



# Excel for Engineers

An Online Continuing Education Course for Engineers

**Course Number: PD-4002**

**Credit: 4 Hours / 4 PDH / 4 CPD**

# Excel for Engineers

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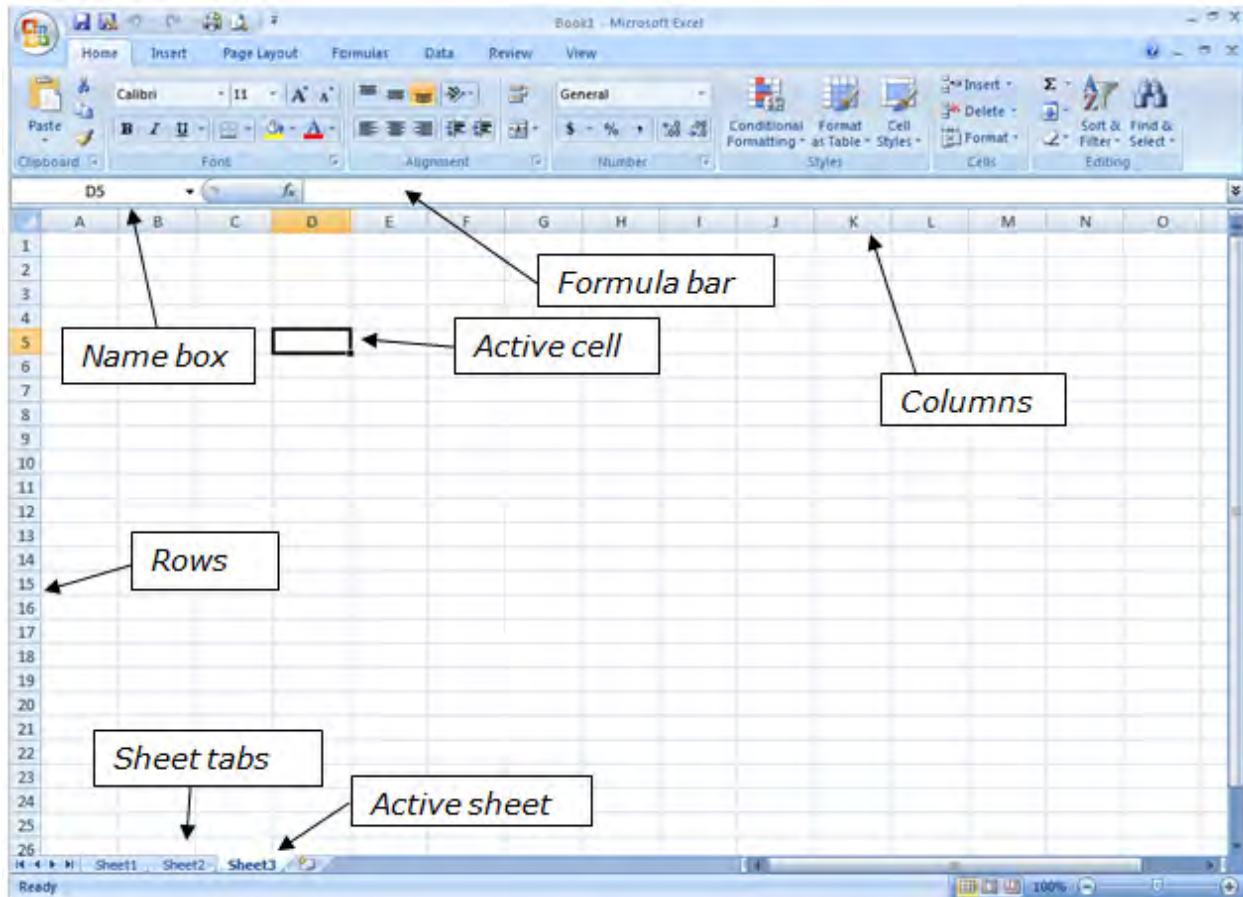
Excel is a Microsoft product that is very useful for engineers. Excel is what is called a spreadsheet program. When you open Excel, you open a *workbook* which is a file used to store *worksheets*. A *workbook* can contain many different types of sheets (worksheets, chart sheets and other sheets). A *worksheet* is a computerized spreadsheet. A *spreadsheet* consists of rows and columns in which you can enter data like text, numbers and equations that display the results of calculations. A single worksheet contains 1,048,576 rows and 16,384 columns. By default, you get three worksheets in your workbook when you start Excel. The number of worksheets in a workbook is only limited by the available memory and system resources.

