Syllabus for
Physics 221 Recitation and Laboratory - Section 018

**Time:** Day - Tuesday
Recitation: 6:45p.m.-7:35p.m.  Laboratory: 7:45p.m.-9:35p.m.
Room: 608 Nielsen Physics  508 Nielsen Physics

**Instructor:** Joel Mazer
Email: jmazer@utk.edu
Office Hours: TBA or by appointment (please contact me at least 2 days in advance and let me know of your availability)
I will also be in the Tutoring center (Neillson 201) on Friday 1:15-2:20
go to 508 Nielsen

**Book/materials needed:**
Please make sure to bring this book to every laboratory session. Also, bring a scientific or graphing calculator and of course a notebook and writing utensils.

**Attendance:**
It is expected that you attend every recitation and lab period. Keep in mind it will only help to be there and it also counts for a small portion of your grade. Perfect attendance will be rewarded with 2% points onto your overall grade. If you can't make it because of an emergency, email me as early as possible.

**Purpose of the Lab:**
The purpose of this laboratory is to provide you with some direct experience with the concepts that you will learn in the lecture portions of this 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 and/or test physical theories.

**Recitation Assignment:**
There will be a 1-hour long recitation period before every lab with 4 short quizzes at the beginning of class throughout the semester. We'll go over what the quizzes will focus on in class. The majority of time will be spent on specific questions if there are any; otherwise, I will work on some problems of interest related to the course material and/or to your assignments, in particular homework. Please, if possible email me in advance any questions that you would like to go over in class. We will also spend a few minutes talking about the current weeks' lab.

**Laboratory Assignment:**
You are expected to read the experiment before coming to the lab session. As it is often impossible to have the laboratory come after the relevant material has been discussed in lecture, you might have to read ahead in your textbook to learn some new theory involved. You will work in pairs while performing experiments and 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. Lab reports should be typed if possible, but are not required as long as they are completely legible and neat.

**Grading:**
Attendance: 10%
Quizzes: 10%
Lab Reports: 80%
Labs and quizzes can't be made up, but I will drop your lowest lab, quiz, and single attendance miss at the end of the semester. Any additional missed lab/quiz will result in a zero.

**The Lab REPORT**
Your lab write-ups are to be turned in at the beginning of the following lab session. Make sure each section is labeled. Each lab will be out of 100 total points with the section and point breakdowns given below.

a) **Title page (5 points):** (1) name of the experiment, (2) your name, (3) your partner's name, (4) course name and section, (5) the date the experiment is performed.

b) **Objective(s) and Apparatus (10 points):**
   1. **Objective:** Give a sentence or two describing the goal of the experiment (see the lab manual). This is to help show you understand the reason for this particular experiment. What law or idea is trying to be proved?
   2. **Apparatus:** List all the apparatus's that you used in the experiment (use your lab manual).

c) **Theory (10 points):** In brief describe the theory behind the experiment. This will generally take a paragraph or two. Write down the key formulas defining all the variables with units. This will help you with associating them.

d) **Tables and Graphs (40 points):** *(this will be what I initial in class)*
   1. **Data tables:** The original or photocopies of the original data sheets. Don't forget labels, units, and uncertainties! *Remember I have to initial your raw data before you leave.*
   2. **Graphs:** should include a title (remember Y-axis vs. X-axis), and axis labels with appropriate units. If straight line fitting is performed on the data, either by hand or with a linear regression program, remember to record the slope and intercept. Make sure to add/draw in the regression line determined from the slope and intercept.

e) **Calculations,** including **Error analysis (15 points):** Whenever possible calculations should be done in the lab. Include in your calculations the units
associated with any variable and, where appropriate, cancel units or change them to derived units (e.g., change kg·m/s² to N). Describe briefly and show all work making sure to include uncertainties in your calculations. The first two labs should help you to understand this more. If you do the calculations with the spreadsheet, remember to put labels, uncertainties if relevant, and units on any values and state in the report how they were calculated.

**f) Conclusions and (10 points):** This should include a brief discussion of the main findings. For example: "We found that there is a linear relationship 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 expectations to within the uncertainties of the measurements. If you don't feel your experiment was successful, explain why this may be the case. Discuss the main sources of error and problems that were run into.

**g) Questions (10 points):** Answer all questions posed in the handout unless I tell you otherwise.

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**Checking Out:** If you finish early, begin preparing your lab 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.

**Students with Disabilities:**
Students with disabilities should contact me as soon as possible in order to make necessary accommodations.

**Classroom Policies**
Please respect your fellow students and please respect me. Do not come to class late. Do not talk when I am instructing. Turn off your cell phones ringers, beepers, and MP3 players and pay attention. I’m here to help you.

**Honor Statement:** An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. By enrollment in this class, you pledge that you will neither knowingly give, nor receive, any inappropriate assistance in academic work in P221, thus affirming your own personal commitment to honor and integrity (Hilltopics, 2003).

**Course Schedule:**
The schedule of experiments can be found online at [http://www.phys.utk.edu/labs/Fall%202010%20P221%20Schedule.pdf](http://www.phys.utk.edu/labs/Fall%202010%20P221%20Schedule.pdf)
If this schedule changes, I will notify you by e-mail.