Frequently Asked Questions

This document will be updated until **_August 30th_** at 12 PM, after which there will be no further assistance available. If your question has not been answered in this document, try rereading the instructions, viewing the online resources and looking over the rubric.

It is recommended that for formatting requirements, you read the **formatting section** of the assignment, and use the **pdf tutorials** & **practice assignment answer key** as examples. The videos will help show you how to do things, but these are the most updated resources for the formatting requirements.

DIRECTORY

General Questions

## Finding the Excel Word Assignment & Tutorials

The assignment, the practice assignment and tutorials for Microsoft Excel and Word can be found [here](#).

Submitting the Excel Word Assignment

The dropbox in the APSC 101 OnQ Course for submitting the Excel Word Assignment will be provided a **week before the due date**.

Adding a Title Page

Go to the Insert tab in Word and click "Cover Page." Select a simple design from the drop-down menu.
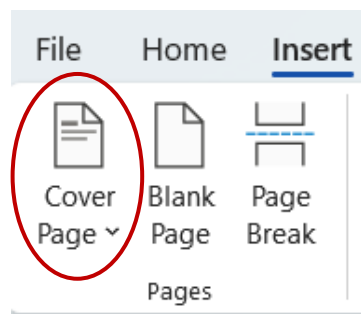
Determining Significant Figures

Error should be reported to **1 significant figure.** If there is a number that has an error value associated with it, it should be reported to the **same digit** as the error. Uncertainty is also referred to as experimental error.

Examples: 678 ± 16 should be expressed as $(6.8 \pm 0.2) \times 10^2$ or $(68 \pm 2) \times 10^1$ or 680 ± 20

987.54 ± 0.11 should be expressed as 987.5 ± 0.1

If there is **not an error value associated** with a given value, and the number of significant figures has not been specified in the question, report all numerical values to **two decimal places.**

Performing Calculations

When performing calculations, use as many significant figures as the numbers are **presented with**. If you are using the equations or the values from the regression analyses, you must use the numbers as they are presented **with error** because that is the only digits that can be guaranteed.

Trendline Equations

Trendline equations should always be included **whenever a trendline is included on a plot**. The trendline equations should be presented on the plot with their trendlines and should also have the R^2 value on the plot.

Downloading Analysis ToolPak for Mac

Go to the *Tools* drop down menu and select Add-Ins. From there, you should see the option to check off both or either of the Analysis ToolPak or Solver.

Basic Plot Guidelines

Figure 1 below was taken from the practice assignment answer key in order to help you see what a good plot should look like. Some things to note:

- No gridlines, use inside tick marks instead
- Axis titles with units but no chart titles
- Legend is enclosed by the plot, but not overlapping any data
- Plot enclosed by a black box – plot area line and axis are black lines
- Trendline equations and R^2 values present on the graph, with variables & subscripts to show what trendline they are attached to
    - o You may also choose to add a line to the label to show what series they work with
- Descriptive Figure caption
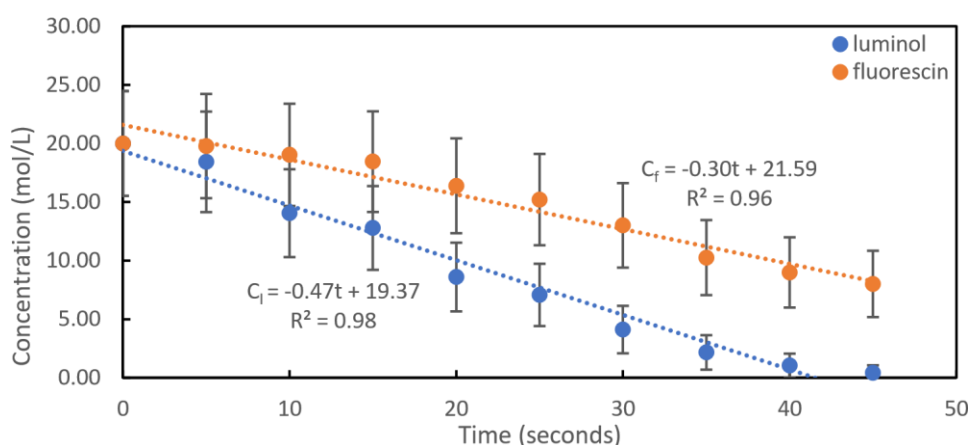
Figure 1: Example plot for formatting purposes

Formatting Equations

Start by creating an equation by clicking **Equation** in the **Insert** tab. Write your equation.

$$y = mx + b$$

Then you need to add an equation number on the end. If you were adding a number to Equation 1, you would write "#(1)" in the equation editor on the right of your equation and click enter.

$$y = mx + b \tag{1}$$

Digits for Calculations

You should be using the number of digits dictated by error in your calculations. If the number has no error associated, use all the digits provided by the trendline. If the number has error associated with it, only use the same number of digits that are presented with the error. For example, if a value is given as 5.274 ± 0.1, then you can only use 5.3 in calculations.

