Honors Physics

Final Project Guidelines

Introduction

One recurring theme for Honors Physics is that you may both discover and uncover physics concepts anywhere in the world simply through observation.

A second recurring theme is that you record this demonstration of physics in the real world and then analyze your video using Vernier Video Analysis.

For your final project, you will use the video footage you collected over spring break to produce your own video analysis lab.

Sample Lab

1. Look at the sample lab found on Pivot Interactives.
2. You will notice that the lab includes the following components:
    - Learning objectives
    - Getting started (some pre-lab questions and information on how to collect data)
    - Collect data and analyze (includes data collection, entering data into the data table, producing a graph and analyzing the graph, along with some analysis questions.)

Part 1: Finalizing Your Physics Concept

1. Make a final decision on which video you will use and which physics concept your lab will involve. Once you make this decision, you will not be able to change your mind.
2. Then consider: how could a student analyze this video to build or demonstrate an understanding of your stated physics concept? This is probably the most difficult part of the project.
3. Please have this decision reviewed and approved before continuing.

Part 2: Developing Your Data Analysis

1. Start developing your data analysis. For example, let's say your video involves a person sliding a block down a ramp and you want the student to determine an experimental value for g.
2. Using Vernier Video Analysis, the student might plot the location of the center of mass of the block as it slides down the ramp. This would produce a position v time graph.
3. The student could then add a velocity v time graph. Using the slope of the best fit line/curve fit, the student would then have the value for the average acceleration.
4. The student could use Vernier Video Analysis to measure the angle of inclination of the ramp.
5. The student might need to know the mass of the block.
6. Using this information, the student could calculate an experimental value for g and determine the percent error.

7. Note: The student should measure a series of points - not just do one measurement and complete a calculation.
8. Please have this information reviewed and approved before continuing.

Part 3: Adding Your Introduction, Objectives and Conclusion
1. Once you have finalized your video analysis, you need to add an introduction and conclusion.
2. Your **introduction** should give the student an overview of the concepts involved in the lab. This should include a paragraph of concepts and specific learning objectives. You do not need to have a quiz like the sample lab.
3. Be sure to cite your sources.
4. You will need one or two **objectives**. Objectives help the student focus on the key learning outcomes for the lab - or, "you will learn the following in this lab."
5. **Analysis questions** help students connect the data they have analyzed with the key concepts outlined in the introduction.
6. Write **no more than four** thoughtful analysis and conclusion questions. These questions should prompt the student to connect their analysis to the key concepts of the lab.
7. One question should deal with "sources of error." However, you may not ask, "What are some sources of error?'

Peer Review
Before you submit your draft to me for review, you must have a peer review your work.

Submitting Your Work
1. In your final project folder, rename your final video **22HPhysLastNameFinalVideo**.
2. Create a Doc and name it **22HPhysLastNameLab**.
3. In the doc, there should be these sections: Introduction, Objectives, Materials, Procedure, Data, Data Analysis, Analysis Questions.
4. Your peer reviewer will need to complete the peer review form. Coming soon!

Important Dates
May 20: Draft of final project due
May 22: Draft comments returned
May 26: Final version due