bottom right corner) of the data on the spreadsheet which you wish to graph (e.g. A1..A30).
2 Choose the graph type.
3 Choose the graph format.
4 View the sample graph.
5 Enter any labels or titles you wish to put on your graph.

Some of the most useful types of graphs are listed below:

Bar	Useful for counting frequencies within nominal classes or classes of similar class width.
Line	Useful for data that varies on a continuous scale along both axes and where the *x*-axis variables are evenly spaced.
X-Y	Useful for regression type relationships between *x* and *y* where the *x*-axis variable is not equally spaced or ordered. Often used for producing scatter plots.
Pie	Useful for showing proportions of a total by nominal categories.
Stacked bar	Similar uses to a pie chart.

These are by no means the full range of options but will be adequate for most purposes. These options may be combined with a 90-degree rotation or displayed in two or three dimensions.

Producing hard copies

The simplest way to produce a hard copy of the spreadsheet is to highlight the part of the spreadsheet that you wish to print and then to select either the **printer** smart icon or to select the **Print** option from the **File** menu. The latter

method requires you to type **Alt** + **F** followed by **P**. It is usually advisable to preview prior to printing. While it is not easy to spot small errors in a large print job from the screen it will eliminate the all too frequent simple errors such as not all the data fitting onto a printed page, or the inadvertent omission of column titles and row descriptions. The **Print Preview** option may be chosen immediately prior to printing by clicking the **Print Preview** button with the mouse or by typing **P**. Every page of printing will be available for viewing. Click the left and right arrows in the icon bar at the top of the preview screen with the mouse or use the **Page Up** and **Page Down** keys to move between pages. Use the **plus** and **minus** characters to zoom into or zoom out from the page and make the image larger or smaller. Alternatively point to the previewed page and click the left mouse button to zoom in, or the right mouse button to zoom out. Use the **scroll bars** at the side and below the previewed image, to move around the page. If you are happy with your previewed image and you have access to a printer press the **printer** icon to commence printing.

It is also possible and preferable to choose to print by first choosing to preview the document prior to printing. This can be done by clicking the **Print Preview** icon in the tool bar or by choosing the **Print Preview** option from the **File** menu. To do this type **Alt** + **F**, followed by **V**.

Setting up the page

Access by selecting **Page Setup** from the **File** menu. **Alt** + **F**, followed by **U**.

The report will normally start printing from the top left corner of the page but inset by the size of the margins. The size of these margins can be adjusted using the **Page Set-up** menu. In addition, you may type a brief **Header and Footer** text line, which will be printed on every page. You may choose to centre the print on the page or to reduce oversized reports so that they will fit within the designated pages. Note: Automatic scaling will never enlarge a print to fill a page but will frequently reduce it. If you wish to enlarge the printout, you may choose to scale the print manually by choosing a **Scaling factor** of more than 100 per cent. You may also specify whether you wish to print it in portrait or landscape layout. Portrait is taller than it is wide, like this document, whereas in landscape mode the print is rotated by 90 degrees so that the print is wider than it is tall. You also have a choice depending on the printer chosen for printing to select the paper size.

Print options

These are a further set of options which you may use to enhance the appearance of your printed output. These options may be accessed by pressing the **spreadsheet type** icon from the **Print Preview** screen.

You may wish to print a small section of your data but use headings from elsewhere in the spreadsheet. These may be specified as ranges entered as print

option headings. You may choose to place gridlines between all cells, show the row numbers and column letters and even show the formulae used in each cell.

Summary

The basic areas covered in this document will help you get started with Excel, however it should be remembered that there is much more to this programme than covered here. For more information there are a number of excellent books on Excel available in all leading retailers.

EXCEL GUIDE

Appendix A

Basic Mathematical Formulae

There are a number of basic mathematical operations which can be used on the spreadsheet, as shown below:

^	exponential (raise to the power of)
* /	multiplication and division
+ −	addition and subtraction
( )	brackets

Example

$$= ((B4+B6)/3)\,{}^\wedge\,2$$

This formula will add the number in cell B4 to the number in B6; divide the result by 3 and then raise this to the power of 2.

The following mathematical symbols can be used in the conditional **IF** function.

=	equal to
<	less than
>	greater than

Special symbols

$$\$$$

The dollar symbol is used to fix the cell row or column when copying formulae around the spreadsheet. A $ in front of the letter will fixed the column (e.g. $A21), a $ in front of the number will fix the row (e.g. A$21). A $ sign in front of the letter and number will fix the cell (e.g. =A21).

