Introduction
The aim of this document is to introduce some basic techniques for using Excel to enter data, perform calculations and produce simple charts based on that information.

You will look at different techniques for ensuring that your spreadsheet appears as intended both on screen and when printed. There is more information on charts and calculations in the companion document, 5.167 Intermediate Excel 2007.

Prerequisites
The exercises below assume that you are familiar with the use of a computer keyboard and mouse and have a working knowledge of Microsoft Windows.

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About this Document

<table>
<thead>
<tr>
<th>Words in bold</th>
<th>Will need to be typed or chosen from a menu or window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small capitals – e.g. ALT</td>
<td>Indicate keys that you press</td>
</tr>
<tr>
<td>Press KEY1 + KEY2</td>
<td>Press both keys together</td>
</tr>
<tr>
<td>Press KEY1, KEY2</td>
<td>Press each key consecutively</td>
</tr>
<tr>
<td>• Bulleted lists</td>
<td>Are guidelines on how to perform a task</td>
</tr>
<tr>
<td>Choose Insert - Picture</td>
<td>Show menu commands – in this case, choose the option Picture from the Insert menu at the top of the screen</td>
</tr>
</tbody>
</table>

This document is available from ITS reception or from the College intranet at www.bbk.ac.uk/its/docs/. Large print copies are available on request.
1. Introduction

Objectives  To introduce the main concepts and terms used in Excel

Method    There are several basic terms used for reference

Excel is a spreadsheet, most useful for storing and processing numerical data, though you can store textual information should you want. It is an extremely complex and powerful tool, but the main functions are fairly straightforward to pick up.

Basic terms

**Workbook**  The file in which you store your data. Can contain more than one worksheet – by default there are 3 in a workbook

**Worksheet**  The area you can see on screen, where you input data and perform calculations etc.

**Sheet tabs**  Appear at the bottom of the screen, allowing you to jump from one worksheet to another

**Cell**  Each box on the screen is known as a “cell”. It is usually referred to by its address – e.g. A1 is the cell at the top left of the worksheet

**Active cell**  The cell that has a dark border around it is “active” – that is where anything you type will appear

**Row**  All the cells in one horizontal line, marked by the numbers on the left of the screen

**Column**  All the cells in one vertical line, marked by the letters at the top of the screen

1.1 Open Microsoft Excel

There may be an icon on your desktop, or you can find it on the Start menu

1.2 Moving around in Excel

You can move around a spreadsheet in a variety of ways. Moving around the cells is (arguably) easiest with the arrow keys;

← left one cell
↑  up one row
→  right one cell
↓  down one row
1.3 Entering data
If you want to enter information in a column, type in each value and press RETURN. You will then be moved down to the next line. You may enter data in a row by using the TAB key to move across the spreadsheet. You may also move around using the arrow keys.

1.4 Selecting areas with the keyboard
Sometimes you may need a little more control over the area you select than clicking and dragging with the mouse will allow. To do so, you may use the keyboard.
- Move to the first (top left) cell you wish to select
- Hold down the SHIFT key (there are two, both have an upward arrow printed on them)
- Use the arrow keys to increase the size of the area selected
- Experiment by using the page up and page down keys. The HOME key will move the selected area over to the first column
- If you have data in your spreadsheet, pressing the END key followed by an arrow key takes you to the end of the data area
- When you have finished selecting an area, let go of the SHIFT key

Note: this also works in Word and other Windows applications

1.5 Entering the same data into several cells
- Select the cells into which you want to enter data
- Enter one piece of data
- Press CTRL+ENTER together
- The cells are filled with whatever you just input
2. Laying out a spreadsheet

Objectives  To produce a basic layout for a budget calculator

Method  We will use the drag handle and block selection to enter data and text

Comments  The drag handle is extremely useful, if a little fiddly at first

2.1 Entering different data automatically

We will set up a worksheet to act as a budget calculator.

