

Spring 2009 Syllabus for Physics 231 Lab

Monday 10:10 – 12:05(section 005) and 12:20 – 2:15(section 002)

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Office Hours: By appointment, Nielsen Physics Building Room # 609, Carrel #14

Text: *Contemporary Introductory Physics Experiments* by Dr. James Parks, University of Tennessee – Knoxville, ISBN 978-0-7380-3083-8

General Instructions

You are expected to read the experiment (procedure is important) before coming to the lab session. Generally, you will work with one partner and each partner must take part in the experimental tasks. At the end of the lab, the data sheets can be shared for the reports that must be written **individually**. Data sheets must be initialed by the instructor before you leave the lab. At the beginning of the lab, I will quickly explain about the experiment and not e any specifics about the equipments.

1. Lab Report

Lab report is due at the **beginning** of the next lab. It should contain the following sections.

- a) **Title Page:** 1) Title of the experiment, 2) Your name, 3) Your Partner's name, 4) Course name and number (E.g. Lab 231002 or 231005), 5) Lab Instructor's name, 7) Date of experiment and 8) Date of submission

Note: Partners listed are those with whom you performed the experiment. As an alternative to save paper, the title information can be included on the first page instead of a separate page.

- b) **Objective(s):** Give a sentence or two describing the goal of the experiment (see the lab manual).
- c) **Apparatus:** List all the apparatus that you will use in the experiment (use your lab manual).
- d) **Theory:** In brief describe the theory behind the experiment. Write down the working formulas defining all the variables with units.
- e) **Data/Results:** First, attach the data you produced in the lab. You may include the neatened or explained versions of the data with additional derived quantities as well. In this section, include table and graphs.
Things that must be taken into consideration:
 - 1) Every quantity in the table **must be labeled** with appropriate unit.
 - 2) Include "caption" or description for your tables and graphs.
 - 3) Graphs must have title of the form y-axis variable vs. x-axis variable. Graph axes must also be labeled with appropriate units.

Note: Missing of units, table and graph titles, and labeling of the graph axes will result in the reduction of points.

- f) **Error Analysis:** Show the error calculation as indicated in the procedure (e.g. percentage error).

- g) **Conclusion:** State the main findings of the experiment briefly relating the results with the theory involved. For example, we found that there is a linear relation between the measured variable and This can be seen from the graph and is predicted by the theory. Also state whether your results agree with the expectation. Explain the possible sources of error and the impact they may have on the results, if any.
- h) **Questions:** Unless instructed otherwise, answer the questions presented in the “*Questions*” section of your lab manual.
- i) **Attendance:** Attendance in lab is a must. An excused lab can usually be made at the end of the semester. No more than one lab may be made up. Please notify me in advance. According to the university policy, more than 2 absence results in the failure of the lab. **DON'T BE LATE** for lab.
- j) **Preparation:** Before each laboratory you are expected to read the experimental write-up and any related sections of the text so that you are familiar with the theory and the experimental procedure. As it is often impossible to have the laboratory come after the relevant material that has been discussed in lecture, you will have to read ahead in your textbook.
- k) **Checking Out:** If you finish early, begin preparing the laboratory report. In some cases, you may be able to finish it in class. Clean up your area, leaving it as you found it, unless specified otherwise. If something broke during your experiment, report it to me so a replacement can be found.
- l) **Grading:** Each lab is graded for 100 points. I will use the following scheme to grade the report.

S.N	Section	Points	Remarks
1.	Objective, Apparatus, Theory collectively	10	
2.	Data (Experimental results)	60	Be aware for labels and units
3.	Error Analysis	5	Where applicable
4.	Conclusion	20	
5.	Question-Answer	5	
6.	Total	100	

- m) **Be Creative and Honest:** If your results are not what you expected them to be, talk to me. If you honestly perform the experiment to the best of your ability, and there is an error, you should still report your findings – that’s a part of the experimental method. Copying or sharing lab reports will lower your points.

n) **Laboratory Schedule:**

**Physics 231 Laboratory
Schedule of Experiments
Spring 2009 Semester**

Dates	Nielsen Room #	Experiment
7-Jan		Classes Begin
12-Jan - 13-Jan	510	Electric Fields
19-Jan - 20-Jan		No Labs--January 19 MLK Holiday
26-Jan - 27-Jan	510	Ohm's Law I, II, & III
2-Feb - 3-Feb	510	Ohm's Law I, II, & III cont'd
9-Feb - 10-Feb	510	Wheatstone Bridge (Ch. 26)
16-Feb - 17-Feb	510	Resistance vs. Temperature (Ch. 25)
23-Feb - 24-Feb	510	Electrical Energy
2-Mar - 3-Mar	510	e/m Ratio (Ch. 27)
9-Mar - 10-Mar	510	Ampere's Law (Ch. 28)
16-Mar - 17-Mar		Spring Break March 16-20 - No Labs
23-Mar - 24-Mar	510	RC & RL Circuits (Ch. 26)
30-Mar - 31-Mar	508	Oscilloscope
6-Apr - 7-Apr	508	AC Circuits I (Ch. 31)
13-Apr - 14-Apr	508	AC Circuits II (Ch. 31)
20-Apr - 21-Apr	508	Lab Makeups/Lab Final Exam
24-Apr		Last Day of Classes
27-Apr		Study Period

The laboratory manual for Physics 231 is **Contemporary Introductory Physics Experiments** by James E. Parks, Hayden-McNeil Publishing, ISBN 978-0-7380-3083-8 and is available at the UT Book and Supply Store.

Can also be found at: <http://www.phys.utk.edu/labs/S09ph231syl.pdf>