This is a template for a lab report. Other than the required identification information such as the lab number and title, section and group number, group members’ names (shown above in the header) and page number (shown in the footer), you have great freedom to decide what go in this lab report. In most cases, we would expect to see sections titled “Introduction”, “Objectives”, “Materials, Apparatus, and Procedures”, “Data”, “Analysis” and “Conclusions”. However, sometimes you may find that you do not need all the sections described in this template. You may want to rename a section, or you need to add new sections. These are all fine. **What matters most is that you present the report information in the most straight-forward and complete way possible and that your report looks professional, i.e. you follow** **the general guideline of “technical writing”.** Feel free to change this template and use your favorite format (layout, fonts, etc.) to fit your needs.

In the following, text highlighted in yellow are instructions (like the paragraph shown above). Text in black without highlight is the sample header/text for that section.

# Introduction

Under Introduction you write the background information and literature search that you have conducted or were provided to you.

Kittens are juvenile domesticated cats. They are cute animals and children are particularly fond of them. Kittens’ characteristics or traits are many …

# Objectives

Under Objectives clearly state the purpose of this lab, what you want to achieve, etc.

## Hypothesis

A Hypothesis is a prediction. Based on what you know before the experiment, predict an outcome.

In this lab, we hypothesize that kitten trait can be categorized by two indices: cuteness and fuzziness. …

**Variables**

Here you include discussions of dependent and independent variables used in the lab and in the report: explain or define the key terms your group used and how are they affect each other. This section is particularly needed if you would define any new terminology to fit your purpose.

Cuteness: degree of attraction to human observer in kitten’s appearance, movement and sound expression.

## Work Assignments

This section is not standard in nominal technical writing butis **mandatory for every lab report or summary in AerE 322.** It must clearly state in details the work assignment or responsibility of each group member during the lab session and in the report writing. This section thus consists of two paragraphs: one for the lab work and one for report writing. The work assignments should be more or less evenly divided out and agreed upon by all members. We take this section as the binding agreement made by the entire group and will use it as the basis for adjusting each member’s final grade – be careful what you are committed to do!

# Lab work: John assembled the experimental setup, Henry took all measurements, and Mary operated the laptop and recorded the data.

Report writing: Henry did the analysis of first experiment results (i.e. After Lab parts 1-4) and wrote the Analysis section, Mary made all figures and tables and did the analysis of second experiment (After Lab parts 5 -7), and John wrote all other sections.

# Materials, Apparatus, and Procedures

You should include all the information on your test setup and your specimen (material, geometry, conditioning, etc.)

You should always include a figure (photo preferred) illustrating the geometry of a test specimen. This figure should be computer generated, not hand drawn.

If you typed your pre-lab you might be able to just cut and past the procedure unless you changed the procedure in some way. The reader should be able to recreate the experiment from these instructions, so be specific. This section should be what you actually did, not what you intended to do.

Figures should be numbered and inserted at an appropriate point (after first reference in the text) at the top or bottom of a page. **All figures should have a caption below**.

We borrowed two kittens from Elizabeth Gregory’s house as our samples. We used the mark-1 eyeball to evaluate cuteness and fuzziness of kittens. Kitten #1 is shown in Figure 1.



Figure 1. Kitten 1

# Data

Present the raw data and make any observations about the test that are pertinent to the outcome. Use charts rather than list or table unless the data are key parameters and limited in quantity. **Tables should be captioned above.**

Table 1 shows observed cuteness and fuzziness of kittens 1 and 2.

Table 1: Cuteness and fuzziness by kitten

|  |  |  |
| --- | --- | --- |
| Kitten | Cuteness | Fuzziness |
| 1 | 5 | 10 |
| 2 | 2 | 100 |

Table 2: Additional data of cuteness and fuzziness by kitten

|  |  |  |
| --- | --- | --- |
| Kitten | Cuteness | Fuzziness |
| 3 | 5 | 10 |
| 4 | 2 | 100 |
| 5 | 3 | 99 |
| 6 | 1 | 56 |
| 7 | 7 | 78 |
| 8 | 4 | 23 |
| 9 | 6 | 0 |
| 10 | 12 | 98 |
| 11 | 4 | 66 |
| 12 | 8 | 73 |

Long tabulated data of same data type may be suitable for line chart instead. Table 2 above fits the criterion.

Charts should not have their own titles as shown in Fig. 2 below. Descriptions of charts should be put into captions. Axes titles are also absent from Fig. 2.

Figure 2. Additional Data of cuteness and fuzziness by kitten

# Analysis

This is the section you answer questions that are asked in the “After Lab” section of the lab assignment. Be sure to include the number of the part you are responding to. Do not repeat information in multiple sections. You may want to add subsections such as Calculations, Source of Error, etc. if you wish to address these topics and the “After Lab” questions did not ask for them.

Calculations must be typed and important equations should be labeled and referred to by number. Equations should generally be read as part of the text.

 (1)

Do not just list equations, walk the reader through the calculations process.

You should compare the data with the calculations and discuss any discrepancies. Explain what happened and why. Explain if your predictions were wrong and why.

## Sources of Error

Give concrete analysis to back up your sources of error. Show how any error affects the data.

# Conclusion

Summarize the results and your key findings of this lab.

# References

Referenced should be in a standard format (AIAA, MLA, IEEE) and numbered in the order in which they are referred to in the text of the report. You must refer to each reference specifically. **ALL OUTSIDE SOURCES of quoted text, pictures, diagrams, etc. MUST BE PROPERLY CREDITED. ALL FAILURE TO DO SO IS ACADEMIC MISCONDUCT AND CAUSE FOR EXPULSION.**

# Appendices

This is where you put extra data or calculations that are separate from your report but referenced in the report.

**EXTRA NOTES:**

PAGE NUMBERS: If you choose to have a title page, do not number that page but do number the first page if it is not a title page (like this report).

TEAM MEMBERS: Each report must have each team member named on it.

CROSS REFERENCES: These are great because they automatically keep track if the number changes. But make sure that you update them before you submit. The reader does not want to read an error message.