Physics 232 Lab: Fundamentals of Physics Lab
Modern Physics
Spring 2009

Instructor: Suman Ganguli **Email**: sgangul3@utk.edu
Office: Nielsen 603-6
Office Hours: Tutorial Center (Nielsen 201 - 203) Monday 11:15 – 12:05 or by appointment
Tutoring Session: TBD
Text: Selected Introductory Physics Experiments, Dr. James Parks, ISBN 0759310211

Purpose of the Lab: it is to provide you with some direct experience with the concepts that you will learn in the lecture portions of the course. In addition, you will be exposed to the techniques that are used to obtain and analyze the experimental data, which are used to construct or test physical theories.

Laboratory Assignment: you are expected to read the experiment before coming to the lab session. Generally, you will work in pairs performing experiments; however, both partners will collaborate in filling out the data sheet. At the end of the lab, the data sheets can be printed out and attached to the reports that must be written INDIVIDUALLY. Reports are due at the beginning of the following lab.

Schedule of Experiments

7 Jan	**Classes begin**
12 Jan	**Simple harmonic Motion**
19 Jan	**No Lab – Holiday**
26 Jan	**Standing Waves**
2 Feb	**Refraction**
9 Feb	**Speed of Light**
16 Feb	**Simple Lenses**
23 Feb	**Optical Instruments**
2 March	**Diffraction**
9 March	**Photoelectric Effect**
23 March	**Balmer Series**
30 March	**Poisson Statistic**
6 April	**Attenuation of Radiation**
13 April	**Half-Life of Ba-137**
20 April	**Lab Final/Make up**

Attendance: **If you miss and do not make-up more than two labs you fail the class**. Lab make-up week: 20th April 2009. If you miss a lab you can try to schedule, through me, a make-up session in another lab class during the same week. This type of make-up is not guaranteed.

Grading System:
Lab Report 80%
Quizzes 20%
Lab reports are worth 10 points and are to be turned in one week after the experiment is performed.

Lab reports:
Your report should explain what you did and how you came to your conclusions regarding the objectives of each lab. Use first person. Your data needs to be turned in with your lab reports and every number must be labeled with units.

Heading
Include the title of the lab, your name, your partner's name, and the date the lab was performed.

Objective
Explain the purpose of the lab and what you are trying to understand by completing it.

Results/Conclusions
In this section you need to discuss your data and make conclusions from it. Discuss trends in your data and any interesting results. Do not simply restate the information on your data sheet. Then make scientific conclusions from your data. Your conclusions should be supported by your data whether or not the conclusions are accurate. Your conclusions should concern the validity of the theory of the lab or other scientific phenomena.

Error Analysis
Discuss any possible sources of error. You should explain sources of error that may actually have contributed to your percent difference, and focus on sources of error specific to the lab. You need to discuss multiple sources of error, and explain how they would affect your data.

Real Life Applications
Give a few examples of real life applications of the experiment.

What I learned?
Explain what you learned by completing this lab. Learning is most important.

General Remarks:
I hope you can get this done as efficiently as possible. Working together with friends is a great idea. Using Excel can help with tedious calculations. Being organized will save you time. I will often write notes on the lab report explaining why I took off points; please read these comments. I am sure that I will think of a few more things as we go through the semester, and I will make announcements at the beginning of lab. Please let me know if you are having any kind difficulties in the laboratory. Let's have fun learning.