A Systems Lab Memo

Section #, Group #:
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Abstract

The Abstract should be approximately 100-150 words in length. This may be a very strict limit in some cases. For ME4842, the limit will be somewhat flexible. This should include what the objective of the experiment was and its importance, any theory the experiment is based on, major findings and trends found in your results, and a brief summary of your interpretations and conclusions. You should not reference anything in the abstract; this section should be completely independent from the rest of the report.

Procedure

Here, you will briefly explain what steps you followed in conducting the experiment. The procedure should state what is not covered in the lab manual and what decisions you made in order to accomplish the experiment. It may be handy to organize this section as a list.

Results

Here, you will explain the data you took, and any calculations that you made. This section should be the longest in the report. Many results can be displayed using objects similar to Table 1 and Figure 1, displayed below.

Table 1: Annual Per Capita Consumption of Mozzarella Cheese and Civil Engineering Doctorates Awarded [3]

Year	**Civil Engineering Doctorates**	**Mozzarella Cheese Consumption**
2000	480	9.3
2001	501	9.7
2002	540	9.7
2003	552	9.7
2004	547	9.9
2005	622	10.2
2006	655	10.5
2007	701	11.0
2008	712	10.6
2009	708	10.6

Figure 1: Robert Cheseman (Holbein)[1]

1. You should be mindful of the number of significant digits you use in your results.
2. Use consistent units and suitable unit prefixes.
3. When referring to equations, figures, tables, and appendices in your memo you must always capitalize E in equation F in figure, T in table, and A in appendix.
4. To reference an equation from the manual don't say "according to Equation 8.25 in the manual". The correct way to do this is: "according to Equation 2[1]". Note Equation 2 is an equation in your memo and has its own number and [1] is the citation in your reference section citing the lab manual.
5. Table, figure, and equation titles: Tables get titles on top. Figures and equations get the title on the bottom.
6. Tables, figures and equations must be part of the written text. That is you should put your table, figure, and equation right below the paragraph where they are first mentioned.
7. Only include necessary data in tables that are related to the analysis of the experiment.

Discussion Questions

In this section, simply answer each question from the lab manual in order. It may be wise to number your responses. Some responses require equations. Equation 1 displays the proper formatting; Equation 2 is a more complex example.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Equation 1: Quadratic Formula

$$\left(\beta mc^2 + c\left(\sum_{n=1}^{3} \alpha_n p_n\right)\right)\psi(x,t) = i\hbar\frac{\partial\psi(x,t)}{\partial t}$$

Equation 2: The Original Dirac Equation

Conclusion

Conclusions should clearly state how well the objective was met, any errors that were part of your data collections or would have affected results, suggestions to improve experimental data collection, and what you might have done better. If you are going to make suggestions for improving the experiment, ensure they are technically sound and would make a significant impact on results.

References

[1] Herbert, Susan.,*Robert Cheseman (Holbein).* Chris Beetles Gallery, London, England, www.chrisbeetles.com/gallery/animals/cats/robert-cheseman-holbein.html. Accessed 8 Nov. 2018.

[2] Stutts, D.S., *Mechanical Engineering Systems Laboratory Manual.* Department of Mechanical and Aerospace Engineering, Missouri University of Science and Technology, 3 Oct. 2018. 130-131.

[3] Vigen, Tyler., *15 Insane Things That Correlate With Each Other.* Spurious Correlations, tylervigen.com/spurious-correlations. Accessed 8 Nov. 2018.

Appendix A: Additional Data

Only thing to put in the appendix is programming codes, program code output, and large raw data tables that are not referenced in any results.