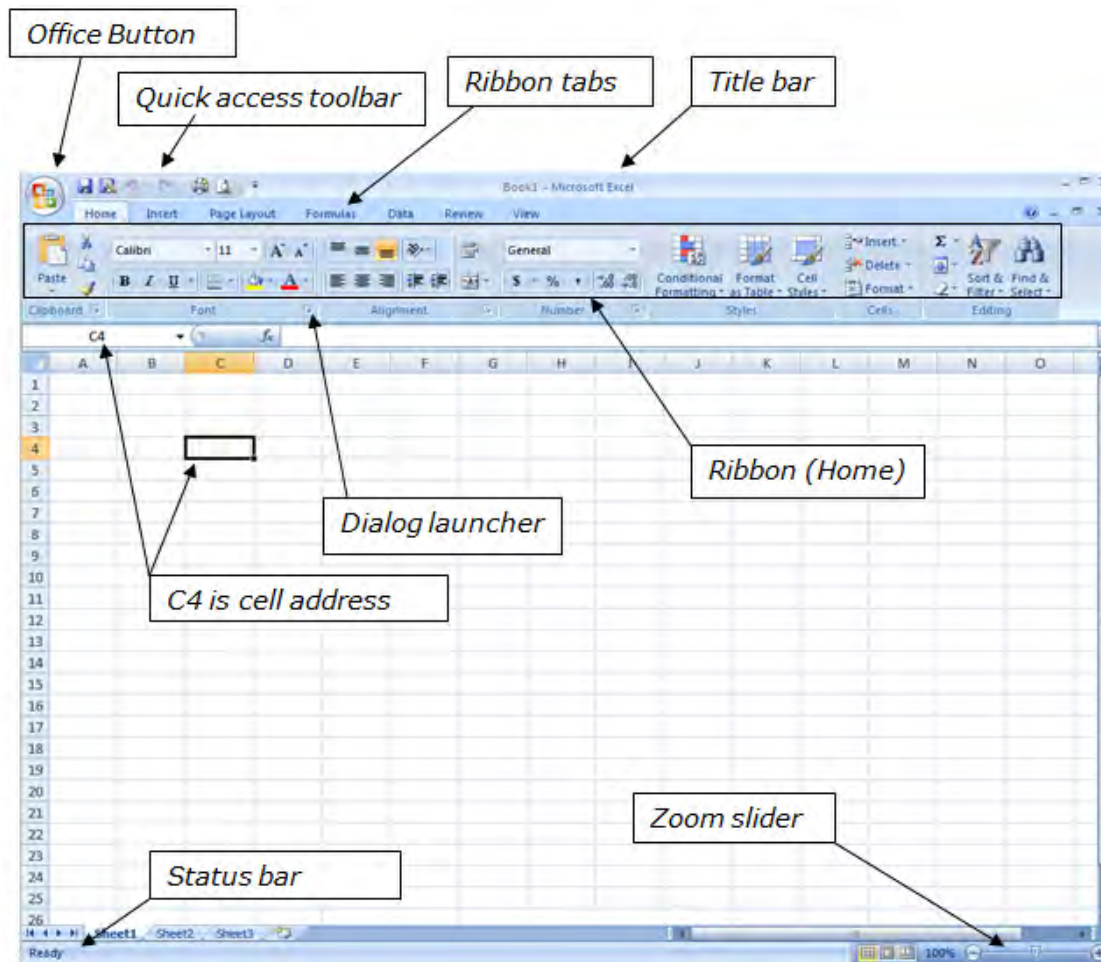
Examples in the course are written and illustrated in Excel 2007. You may be using any one of a number of different versions of Excel; therefore, your screen may look slightly different. However, basic functions of Excel remain essentially the same in all modern versions of the program.

The downloadable file of examples and exercises was also written in Excel 2007, but is generally compatible with all versions of Excel.

## Start Excel:

It should look something like this.





A *cell address (reference)* begins with the column and then the row. Address C4 is one cell. A *range* of adjacent cells can be indicated like A10:A20. The separator is a colon and this would be 11 cells from A10 to A20. Range H:H, would include all cells in column H. Range 5:5, would include all cells in row 5. Range B15:E15, would include four cells. If you would like to indicate non-adjacent cells, use a comma as the separator. C2,D15 would be two cells. You can select adjacent cells by clicking the first cell, hold the shift key down and select the last cell. You can select non-adjacent cells by holding down the control key while clicking on the cells.

A single cell can contain 32, 767 characters. There are 17,179,869,184 cells in each worksheet.

## Example 1

Create a spreadsheet to calculate the bending moment at one foot intervals along the length of a 12 foot beam. The uniform load is  $q = 500$  lb/ft. The bending moment is in units of ft-lbs. The equation to calculate the bending moment is:

$$M = \frac{qLx}{2} - \frac{qx^2}{2}$$

In cell A1, hold down the control key and press B. This will make what you type bold. Now type in **Bending moment example**. To enter data into a cell, select the cell and type what you want to enter and then press the Enter key, ← key, ↑ key, → key or the ↓ key.

	A	B	C	D	E
1	<b>Bending moment example</b>				
2					
3					
4					
5					
6					
7					

In cell A3, type Distance. In cell A4, type (ft). In cell B4, type Bending and then hold the Alt key while you press the Enter key. This allows a multiple line entry. Now type moment and press enter. In cell B4, type (ft-lbs).

	A	B	C	D	E
1	<b>Bending moment example</b>				
2					
3	Distance	Bending			
4	(ft)	moment (ft-lbs)			
5					
6					
7					
8					

In cell A6, type the number 1 and in cell A7, type the number 2. Grab the fill handle while holding down your left mouse button and drag down column A to row 18.

	A	B	C	D	E
1	Bending moment example				
2					
3	Distance	Bending			
4	(ft)	moment			
5		(ft-lbs)			
6	0				
7	1				
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					

We need to insert some rows. Select rows three and four with your mouse on the row headings. Right click on the 3 or 4 and select Insert from the pop-up menu. This will insert two rows above row three.

	A	B	C	D	E
1	Bending moment example				
2					
3					
4					
5	Distance	Bending			
6	(ft)	moment			
7		(ft-lbs)			
8	0				
9	1				
10	2				
11	3				
12	4				
13	5				
14	6				
15	7				
16	8				
17	9				
18	10				
19	11				
20	12				
21					

In cell E3, type Uniform, hold the Alt key while pressing the Enter key and type load. In cell B3, type the number 500. Press the right arrow key to move to cell C3. In cell C3, type lb/ft.

## Bending moment example

Uniform

*To view the remainder of the course material and to take the quiz for PDH credit, you must purchase the course.*

*Close this window and click "Add to cart" on the product page.*

Notice: Text entries are left justified and numbers are right justified.

6

7

8

9

10

11

12