Rubric for the Final Project, PHYS135B

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***Requirements**: 1. Write down an idea for an experiment for yourself, or yourself and a lab partner, that is both doable and involves concepts from the course. 2. Construct the experiment and collect the data. 3. Create a 10-minute presentation on your results (5-10 slides). 4. Give the presentation in the final week of class.*

- **Project idea**: The project idea should be constructable at home, or it can be a theoretical calculation. Either way it should be doable for you and your lab partner (if you have one).
- **Experiment**: The take-home experiments proposed in the text are a good start for ideas. Another source is DIY electricity experiments on YouTube (hompolar motors, AC motors etc.). The experiment should be a device or setup that is cheap, safe, and easy to build. The experiment should be focused on a topic covered this semester.
- **Presentation**: The final project can be created in one of two options. Option A: A 10 minute traditional presentation with several minutes for questions. Option B: Digital liberal arts style, in the form of video or digital book form that educates the class on a topic. Regardless of the option, students will all present their work to the class at the end of the module.
- **Speaking**: When a pair of students gives the presentation, each member of the group should give at least part of the presentation.

***Example outline of the presentation**:*

1. Slide 1: *Measuring the coefficient of static friction* - by Jordan C. Hanson
2. Slide 2: Introduction: "The force of friction experienced by a stationary object is proportional to the coefficient of static friction, μ_s. In this experiment, we measure μ_s for a variety of materials."
3. Slide 3: "(Diagram) A textbook is titled at an increasing angle until a given object begins to slide across it. The angle is measured with a protracter, and the mass of the object is measured with a scale. The result for μ_s will be given by $\tan\theta$, where θ is the angle of incline. The angle must be the maximum angle acheived before the object slides."
4. Slide 4: *Tables of data for the angle θ based on object type are given.* "Here is our data. As you can see..."
5. Slide 5: "The predicted coefficients of static friction for the objects are compared to the measured ones. There are a few discrepancies...but we agree in general with the predictions."
6. Slide 6: "In conclusion, the predicted coefficients of friction were measured with **standard deviations** in agreement with the global values."

Grading: 30% of the grade will be assigned based on *attention to detail* in the project proposal. What parts did you need? How is this device built? Another 30% will be assigned based on the execution of the experiment. Are we allowing any unnecessary errors? Are there any ways we can be more precise? Finally, 40% of the grade will be assigned on *how clearly you related the findings to the class.* Are you plotting or listing the data in such a way that other people can understand it? Are there unit errors? ***Can people read your graphs and tables?***