PHYS 371 Final Report Guidelines

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1 Grading Breakdown and Due Dates

Assignment	Final Report Grade	Due Date
First Submission	700 pts	April 20th @ 5 P.M.
Peer Review	175 pts	April 27th @ 5 P.M.
Final Submission	300 pts	May 4th @ 5 P.M.
Final Presentation	500 pts	April 27th @ 5 P.M.

1.1 First Submission

The first **complete** iteration of your report. We expect this to contain all the required material detailed in Section 2. The first submission will account for the majority of the final report score. Therefore, you are expected to provide a high-quality report at this stage. To facilitate peer review, your first submission must contain line numbers. Check out this link for instructions on adding line numbers. `https://texblog.org/2012/02/08/adding-line-numbers-to-documents/`

1.2 Peer Review

As a group you will read and comment on the first submission of another group. You will receive a copy of the paper with line numbers and you will have to formulate questions on specific parts of the manuscript. You should also provide a short review summary (≈ 500 words).

- You **will** be graded on the course staff's evaluation of your peer review.

- Your grade **will not** depend on another groups evaluation of your paper.

1.3 Final Submission

Assessment of the Final Submission is dependent on two criteria.

1. Using the points outlined in this document we will evaluate the overall quality of your paper.

2. After receiving comments on your first submission, you will be graded on how you address these comments. Note that it is okay to disagree with a comment or suggestion from a reviewer, but you must defend your decision in the final submission.

1.4 Final presentation

The final presentations will be given on the last day of class, April 28th 2023. Each group will have 25 min + 10 min for questions. The first round of questions will be given by the peer reviewers.

2 Required Material

You may choose any way you would like to format your final report. You may have more/different sections than those outlined. Please do not hesitate to include material not outlined that you believe benefits your report. However, be sure to include all the content outlined below.

2.1 Introduction & Scientific Background

Introduce the problem your project is designed to solve, why it is important, and any scientific background needed to understand your paper. You can assume that the reader has the background knowledge of an upperclassman engineering student, but do not assume that the reader will know anything about the specifics of your project. If you will use any physics equations in your analysis, they should be derived here.

2.2 Design Process & Related Studies

Summarize how the design of your project evolved throughout the class. Be specific as to what motivated each part of your design (e.g. design constraints, preliminary studies). Discuss development of your DAQ (See Week 3 Slides). If you choose to include any code in your report, please make use of latex code blocks. Make sure to use figures and visual aids.

2.3 Analysis

The main portion of the report. Here you will detail how you processed and analysed your data. Provide calibration for all the individual sensors you use in your measurement. Identify and estimate (either by direct measurement, literature, or rough calculation) sources of systematic errors. Discuss how confident you can be these estimates. Using both systematic and statistical errors, build a total uncertainty on your measurement. Did your measurement yield statistically significant results? Did your measurement come out they way you expected? Why or why not? Make sure to use figures and visual aids.

2.4 Conclusions

Summarize the entirety of your project in a half a page or less. A good conclusion should be understandable and informative to a potential reader that has not read the rest of your paper. Also discuss possible extensions to your research (i.e. If you had 4-8 more weeks of time and $1000 more of funding how would you improve your project).

2.5 References

You must cite all of your sources in a consistent manner. You may use any mainstream citation format you desire, but you must remain consistent throughout the paper. It is recommended to use latex to manage your references, see `https://www.overleaf.com/learn/latex/Bibliography_management_with_bibtex` for more details.

3 Major Points of Evaluation

You will be evaluated on the quality of all the required material in your paper. Reports that go above and beyond the required material will be rewarded, so long as the extra material is pertinent and beneficial to the overall paper (i.e. don't include superfluous material).

In addition, reports will be evaluated on the following:

3.1   Quality of the text & notations

The goal of technical writing is to transfer your ideas to the reader in a clear and concise way. When grading your writing we will aim to be rather lenient, as this is not a writing class. However, papers with stylistic or grammatical errors that obstruct comprehension will be adversely evaluated. If you need any tips on technical writing, check out the directory page portion of Illinois' own Ceila Elliot titled **Resources for Technical Writers and Students**. `https://physics.illinois.edu/people/directory/profile/cmelliot`

3.2   Quality of figures and visual aids

When preparing your figures there are some things you should keep in mind:

- **Do** make all figures using some form of scientific software (e.g. matplotlib, ROOT, OriginLab, MathCad, etc.). Please ask if you want to use a certain software but are not sure if it qualifies.

- **Do** include a descriptive caption for all plots and tables

- **Do** number your plots, equations, tables and figures so they can be easily referenced from your text. This can be done automatically in Overleaf (see `label` and `ref` commands).

- **Do** clearly label plot axis with a descriptive title and units.

- **Do** use contrasting colors and different markers to clearly distinguish different data. Consider using color blindness palettes online for assistance.

- **Do** include relevant statistics for histograms and fits.

- **Do** choose appropriate bin widths for histograms.

- **Do** show uncertainties on your plots.

- **Do not** label plots with font size too small to be easily readable.

- **Do not** use colors that are hard to see on a white background when projected, such as yellow.

- **Do not** use a line graph when plotting many points that together express a trend. Instead, consider using a scatter plot with a best fit line.

3.3 Academic Honesty

3.3.1 ChatGPT

ChatGPT is a powerful AI based tool that can aid your writing. Here are some suggestions from the UIUC Center for Innovation in Teaching & Learning on permissible use of AI text generators like ChatGPT.

- **Generating ideas:** ChatGPT can help you brainstorm ideas for your paper by providing suggestions for topics, thesis statements, and key points to include in your paper.

- **Organizing your thoughts:** ChatGPT can assist you in organizing your ideas into a logical structure by providing suggestions for outlines and transitions between paragraphs.

- **Enhancing your writing:** ChatGPT can assist you in improving the quality of your writing by providing suggestions for grammar, vocabulary, and sentence structure.

- **Summarizing your sources:** ChatGPT can help you summarize and paraphrase information from your sources, which can be useful when incorporating research into your paper.

- **Citing sources:** ChatGPT can also help you generate bibliography and citation in the format required by your university or professor.

It is important to note that while ChatGPT can be a useful tool in writing a paper, it is not a substitute for your own critical thinking and writing skills. The suggestions provided by ChatGPT should be used as a guide and not a replacement for your own ideas and writing. Additionally, it's important to carefully review and edit the text generated by ChatGPT and to ensure that all sources are properly cited.

Please note that if you use **any** AI-generated text in your report, you must give credit to the AI in your report.

If an essay checker software identifies your paper as containing AI-generated text without proper attribution it will be considered plagiarism.

3.3.2 Syllabus Statement on Plagiarism and Cheating

You must never submit the work of someone else as your own. Always identify your sources.

It is cheating to receive work from another student and then represent it as your own. It is cheating—and a violation of U.S. copyright law—to give (or sell) course material to someone else who intends to redistribute and/or sell it.

Cheating will be penalized harshly: I will award zero credit for any assignment in which a student is found to have cheated. I will also probably reduce your course grade by two letter grades (so that an A becomes a C), though I reserve the right to issue an F for the entire course to any student who is found to have cheated.

All activities in this course, including documentation submitted for petition for an excused absence, are subject to the Academic Integrity rules as described in Article 1, Part 4, Academic Integrity, of the Student Code. `https://studentcode.illinois.edu/article1/`