A MINIMALIST GUIDE TO EXCEL

To start EXCEL, double click on the EXCEL icon or select EXCEL from the menu.

To return to your EXCEL session from another part of Windows, hold down the Alt and Tab keys simultaneously. Hit the tab key until the EXCEL box appears, then release both keys.

To edit a cell entry, click on the cell of interest. The contents of the cell will appear in formula bar and the cell address will appear to the left of the formula bar. Move the cursor to the appropriate point in the formula bar and edit. When you hit enter, the modified text will appear in the cell.

To enter a subscript, go to the format menu and select cell (or use ctrl-1). Select the font menu. Click on the subscript box. After entering the subscript, to return to regular text, go to the format menu, select cell, font, and click on the subscript box again.

To enter an entire column of values at uniform intervals, enter the first two values then, using the right hand button of the mouse to highlight the first two values, pull the cell "handle" down the column until the desired value is reached and release the mouse button. The column will be automatically filled.

To enter a number expressed in scientific notation, use "E" format, i.e. 1.0×10^{-4} as 1.0E-4.

To enter a formula: Highlight the cell. In the function bar, type: =A2*B2/C2 (or the formula of interest using brackets as necessary; the given example may be read as multiply the contents of cell A2 by the contents of cell B2 and divide by the contents of cell C2), then click on the "check" sign or hit return. The calculated result will appear in the highlighted cell.

To propagate a formula: Highlight the relevant cell, and pull the cell handle down the column to desired point and release the mouse button. If you wish the cell address of a constant not to change, insert a '$' in front of the numerical part of the address to keep it constant while pulling down. To keep it constant while pulling across, insert a '$' in front of the letter part of the cell address. For example, if cell J2 contains the value of a constant and you wish to use that constant in a formula, type J2 and that address will not change when you pull down or across.

To create a chart: Save your file first. Select the columns containing values of interest. Select Chart from the "Insert" menu, then select "separate sheet". Select desired chart type, style, etc. from the menus presented. If you make a mistake, cancel the chart and resume again.

CHEMISTRY 300
EXCEL PRACTICE ASSIGNMENT
SEPTEMBER 2006

1. Use EXCEL to assess the validity of the power series expansion for .

   (a) Use Row 1 to label the columns as follows: Column A x, Column B 1/(1-x), Column C 1+x, Column D $1+x+x^2$, Column E $1+x+x^2+x^3$, Column F $1+x+x^2+x^3+x^4$.

   (b) In Column A enter some values for x. Some suggested values are: 1E-6, 1E-5, 1E-4, 1E-3, 1E-2, 2E-2, 3E-2, 4E-2, 5E-2, 6E-2, 7E-2, 8E-2, 9E-2, 1E-1, 2E-1, 3E-1, 4E-1, 5E-1.

   (c) In Cell B2 enter the formula for $\frac{1}{1-x}$. The formula will be: =1/(1-A2).

   (d) In Cell C2 enter the formula for 1+x. The formula will be: =1+A2.

   (e) In Cell D2 enter the formula for $1+x+x^2$. A suitable formula would be: =C2+A2^2. Continue in a simular fashion for Cells D2, E2, and F2.

   (f) Highlight Cells B2 to F2. Use the "handle" to pull down the cells for the rest of your values of x.

   (g) Plot columns A-F by highlighting these columns, then clicking on the chart icon. Select XY (Scatter) and follow the prompts to produce your plot. Use the plot to assess the validity of the power series expansion.

2. Plot the concentration of A as a function of time when A disappears due to a first order reaction with a rate coefficient $k = 0.5$ h^{-1}. The initial concentration is 0.1 M. Plot the curve to the point that A is 1×10^{-4} M. Use a timestep of 0.5 hour and compare the results of the numerical integration with the analytic solution.