**ENR 161 Fall 2017 Chapter 3 Homework**

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Step 1:

Watch the Video Entitled, **ENR161 Ch03 HW F16**, this video is stored on the M drive at MCC and at youtube.com.

Step 2:

Complete the questions and problems below.

1. List the steps for adding a second set of data to an Excel graph when the new data set has a different set of X values as the first set.

2. What are error bars? How are they added to an Excel graph.?

3. How does a line graph differ from a scatter graph?

4. How will the following cell references change if they are contained in an Excel formula cell that is then copied elsewhere? A. **$A3** B. **B$2**

5. What does the term delimiter mean in the context of a data file?

**Grade for Questions (0-10)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Problem Stamp or Grade**

**Pages 126-138, TempVsTime 1 Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name the worksheet **TempVsTime 1**.

Enter the data as shown in figure 3.1 on page 126 and then follow the instructions through Fig 3.17 on page 138.

**Pages 139-144, TempVsTime 2 Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Right click on the **TempVsTime 1** tab at the bottom of the worksheet and select **Move/Copy** and click on the **Create a Copy** box.

2. Rename the worksheet tab to **TempVsTime 2** and drag it to the right of the **TempVsTime 1** tab.

3. Modify the data set so that it is the same as in figure 3.18 on page 139.

4. In figure 3.19 you may see an existing data set named Pred. (⁰C) listed. If so click on it and choose **Remove**.

5. Follow the directions from figure 3.19 on page 140 to figure 3.28 on page 144.

**Pages 145-149, TempVsTime 3 Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Right click on the **TempVsTime 1** tab at the bottom of the worksheet and select **Move/Copy** and click on the **Create a Copy** box.

2. Rename the worksheet tab to **TempVsTime 3** and drag it to the right of the **TempVsTime 2** tab.

3. Remove the Pred. (⁰C) Data Source from the graph and delete the Pred. (⁰C) data column in the worksheet as shown in figure 3.29 on page 145.

4. Follow the instructions from figure 3.29 to figure 3.32 on page 146. Keep the exponential trendline displayed on your graph as you add the error bars in step 5 below.

5. Add 30% vertical error bars as shown in figure 3.35 on page 149 but keep the exponential trendline and equation displayed on your graph.

**Pages 150-151, Example 3.2, Line-XY Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet **Line-XY**.

2. Create both the XY Scatter and Line graphs in this worksheet.

3. Format the graphs **exactly** as shown on pages 150 and 151. You may find the Layout/Format Selection Helpful.

4. Note: In the line graph you will have to edit the horizontal data series that is found in the **Design/Select Data** menu.

**Pages 151-156, Example 3.3, Surface Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet **Surface**.

2. Your final graph should be identical to figure 3.47 on page 156.

**Pages 157-159, Stess-Strain Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet **Stess-Strain**.

1. Enter the data as shown in Figure 3.49 on page 158.

2. Create the two scatter plots as shown in figures 3.50 and 3.51 but format the axis labels on the second graph so they appear as below.

**Pages 160-166, Precipitation Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Add a new worksheet tab named **Precipitation** to your workbook.

2. Click on the **File Tab** thenselect **Open**.

3. Navigate to the **M:\Courses\ENR\ENR 161\Excel- HW Data Files**

4. Open the **Rochester Precipitation** file.

5. Follow step 2 on page 164 but select **Comma** as the delimiter.

6. Follow step 3 on page 164 but check the **General** bubble under Column data format.

7. A new Workbook will be created with the imported precipitation data. Copy and paste this data into the Precipitation tab of your Ch03 Homework Workbook.

8. Once the imported data in your Precipitation sheet appears similar to figure 3.60 you are done!

**Page 169, Problem 3.1, Stress-Strain II Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet Stress-Strain II.

2. Format your graph so that it appears as below.

3. Note that 1 MPa = 1 x 106 Pa, and 1GPa = 1 x 109 Pa, therefore 1GPa=1000MPa.

4. Highlight your answers to part C using a yellow background fill.

**Pages 169 & 170, Problem 3.2, Tank Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet Tank.

2. Format the given data as shown below. Name the cells containing the numerical values using the variable names shown below.

|  |  |  |  |
| --- | --- | --- | --- |
| Constants |  |  |  |
| Descriptive Name | Variable | Value | Units |
| Cold Water Input Temp | Tin | 35 | (⁰F) |
| Initial Tank Temperature | Tinit | 115 | (⁰F) |
| Initial Volume | V | 3,000 | liters |
| Volumetric Flow Rate | Vdot | 30 | liters/min |

3. Note that the exponential function (e) is written exp() in Excel.

4. Highlight your answer to part c with yellow fill. You may skip question **d** on page 170.

**Pages 171 & 172, Problem 3.4, Thermocouple Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet **Thermocouple**.

2. Add a descriptive title, axes labels with units, and a legend.

3. For part C you will have to select **More Error Bars Options** then choose **Custom** and then highlight the standard deviation column for both the plus and minus error bar series.

4. For part D you will have to add a new data series to your graph using the given Temperatures for the X series, and the Predicted Thermocouple Voltages for the Y series. Format your table as shown below and use a logarithmic function to compute the Predicted Voltages.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Power Setting | Thermometer (⁰C) | Thermocouple Average (mV) | Std. Dev. (mV) | Predicted V(mV) |
| 0 | 24.6 | 1.264 | 0.100 | 1.3 |
| 1 | 38.2 | 1.841 | 0.138 | 2.0 |
| 2 | 50.1 | 3.618 | 0.240 | 2.6 |
| 3 | 60.2 | 3.900 | 0.164 | 3.1 |
| 4 | 69.7 | 3.407 | 0.260 | 3.7 |
| 5 | 79.1 | 4.334 | 0.225 | 4.2 |
| 6 | 86.3 | 4.506 | 0.212 | 4.5 |
| 7 | 96.3 | 5.332 | 0.216 | 5.1 |
| 8 | 99.8 | 5.084 | 0.168 | 5.3 |

**Page 174 to 176, Problem 3.8, Pie Chart Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet **Pie Chart**.

2. Create two pie charts, one for As Budgeted and a second for Actual.

**Page 176, Problem 3.9, Column Chart Worksheet** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the worksheet **Column** **Chart**.