

# Curve Fitting with Excel

## Basic Curve Fitting

1. **Data** There must be two columns of data. One column of “ $x$ ” (input, predictor, independent) data, and one column of “ $y$ ” (output, response, dependent) data. The size of both data sets must be the same.
2. **Scatter Plot** First highlight the input  $x$  and output  $y$  data by holding the left mouse button down. If the  $X$  and  $y$  data columns are not adjacent then highlight the  $x$  data while holding down the control key, lift your finger off the left button after the  $x$  data is highlighted and then highlight the  $y$  data. Once this is done go to Insert → Chart. In the dialog box choose scatter plot and follow your way through by clicking next. In step 3 of the chart wizard you should label your axes and give the chart a title. In step 4 you have the option of putting the graph in as a new sheet (you will get a larger graph to view and is often helpful when making more than one graph) or as an object in a worksheet -recommended- (your graph will be small but in the same worksheet as the data set, this is good if you only want a couple of graphs from a given worksheet).
3. **Fitting a Model** First be sure that your chart is highlighted (left click on the chart anywhere if it isn't). Go to Chart → Add Trendline. You have 6 options. Note that when selecting polynomial you need to set the order of the polynomial (2 is quadratic, 3 is cubic). Before clicking Ok, go to the option tab and check Display Equation and Display R squared. Note also that under options you can choose to give the equation a name and you can choose to have the equation extrapolated forward or backward.

## Some Options and Details

- **Changing Axis Range** To change the range on a particular axis (say the x-axis) you need to first click on the axis so that in the upper left corner it says Value (X) axis. Now go to format → Selected Axis or Ctrl 1. In this dialog box click on the scale tab and set the range.
- **Forecasting** You can extend the model (trendline) forward or backward beyond the data set: Right click on the trendline and go to format trendline. Under the options tab and adjust the forecast value forward or backwards.
- **Setting the decimal places in a model** Once a trendline has been added to a graph you may need to add decimal places to the equation, especially if excel starts using scientific notation (significant digits are often lost when excel does this). Right click on the equation you want to change and select Format Data Labels. Choose the Number tab and go under Number in the Category. A box will appear to set the desired number of decimal places. As a rule it seems safe to go one more decimal place than needed to get rid of the scientific notation.