Name of the Experiment

*Name:*

*Partner's Name:*

Elements of Physics
Lab 221, section 222001
Lab Instructor: Amal al-Wahish

Experiment Performed on: Month Day, Year
Date Report is Submitted:
Purpose:

Purpose and method: This should be short: a paragraph or two describing what measurements were made and for what purpose. You are trying to show that you understand the relationship between the experimental procedures and the theory. This can sometimes be fairly obvious or simple and may only take a sentence or two. Procedural details should not be given, unless they are in some way original or non-standard.
Calculations and Data analysis:

a. Data tables: The original or photocopies of the original data sheets, collected in class and initialed by the instructor, should come first. Neatened or expanded versions of the data with additional derived quantities may come next. Once again, remember labels, units, and uncertainties.

b. Calculations, including Error analysis: Whenever possible calculations should be done in the lab. Include in your calculations the units associated with any variable and, where appropriate, cancel units or change them to derived units (e.g., change kg·m/s² to N). Describe and show all work. If you do the calculations with the spreadsheet, remember to put labels and units on any additional columns, and state in the report how these columns were calculated.
Conclusions:

This should include a brief discussion of the main findings. For example: "We found that there is a linear relationship between the measured variable … and … This can be seen from the graph and is predicted by the theory."

Also state whether your results agree with expectations to within the uncertainties of the measurements: For example: "The slope of the graph of … versus … as determined by (linear regression, hand fitting) was …±… (units). This value, together with Eqn. …, and the measured quantities …=…±… (units), and …=…±… (units), allowed for a determination of …=…±… (units). This is within … standard deviations of the accepted value of … (units)."

Discuss the main sources of error. "The main sources of uncertainty in the determination of … are … ."

It could happen at times that error estimates are substantially large (and error percentage exceeding 15% greatly of the quantity is to be considered large). In that case try as best as you can to explain what you obtained, and in particular try to be quantitative in doing so. And always try to look at the whole picture that the results are telling you; ask yourself, why are the values of error distributed in that way? Could that be correlated with the procedure? Was the outcome of the experiment reasonable? Did it fulfill the claims you made at the outset in the purpose? If not, try analyzing the reason why… etc.
Questions:
Graphs:

When appropriate, should include a title, and axis labels with units. These should also be done in the lab, if possible. If straight line fitting is performed on the data, either by hand or with a linear regression program, remember to record the slope and intercept and their uncertainties. Draw in the regression line determined from the slope and intercept. Whenever possible put error bars on each graph point. This is too tricky to do with the spreadsheet program – so you may have to add them after the printout from the spreadsheet has been made. If the error bars are too small or data points are difficult to see on the graph, put a small circle around each one.
Family name
Family name
Family name
Family name