Excel will try to complete a series of data for you. To tell it to do so, use the drag handle at the bottom right corner of the input box

- Clear all data from your spreadsheet
- Type the text January into cell B1
- Put the cursor over the handle – it will turn into a thin black cross
- Drag the handle out to the right until all the months of the year appear
- What happens if you go beyond December?
- If you drag too far, drag to the left to remove entries

Excel also understands abbreviated forms of the months – Jan, Feb and so on.

The same technique works for simple sequences of numbers, though you will need to enter and select more than one (e.g. enter 1 and 2 in separate cells, select the two and use the drag handle for excel to fill in 3,4,5…).

2.2 Headings for Types of Expense

Starting in cell A2, enter the headings shown in Figure 2-2

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January</td>
</tr>
<tr>
<td>2</td>
<td>Staffing</td>
</tr>
<tr>
<td>3</td>
<td>Stationery</td>
</tr>
<tr>
<td>4</td>
<td>Materials</td>
</tr>
<tr>
<td>5</td>
<td>Travel</td>
</tr>
<tr>
<td>6</td>
<td>Training</td>
</tr>
<tr>
<td>7</td>
<td>Advertising</td>
</tr>
</tbody>
</table>

Figure 2-2

2.3 Repeat entries

- Select the cells corresponding to Staffing for January to December – that should be B2 – M2 on your spreadsheet
- Without clicking again, type in a value – e.g. 2500.45
- Press CTRL + ENTER
That value will be repeated across all the cells

2.4 Using the drag handle to complete a sequence

- Enter 10 and 12 in cells B3 and C3, as in Figure 2-3
- Select both cells
- Drag the drag handle across to the right to fill in the sequence across the row

Because this is a simple sequence, Excel is able to add 2 to each value in order to continue it.

![Figure 2-3](image)

2.5 Entering a block of data

We now need to enter some information into the remaining cells

- Enter 1, 2 and 4 in the cells next to “Materials” (which should be B4-D4)
- Select the three cells
- Right-click on the drag handle and drag it across to cell M4
- A menu will pop up – choose Growth Trend, as shown in Figure 2-5

Excel will continue the trend, doubling each value in the next cell

![Figure 2-4](image)

2.6 Entering data into a block

We will fill in random data for the remaining cells.

You may do so by using the arrow or TAB keys to move around the worksheet, but there is another technique, allowing you to enter information in a block of cells, which will help.

If you want to enter information in a block wider than one column you may find it easiest to select the whole block using the mouse or keyboard. You may then enter information, pressing return after each value. Excel will move you through the cells, and up to the top of the next column when you reach the end of the current one.

Figure 2-5 shows a selected block – the data shown has been entered by hitting RETURN after each item
• Enter some data in each of the remaining cells
• Feel free to select a block and use CTRL+ENTER to fill in the same value across all cells – as in 2.3, above

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January</td>
<td>February</td>
<td>March</td>
<td>April</td>
<td>May</td>
</tr>
<tr>
<td>2</td>
<td>Staffing</td>
<td>2500.45</td>
<td>2500.45</td>
<td>2500.45</td>
<td>2500.45</td>
</tr>
<tr>
<td>3</td>
<td>Stationery</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>Materials</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Travel</td>
<td>50</td>
<td>35.24</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td>6</td>
<td>Training</td>
<td>10</td>
<td>46</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Advertising</td>
<td>45</td>
<td>100</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2-5**

**Note:** when you reach the last cell selected, pressing RETURN takes you back to the first. Be careful not to overtype the contents!

### 2.7 Save your work

Save the workbook to your n: drive – you may call it anything you like, but include “wkshp” (without quotes) within the name to distinguish it from other documents.
3. Calculations

Objectives To set the worksheet up to perform calculations on the data we have input

Method Use the autosum function to setup cells that perform calculations

Comments The autosum function can be used for a variety of calculations

3.1 Quick Sum
You may quickly find out the sum of a group of values by selecting them using mouse or keyboard. The sum of the selected area (and other common functions, such as the highest number and average) is displayed at the bottom of the screen, on the right. This is one advantage of pre-selecting the area to be filled, as in 2.5, above – the Sum will be updated as you fill in each field.

