PHY 224 Lab Book Guidelines

To prepare for the lab: Read the lab instructions and highlight or make note of the key questions. Make sure you can clearly state the objective(s) of the experiment in your own words.

The basic overall goals of your lab book:

1) Keep a log of what you're doing and what you're observing.
2) Record your data.
3) Using your observations and computational analysis, answer questions posed in the instructions.
4) Interpret your results.

This is not a formal report! Be brief and use jot notes if you like.

Writing in your lab book:

To start

- At the top: Name of experiment, Student's names, Date
- Before you begin a log of your work, write down the objective(s) of the experiment in your own words. This serves as a basic introduction.

Log and Data

- **As you do the experiment**, write down what you are doing and what you observe. This should be as **chronological** as possible. *You or another student should be able to re-create your results based on your log.*
- Record everything you observe, even if it's not directly stated in the instructions. You never know what observation may be interesting or useful to you later.
- **Record error** on all observations. If you have time, doing multiple trials on certain experiments can improve your clarify and improve your results.
- A table is often be useful for recording numerical observations such as times, lengths, speeds, etc. Reserve a page or two for this if applicable.

Questions and analysis

- Following the log, answer questions asked the instructions. Back up your answers with the observations from the experiment.
- State equations clearly before using them. Show your workings and make sure they follow a clear and logical progression. Use units and error.
- Python code used for analysis should be commented for clarity. Graphs should be clearly labeled.
- Numerical results and graphs should always include your own interpretation of their meaning.

Conclusion

- What results were expected or unexpected? What changes or improvements might you make if you were to repeat the experiment?
- Compare experimentally determined values to a known values where applicable., Make sure to check if the values agree **within the range of uncertainty.** If they do not agree, explain why (for example, innaccurate observations, assumptions made, extraneous factors not taken into account, etc) .

Computational analysis

- Print and attach any python code, code output, and graphs used for the analysis. Make sure to include comments in your python code.