

MECH 366 – Lab report guidelines

Formatting: 0.5 marks each

- Justify all text that is in paragraphs.
- Proofread and ensure correct punctuation.
- Figures and table should be centered.
- Figure and table captions must be centered unless they take up multiple lines. In this case, the text should be justified.
- Do not indent the first paragraph in a new section or subsection. Indent remaining paragraphs.
- Ensure that figure and table fonts match report body font in size, color, etc.
- Use non-breaking spaces between words and elements that must always be on the same line. In Microsoft Word, a non-breaking space may be added by using Ctrl + Shift + Space. In Latex, use the ~ symbol instead of a space. Use non-breaking spaces between values and their units, figures and tables and their respective numbers, etc.

Technical communication: 1 mark each

- Figures and table must be of high quality and clearly visible. All text contained within must be easily readable.
- When comparing results, incorporate them into a single figure or table.
- If printing report in grayscale, use plot markers to distinguish between different curves.
- All figures and tables that are included in your report must be referred to within the text. Use the words Fig. # and Table # to refer to figures and tables. If the figure is reference at the beginning of a sentence, then use Figure #.
- Figure and table captions must provide adequate description. It is useful to describe the information presented, the experimental conditions that were used to generate the plot, and ideally, a brief interpretation of the figure.
- Use Microsoft Word's equation editor for generating equations.
- All variables must be italicized.
- Units should not be italicized.
- Subscripts that represent variable must be italicized (e.g. drag coefficient would be C_D if drag force is represented using the variable D). Subscripts that represent text should not be italicized (e.g. drag coefficient would be C_{drag} , not C_{drag} , since the word drag is not a variable).
- Equations must be centered.
- Equation numbers must be included, and they must be right-aligned.
- When writing units, use the dot symbol where necessary (e.g. a newton-meter is $\text{N} \cdot \text{m}$, and not Nm).

Technical content and discussion: 2 to 5 marks each

- For each figure:
 - o Describe the trends that are observed.
 - o Explain verbally or mathematically why these trends occur.
 - o Discuss how the information gained from the plotted results are linked to the objective of the report.
- Be quantitative when discussing results. Don't state that a certain parameter gets *larger* or *smaller*, or that a certain model is *reasonable accurate*. Instead, use your data to calculate percent differences and percent errors.

*See the lab content guidelines posted below for more information:

1. Introduction
 - a. Explain the purpose of the lab.
 - b. Explain why the knowledge gained from this lab is important for engineers.
 - c. Provide a brief overview of how the lab will be conducted.
2. Experimental methods
 - a. Describe the lab apparatus
 - b. Describe the experimental procedure. Do not copy all of the material from the lab handout. Only provide a concise and succinct description of your procedure.
3. Data reduction
 - a. Describe the mathematical equations and models that will be used to convert collected data into meaningful results.
4. Results and discussions
 - a. For this section, you should present your results in an appropriate form (*i.e.* a plot or table) and then do the following:
 - i. Identify the patterns observed in the results
 - ii. Discuss why these patterns occur
 - iii. Discuss the significance of these patterns (*i.e.* how does it help you as an engineer?)
 - b. Repeat the above step for each set of data that you present.
 - c. Use questions in the lab handouts as a guide for what information to include in this section.
5. Conclusions and recommendations
 - a. Your conclusions do not need restate your findings. Rather, the conclusion should summarize what you learned by conducting the experiments and writing the reports.
 - b. For recommendations:
 - i. Make suggestions as to how these experiments could be improved.
 - ii. Discuss other types of experiments that could potentially build more knowledge on the subject.