Special Functions

There are over 300 different functions, which can be used on a spreadsheet to perform calculations. The simplest is the **SUM** function which will add up all the cells in the given range so =**SUM(A2..B8)** will add up all the cells in the range A2 to B8. The special functions break down into six major areas.

1   Engineering
2   Financial
3   Database
4   Statistical
5   Mathematical
6   Logical

Users can use the Help system, within the spreadsheet, to find out more about the syntax of required commands and examples of their use. Some of the more common functions are listed below, however, this is not an exhaustive list.

Engineering

Bessel	These functions return values that meet the Bessel equation which has various applications in physics and engineering.
Boolean	These functions handle the application of digital logic which is used in testing, setting of actual bits in a number.
Complex numbers	These functions convert or modify a complex number (where a complex number is the square root of a negative number).
Number conversions	These functions convert values from one number system to another (e.g. base 10 to base 2).

Financial

These functions are used to calculate financial values:

Annuity	Used in special types of investment analysis.
Cash flow	Operates a table to record income and expenditure.
CD	Compute the value of a certificate of deposit.
Depreciation	These functions calculate the depreciation over time.
Investments	These functions calculate the net present value of future cash flows.
Stock	These functions calculate the value of common stock.

Database

These functions are like the statistical functions, except they take three arguments (Block, Column and Criteria) into account:

DMAX	The largest numerical value in the given block.
DMIN	The smallest numerical value in the given block.
DSTD	The standard deviation in the given block.
DSUM	The total of all numerical values in the given block.

Statistical

These types of functions break down into two major areas, namely descriptive statistics and inferential statistics:

Descriptive statistics	
AVERAGE	The arithmetic mean of a list of data.
CORREL	Calculate the Pearson's correlation coefficient.
COUNT	The number of observations in a data list.
INTERCEPT	Returns the intercept of a regression line.
KURT	The kurtosis (peakedness or flatness) of a data list.
MEDIAN	The median of a data set.
MODE	The mode of a data set.
SLOPE	Returns the slope of a regression line.
STDEV	The standard deviation of a data set.
VAR	The variance of a data set.

Inferential statistics	
CONFIDENCE	Returns the confidence intervals for a population mean.
FDIST	Returns the F distribution function.
NORMSDIST	Calculates the cumulative probability value for the normal distribution.
	Example =normsdist(z) where z is number of standard deviations you want the cumulative normal distribution for.
	Example =normsdist(1.3333) is equal to 0.9087
TDIST	Returns the area under the 'student t' distribution.

Mathematical

ABS	Returns the absolute number (i.e. ignores negative signs).
ACOS	Returns the angle whose cosine is a given number.
ASIN	Returns the angle whose sine is a given number.
ATAN	Returns the angle whose tangent is a given number.
CEILING	Round a number up to the nearest integer.
COS	Returns the cosine of a given angle.
FLOOR	Round a number down to the nearest integer.
INT	Returns the integer part of a number (no rounding).
LOG	Returns the log to the base 10 of a number.
ROUND	Returns a number rounded to the desired level.
SIN	Returns the sine of a given angle.
SQRT	Returns the square root of a given number.
TAN	Returns the tangent of a given angle.

Logical

> IF   This evaluates a condition, and returns either true or false based on the stated condition.
>
> Example
>
> = if(logical-test, value_if_true, value_if_false)
>
> The following **if** test looks at the value in cell B3, if it is greater than 4 the comment '*Cell is greater than 4*' is printed, if it is not the comment '*Cell is less than 4*' is printed.
>
> =if(B3>4, 'Cell is greater than 4', 'Cell is less than 4')
>
> **If** statements can be nested to include other **if** statements to allow for more than two outcomes (e.g. true or false).

FILEEXISTS	Checks to see whether a filename exists or not. Returns true(1) if the file exists or false(0) if it doesn't.
ISERR	Returns 1 if a given cell contains the ERR (error indicator), otherwise 0 is returned.

Appendix B

Short-Cut Menus

This is a list of the more commonly used short-cut commands which can be accessed when you are using the spreadsheet. Some of these short-cut menus are also available in other Microsoft products such as Word for Windows, Access and PowerPoint.

1	Help	F1
2	Edit a cell	F2
3	Repeat the last action	F4
4	Spelling	F7
5	Create new file	Ctrl+N
6	Open file	Ctrl+O
7	Save file	Ctrl+S
8	Print file	Ctrl+P
9	Cut	Ctrl+X
10	Copy	Ctrl+C
11	Paste	Ctrl+V
12	Find	Ctrl+F
13	Replace	Ctrl+H
14	Goto	Ctrl+G