- Select a few of the cells on your spreadsheet
- Note the Sum, shown at the bottom-right of your screen

This is, of course, useful only for an immediate check of the total.

3.2 Autosum
You will most usually want the sum to remain on screen, as a part of the worksheet.

- Click into the blank cell, A8, and add the word “Total”
- Click into In the blank “Total” cell in column B (it should be B8)
- On the Home Ribbon, click on the Autosum icon

Excel will guess which values you want to work with, and should have filled in the calculation =SUM(B2:B7) (note how Excel uses : to mean “to”)

- Hit RETURN to confirm the calculation is correct
- Repeat for C8 and D8

3.3 Repeated Formulae
Although we have done so here, it is not necessary to use the autosum button for each calculation. Excel is clever enough to understand that if you copy and paste a
“Sum” from one column, you want to work with the values in the new column.
To see what I mean;

- Click on D8 (which is the total of the values in column D)
- Choose **Edit - Copy** (or CTRL+C)
- Click on E8 (which is blank at present)
- Choose **Edit - Paste** (or CTRL+V)

![Figure 3-2](image)

Note – as in Figure 3-2 – that when you pasted in the formula, Excel changed it from D2:D7 to E2:E7

### 3.4 The drag handle

We used the drag handle above to repeat values across a row. It also works for formulae

- Click on the drag handle in the total for row E
- Drag it across until all the rows have their totals calculated

![Figure 3-3](image)

Excel will automatically update the totals - change some of the values to test it out.

Have a look at the syntax of an Excel formula – note the = sign at the beginning, then the function to be performed, and finally, in brackets, the cells on which to perform it.
4. Amending the worksheet

Objectives  To add another expense to our budget

Method    Use the commands on the Insert menu to add to the worksheet

Comments  Excel will automatically update the calculations to take account of the inserted information

4.1 Inserting a row

There are some other basic functions in Excel that are very useful.

What if we wanted to add information in between the data we have already input? Excel will allow us to insert a column or row:

- Click into any cell in row 7
- At the top of the screen, click the lower-half of the Insert button
- Click Insert Sheet Rows

A new row is inserted, and all those to the right of it are re-labelled. You may insert columns similarly:

- Click into any cell in column B
- Click Insert
- Click Insert Sheet Columns

A new column is inserted.

Note that, despite the commands referring to “columns” and “rows”, only one will be entered unless you have selected multiple rows or columns.

With any item selected, clicking the top-half of the Insert button will insert another of the same – so with a cell selected, it will insert a cell, selecting a row (by clicking on its number on the left) will insert a row and selecting a column (by clicking on its letter heading) will make the Insert button add a column.

4.2 Deleting a Column

We don’t need the column, so will remove it.

The row and column labels at the edge of the worksheet – A,B,C; 1,2,3 etc – allow you to select a whole row or column:

- Click on the label B

The whole column is selected, as in Figure 4-2:

- Click on Delete (next to the Insert Button on the Home Ribbon)
4.3 **Updated formulae**

Enter some information into the new, blank row of your spreadsheet

- Type the text in
- Select all the blank cells in the row
- Type a value
- Press CTRL + ENTER to copy the value to all the other blank cells

Note that the rows containing the Total and Average calculations were automatically updated when the new row was inserted, and thus will now take account of the values just entered.

5. **Formatting the Worksheet**

**Objectives**  To enhance the layout of the spreadsheet

**Method**  Use Excel’s formatting options to control the layout and appearance of the cells within the worksheet

**Comments**  The old-style Format-Cells dialogue may be accessed through the icon next to the Alignment group on the Home Ribbon – the popup is useful as it combines many different layout options in one place

5.1 **Sizing columns and rows**

Many of the items in the first column will not fit because they are wider than the column. To fix it

- click on the A at the top of the column to select the entire column
- Click on the Format icon and select **AutoFit column width**

You may also manually scale the column.