Error Bars

Error bars should only be in the y-direction. We know the table 3 voltage and tables 4 and 5 time exactly, so there should be no error bars in the x-direction. Ensure you set the x-direction to 0 and remove the caps so they can't be seen.

Citing Assignment Document

Any information given to you in the Excel Word assignment is fine to reuse in your solution without a reference unless it is from an outside source, in which case the original document/website should be referenced. So, if you are using information from the coagulation website, the coagulation website should be an in-text citation beside the referenced material and should be included in your list of references.

Conclusion

You do not need to directly compare the two slopes directly but just touching on what you expect to have been higher if they were both linear to show your understanding of alum addition would be good. With one of the two having an ln trendline they are not particularly relatable to each other unfortunately, but as long as you analyze the way that the trendlines fit that is what we are looking for.

Regression Analysis

You should have y-intercepts and error, I have attached an image of what should be checked and unchecked in the regression analysis. If you have a linear residual plot I would recommend performing it again with special attention to making sure the selections you make are correct.
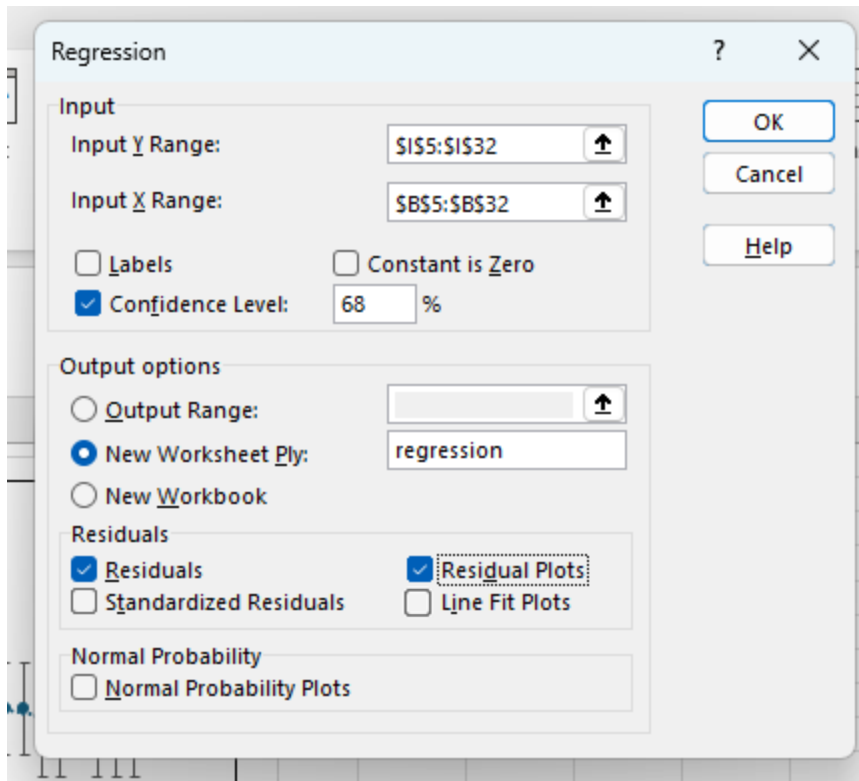
Rounding Plot Values

The trendline does not have directly corresponding error so all the values involved should be rounded two decimal places. I suggest rounding your R^2 values to 4 decimal places on the graph so that they can be converted to percentages, in this case 99.80%, in the report body, so that you aren't inaccurately rounded to 1, but if you choose to round to 1 and have the two decimal places on the trendline this is correct as well.

Finding Averages and Uncertainties

You should be averaging the values **across each row**, so that they each have a corresponding voltage. So, for the voltage 4.20 the average is (0+0+0)/3 = 0 and the uncertainty is largest 0, minus smallest also 0, so (0-0)/2 = 0.

Final Equations

If the relationship was logarithmic, you should use y = mln(x) + b, but you will need to change the variables (x and y) to match the data they represent.

Sectioning

Both Question One and Question Two should be included in the same submission document. You should separate them into separate sections where section one for Q1 contains the recommendation and summary and Q2 contains the introduction, analysis, and conclusion.

Additional Tips

Steps to Follow 1

The uncertainty equation provided is for Tables 4 and 5, for the table 3 data it should say test not sensor.

Steps to Follow 4

In this step you must calculate the turbidity of every trial and then take the average of the turbidity values for the three trials. It is important that you calculate the turbidity first because the uncertainty needs to come from the range of turbidity values and cannot be calculated as the difference in voltage converted to turbidity.

You can identify the maximum or minimum value in a set of data using the built-in equations in excel MIN() and MAX().

Steps to Follow 7

To learn more about completing regression analysis, try watching this video starting at 2:19 (except do not check "Constant is 0" box). That video and more resources are available on the Excel Word Assignment Website.

If you are having trouble reading your results and filling out Table 7, look for a table like Table 1 below. You will use the 4 values highlighted in yellow (the y-intercept and its error and the slope and its error).

Table 1: Example table from a regression analysis

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 68.0%	Upper 68.0%
Intercept								
X Variable								