PHYSICS 221 LAB SYLLABUS

About Instructor
Instructor: Miaoyin Wang  
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About The Lab
Recitation Time: Thursday 4:40 - 5:40PM @ Room, Nielsen Building  
Lab Time: Thursday 5:45 - 7:35PM @ Room 507, Nielsen Building  
Office Hour: Tuesday 2:30 - 4:30PM @ Room 603, Nielsen Building  
Tutorial Center Time: Thursday 3:35-4:35PM @ Tutorial Center on 2nd Floor  
Text Book: Contemporary Introductory Physics Experiments  
Website: http://www.phys.utk.edu/physlabs.html

About The Grading
>90% A, 80-90% B, 70-80% C, 60-70% D, <60% F
Lab Report 80%
Quiz 20%
Bonus 10%

Schedule
20-Aug - 22-Aug  No Labs  
26-Aug - 29-Aug  Statistical Analysis, Propagation of Errors, and Linear Regression  
2-Sep - 5-Sep  Statistical Analysis, Propagation of Errors, and Linear Regression, cont'd  
9-Sep - 12-Sep  Force Table  
16-Sep - 19-Sep  Acceleration Due to Gravity  
23-Sep - 26-Sep  Conservation of Mechanical Energy  
30-Sep - 3-Oct  Conservation of Linear Momentum  
7-Oct - 10-Oct  No Labs -- Fall Break Oct 9 & 10  
14-Oct - 17-Oct  Centripetal Force  
21-Oct - 24-Oct  Boyle's Law  
28-Oct - 31-Oct  Simple Harmonic Motion  
4-Nov - 7-Nov  Standing Waves  
11-Nov - 14-Nov  Refraction  
18-Nov - 21-Nov  Simple Lenses  
25-Nov - 28-Nov  No Labs --Thanksgiving Holidays Nov 27 & 28  
2-Dec  Lab Final/Makeup  
3-Dec  Study Period

Feel FREE to ask questions!
About Lab Report

1. Only paper report is accepted.
2. You can either write or type your report. The written part should be clear.
3. Please turn in your report before or at the beginning of the following lab session.
4. You can deliver report in my mail box (near office 404, ask the office staff if you can’t find it), or go to my office and give it to me, or turn it at the beginning of next lab.
5. You can work with your partner and turn in one lab report with both of your name on it.

Here is a recommended structure of your report:

You MUST include ALL the following parts.

(1) Title and Basic Information
Name of the lab, your name, name of your partner, name of instructor, your section, date of lab
Example:
A General Introduction to the Switch
Name: NNNN, Partner: NNNN, Instructor: Miaoyin Wang, Section N, DD/MM/YY

(2) Introduction
In a few sentences (at least two), describe 1) Purpose of the lab 2) What has been done in the lab
A good reference is the “Objectives” part of your textbook.
Example:
INTRODUCTION
Light is very important in our daily life. This lab is to teach us how to turn on the light using switch. In the lab, different kinds of switches are introduced and we learned how to operate each of them.

(3) Key Words
The key words tell what the lab is about. Try to find a few important words, which may help the others to locate your report by checking these key words.
Example:
KEYWORDS: Switch, Bulb, Light

(4) Principle and Methods
In the principle part, explain the principle of the lab, such as the crucial formulas and description on how equipments in lab work. In methods part, describe process of the lab. It doesn’t have to be too long. A clear, logical description is preferred.
Generally, the textbook is a good reference for the two parts. You can refine the content on the textbook, but if you can describe on your own understanding, it would be much better.

(5) Data and Calculation
List the data you get in the lab and the details of your calculation on the data. If a lab requires you to calculate something, the result of the calculation must be included. Don’t worry if your data is a
little bit inaccurate. But if it is totally different from what it should be, you may have to try to analysis the problem in the next part of the report – “Problem Analysis and/or Discussion”.

(6) Problem Analysis and/or Discussion
This part of the report is important. A very good analysis or discussion is highly appreciated, and an outstanding discussion may win an “A” for the whole report.
Analysis the problem you met during the lab, such as inaccuracy of the data, or not being able to get some of the data, or some equipment did not work.
If you believe some methods can be improved, or the lab can be carried out in an easier way, or the data should be more accurate if change some equipment, you can write them in your discussion. Any idea about the lab can be discussed.
Example:

DISCUSSION
When we turn on a 606B type switch, there is no light. Then we turn on another switch (606A), still there is no light. Then we found ourselves succeeded by turning on both of the switch, which means the two switches control the light together. Operating this set of switch is just like making agreement. Only both sides ‘agree’ to turn on the light, the light can be on. It can be used in many ways. Here is the circuit of this kind of two switch system...

(7) Answer to the Bonus Question (Optional)
I may give some bonus questions. If your answer is correct, you can get a 10% bonus on the current report. Generally the bonus question is not easy.

About Recitation

1. In recitation, I will give you some physics problems. You can form group with your partner and discuss on the problems.
2. During the discussion time, you are free to ask any question about physics and I will came by and discuss it with you.
3. The recitation may be used as QUIZ TIME. I will inform you the quiz (and the details) in the previous lab.
4. If you have better idea on what we do in recitation, please tell me, because it is a good chance to learn physics in a free and different way.