To do so it is not necessary to select the entire column first.
• Position the mouse cursor so that it rests on the line between columns J and K
• The cursor will change to a vertical bar with arrows pointing left and right
• When it does, click and drag the column to the desired width

![Figure 5-1](image1)

Finally (there are always several different ways of doing things!), you may use the “autofit selection” option without having to use the menus

• Position the mouse cursor so that it is in between F and G
• (again, it will change to a vertical bar with arrows pointing left and right when in the correct place)
• Double click the left mouse button
• Column F is resized

![Figure 5-2](image2)

For now, we will make all columns the same width

Using the letters at the top, select all the columns from B to M (to select a full year):

![Figure 5-3](image3)

5.2 Decimal places

There are various styles that it would be sensible to apply to the data in our spreadsheet.

We will make Excel show all values to two decimal places

• Select all the cells with numbers in
• Use the icons in the Number group on the Home Ribbon to increase/decrease the number of decimal places shown
• Because the span of cells selected have different number of decimal places you will have to first decrease and then increase the number – i.e. use both icons

![Figure 5-4](image4)
5.3 Formatting the totals

Because our spreadsheet is financial, it would be appropriate to show the £ symbol. It would look a little too busy if added to every cell, however, so we will just apply it to the Total row

- Select the row containing totals
- Click on the Accounting Number Format icon – note that clicking the arrow on its right allows you to choose different currencies

We may apply other formatting using the Home Ribbon

- Select the row above the totals
- In the Font group, click on the border icon (shown)
- Select the Bottom Double Border style from the menu

You may also change the font size from this tool group.
Note that #### displayed in a cell, as in Figure 5-6, denotes a column width too narrow for the information contained therein – widen the column to display the data.

Click away from the selected cells to see the effect of your changes

5.4 Formatting the header row

- Select the cells B1:M1
- Use the toolbar icons to make the text bold and centred
- Click and drag between the 1 and 2 on the left hand side to expand the height of the row
- Click on the Cell Styles icon
- Move the mouse over the different options – note that the spreadsheet changes to give you a preview of the effect. Choose one of the “Heading x” options
- The text is still aligned with the bottom of the cells – to change that we should use the Format Cells dialogue box. That box is accessible from several different icons on the Home Ribbon. Click the icon in the Alignment group and change the vertical alignment to “Center”

Note the other options on this tab, allowing you to orient text at a different angle. Both wrap text and merge cells have their own icon on the Home Ribbon. Select several cells and then click the merge and centre icon to turn them into one cell and align the heading.
• Use the **Patterns** tab to apply a background colour to these cells
• Use the **Border** tab to underline the title row
• Click OK
6. Printing Options

Objectives  To change options for printing for best results

Method     Use the page setup command on the file menu to fit the spreadsheet to an A4 page

Comments   It is possible to access page setup from within the print preview screen – click the “setup” button. In normal usage you will probably need to switch between the two for best effect

6.1 Page Layout

There are several useful options on the Page Layout Ribbon. Most are self-explanatory – see the screenshot above.

- Use the Orientation button to change the Page orientation to Landscape
- Click the icon on the Scale to Fit tool group

The Page Setup dialogue appears
- Click the radio button next to “Fit to”
- Click the Print Preview button

The spreadsheet is scaled to fit onto one page, which works well with our example, as it does not need to be reduced by much and is still legible. With larger amounts of data, of course, there is the danger of creating a printout too small to read.

Figure 6-1

6.2 Centre the Data

The options on the Margins tab allow you to change print margins, and also to centre your information on the page when printing. You may also use the dedicated Margins icon on the Page Layout Ribbon.

- Click on the Margins tab (on the Page Setup dialogue box – use the icon to show it if you have closed the window)
- Tick the boxes under “Center on page”, as shown in Figure 6-2
6.3 Further options

The Sheet tab has further options which may be of use – the tick boxes under “Print” are fairly self-explanatory.

Printing gridlines may be useful to delineate your data, but for best results you should set borders using the techniques we have already explored.

6.4 Header and Footer

Although you may apply a header or footer to your spreadsheet by using the tab shown on the Page Setup dialogue box, there is a dedicated icon for both on the Insert Ribbon.

