

Laboratory Exam Guidelines

Physics 2019 & 2219

The final exam for this course is a one hour, closed note/book, “practical” exam that you will take individually. It is designed to assess your use and knowledge of some basic laboratory skills. Since the exam is intended to take one hour to complete, we can only highlight a few of all of the concepts that you have learned during the semester. These could focus on the following:

- You should be able to enter data into a spreadsheet and use the spreadsheet to do some simple calculations and analysis of your data.
- You should be able to collect some data using the computer interface and convert it into meaningful information. For example, you should be able to use a photogate to collect some amount of time, and utilize this information to report velocity.
- You should be able to analyze the uncertainty of your measurements and report them appropriately.
- You should be able to create a graph of data and you should be able to analyze the slope (and its uncertainty) of your graph. You should be able to relate this slope to a meaningful quantity in an equation that should describe this data (in “ $y = mx + b$ ” form).
- You should understand the meaning of velocity and acceleration and you should know the relationship between these. You should understand and be able to apply Newton's 2nd law in analyzing the velocity and acceleration of an object.

Your course instructor determines the contribution of the final exam towards your grade, as described in the course syllabus. Your lab instructor will determine the scheduling of exams during your lab period. Also, exams for each student and/or lab section may be modified, so each exam may have different questions and answers.

Laboratory Exam Guidelines

Physics 2029 & 2229

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- You should be able to describe and determine electric field strength in a region between two metals of different voltages.
- You should be able to measure voltage, resistance, and current with appropriate meters and configurations. You should also know the relationships between voltage, resistance, and current so that one could be determined without directly measuring it.
- You should be able to make basic measurements with an oscilloscope. For example, you should be able to display an unknown signal on an oscilloscope and adjust the scale in order to determine voltage and frequency.
- You should be able to measure the index of refraction of an unknown material, utilizing the concept of Snell's law.
- You should be able to experimentally determine the focal length of an unknown lens by projecting a real image onto a screen.
- You should be able to make measurements that relate to the wavelength of a light source and the dimensions of a slit or diffraction grating through which the light passes.
- You should be able to determine the half-life of a radioactive source.

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