

Unit Report Tips

This is a resource for you to improve your reports. You can get points off for points that are bolded and highlighted. Lab report writing is a great skill to have in any scientific field. Good luck!

General

1. No use of personal pronouns
 - a. I see that the example report uses personal pronouns like “we” and “our group” but generally, reports and papers would not include it. It’s okay to use it but a better practice is not to use it
2. Error sig figs and digit
 - a. Include only the digits that make sense. If you can measure up to 3 digits, that should be the maximum number of digits to report your values and errors
3. Separating contents in the right sections
 - a. You should only report results in the results section
 - b. Methods do not need to have results
4. Units
 - a. Please include units at all times! Graph labels and in sentences
5. Use [these slides](#) as reference!

Abstract

1. should include quantitative results with errors

Introduction

1. Include explanations of the law you are using, instead of just referring to the name of it
2. The **applications of the physics concepts** should be at least related to the focus of this lab: mechanics. Once you mention that, then, you can refer to other areas (such as quantum mechanics and electricity and magnetism)
3. Include **only what is relevant**. If you don’t need to explain what gravity is in the lab report, omit it to make it concise.
4. **Labeling** equations and figures
 - a. It is a very good practice to number equations and figures so you can refer to it later. Including the label in the parentheses as below is the most common practice:

$$\chi^2 = \sum_{i=1}^n \frac{[y_i - (a + bx_i)]^2}{1 + b^2} \quad (2)$$

- b. Use labels to refer to equations rather than say, “the equation in the previous section”

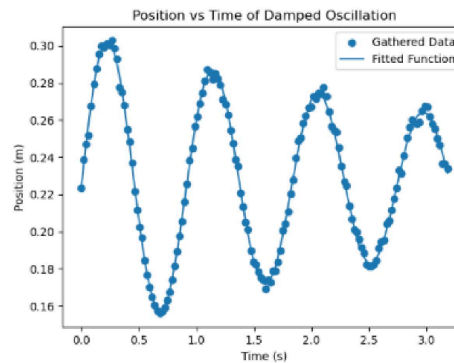
Methods

1. Codes: No need to include codes. Just explain what you did

- a. Some of you included the screenshots of codes or typed their codes, but you don't need that much details. Just explaining the code will be enough.
2. Include how much data you took (20 data sets vs 1 data set makes a great difference)
3. No need to include accelerometer calibration results (such as the quantitative values of slopes). What is most relevant is that you did it, so, just state that it was calibrated.

Results

1. Scatter graph vs line graph



- a. Include data points in addition to a line graph. When the data is sparse, it is easier to visualize data with data points
- b. When there are many data points, include line to connect the dots so that visualization is easier
2. Graph comparisons
 - a. Data and the fitting to the data should be on the same graph for comparison
 - b. When trying different methods of graphing, estimating, etc (such as in unit 3 report when you used three methods to find acceleration of harmonic motion), plot them on the same graph for comparisons
3. Legend in a graph
 - a. If there is only one plot, no need for adding a label