- Click OK to close the Page Setup box if you have not already done so.
- Choose the Insert Ribbon and click the Header & Footer icon.
- Type any text directly into the spreadsheet (this was not possible in older versions of Excel).
- Note also the items on the Design Ribbon, as shown below – click an icon to add that information to header or footer.
- Click on the Header/Footer icons for more options.

Choose View - Normal to return to the previous view.
7. More calculations

Objectives  To include the calculation of VAT in our spreadsheet

Method     Include a function which multiplies an existing value by a constant

Comments  Simple calculations may be typed in in numeric form

7.1 Calculating VAT

- In the blank cell under “Total”, enter the text VAT
- Click into the first blank cell in the VAT row
- Click on the Autosum icon ∑ on the Home Ribbon
- Click on the cell which contains the total for that column

To multiply by a constant, we need only type the multiplication sign (note this is the asterisk - *) and the number to be used.

- Type *.175
- Hit RETURN
- Click Copy (shortcut CTRL+C)
- Select the remaining cells in the row
- Click Paste (shortcut CTRL+V)

We saw above that selecting a block of cells allows us to repeat a value across them all. As we have just seen, pasting a formula into a selected block allows quick replication of that calculation across rows or columns.

7.2 Grand Total

We now need a row to give the total including VAT

- Change the text Total to Subtotal
- In the blank cell underneath “VAT”, enter the text Total
- Click into the empty Total cell of column B
- Click on the autosum icon

Note that even though Excel guesses which cell you want to sum, you do not have to accept its recommendation

- Click and drag to select the Subtotal and VAT cells in column B (which should be B9 and B10)
- Hit RETURN

Repeat the calculation across the whole row

Figure 7-1

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>January</td>
</tr>
<tr>
<td>2</td>
<td>Staffing</td>
<td>2500.45</td>
</tr>
<tr>
<td>3</td>
<td>Stationer</td>
<td>10.00</td>
</tr>
<tr>
<td>4</td>
<td>Materials</td>
<td>1.00</td>
</tr>
<tr>
<td>5</td>
<td>Travel</td>
<td>50.00</td>
</tr>
<tr>
<td>6</td>
<td>Training</td>
<td>10.00</td>
</tr>
<tr>
<td>7</td>
<td>Utilities</td>
<td>20.00</td>
</tr>
<tr>
<td>8</td>
<td>Advertis</td>
<td>45.00</td>
</tr>
<tr>
<td>9</td>
<td>SubTotal</td>
<td>2656.45</td>
</tr>
<tr>
<td>10</td>
<td>VAT</td>
<td>461.37672</td>
</tr>
<tr>
<td>11</td>
<td>Total</td>
<td>=SUM(B9:B10)</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>=SUM(number1)</td>
</tr>
</tbody>
</table>
8. Inserting a chart

Objectives  To insert a chart into our workbook
Method   Select the data to use, then use Excel’s chart wizard to choose the type and layout of the graph

8.1 Selecting data for the chart
Excel makes producing charts easy with the Chart Wizard. We will look at how to insert a chart based on the data we select.

- Select January’s expenses and the headings, as shown in Figure 8-1
- Note that you may need to adjust the figure for staffing and others so that they are not too different from each other

Selecting the data tells Excel which information it should create a chart from

8.2 Options
The chart is immediately added to your spreadsheet.

- Click and drag the white (background) area of the chart to move it around the sheet
- Click into the chart’s title to amend it
8.3 Move the chart

Although charts are inserted into the current worksheet, you may create space and make it easier to print the chart by moving it to its own, new, worksheet.

- Right-click on the chart’s background
- Choose Move Chart
- Click on New sheet
- Type a name for the new sheet, as in Figure 8-4
- Click OK

![Move Chart dialog box](image)
9. Sharing data

Objectives  To insert an Excel chart into a Word document
Method  Use copy and paste

9.1 Basic copy and paste

It is straightforward to copy the chart created in 8, above, into Word

- Click anywhere on the outside of the chart – you will see a grey border appear around the edge of the chart
- Click the copy icon, or press CTRL+C
- Start MS Word
- Choose paste – CTRL+V

This method will also work for PowerPoint and other Office applications.