Physics 221 Section 13 Lab & Recitation

Lab Time: Wednesdays from 7:45pm to 9:35pm in Nielson 508
Recitation Time: Wednesdays from 6:45pm to 7:35pm in Nielson 608
Instructor: Robert Potts (rpotts1@utk.edu)
Office Hours: Thursdays 12:10-1:20 in Nielson Hall Room 201 (Tutoring Center)
Office: Nielson Hall Room 609 Cubicle 11

Class Summary
This is a laboratory course designed to complement and enhance the concepts you encounter during your Physics 221 lecture. It's a good chance to get your hands dirty and experience physics in a tangible way to help build intuition. We will be covering Mechanics, Waves and Optics. The labs should be engaging and often challenging. If it seems too easy, talk to me and I’ll help you dig a little deeper.

Course Materials
We will be using the lab manual *Contemporary Introductory Physics Experiments* by Tennessee's own Dr James Parks. Please have and bring your own copy of the manual with you to each session. Come prepared with writing utensils and a lab book. You may find a calculator useful, but it is not mandatory. Know that I will not be able to provide you with such things. Please read the lab theory and procedure before coming to the lab.

Attitude
Please come to lab on time and turn your lab in as you pass the front table. Cell phones, blackberries, iPods, zunes, laptops, DSis, PSPs, iPhones and the like will not be permitted in class, so please leave them in your bags or at home. When in lab, please be respectful to everyone and please keep your focus on the lab.

Attendance
Attendance to lab section is mandatory. I expect you to be in the lab to do the experiment, make observations, take data etc. You may NOT send someone to do it for you or assume your lab partner will take good enough data. If, for some reason, you cannot make it then you must inform me by email or phone call BEFORE the beginning of lab time. I will not accept lab reports from you if you were absent without letting me know first.

If you do let me know beforehand and it is an acceptable absence, then we will schedule a time for you to make up the lab as soon as possible. It’ll save both of us some work to not wait until the end of the semester to make it up. Acceptable absences include illness, familial disaster or tragedy, or velociraptor attacks but do not include boredom, indifference or having “better stuff” to do, though may include bad weather, transportation issues or other incidents on a case-by-case basis.

Quizzes
Quizzes will be given randomly during recitation times. If you come in after the quiz is over, you may speak to me after recitation concerning a make-up, but please note that attending recitation is your best chance of getting a good grade on the quizzes. The quizzes may be open-
note, discussion-based, multiple-choice, or of any other construction that I feel appropriate to
gauge your understanding. If during a quiz you are having problems or need to step out of the
classroom, please come talk to me.

**Lab Write-ups**

Each week you will turn in a write-up or report of the previous week’s experiment at the
beginning of the lab. The purpose of these reports is to portray your experiment and results in
as clear and concise a way as possible. The following is a guide for your reports, but you are free
to write them as you please, as long as they contain the necessary information.

All work turned in must be original. I expect each member of the lab group to turn in their
own report that is unique. The data will be the same, but all other sections will be different.
Similarly, do not copy anything from the lab manual. The manual is copyrighted material of the
University of Tennessee and copying any part of it is illegal. Plagiarism will result first in a zero
for that report (which cannot be dropped) and any further offense will be reported.

Our policy in this class will be simple: “This work is my own. I have neither given nor received
any unauthorized help on this assignment”. As used by The McCallie School. When working in
the lab, please consider this policy and whether or not you may be breaking it.

**Introduction**

This should, quite frankly, introduce the topic. Possibly a little bit about the history of the
experiment, the purpose for the experiment, and/or some of the theory behind it. Introduce
the concepts and equations you will be using. Make sure to include units for your variables!

**Procedure**

Tell me what you did. Do NOT just copy or paraphrase the lab manual. Make sure to tell me
what you did, but keep it brief! I don’t need the intimate details...

**Data**

Put all data, results, and graphs here. Make sure to include the errors where applicable. If you
need help with error analysis, please talk to me! For long tables of data (i.e. more than a page),
make reference to them but append the data to the end of the report.

**Analysis**

This is the section where you state your results. Tell me how you came up with your results
(which equations you used, etc) and if they agree with theory. Please be honest! I will not
grade you down for data that disagrees with theory if you can explain to me what may have
gone wrong. Also, be sure to state possible sources of error in the experiment as well as how
they may be minimized in the future.

**Conclusion**

What do your results say? What did you learn? Why does the world care about your results?
## Grading Policy

The grade break down for this lab is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Reports</td>
<td>60%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>25%</td>
</tr>
<tr>
<td>Attendance</td>
<td>10%</td>
</tr>
<tr>
<td>Attitude</td>
<td>5%</td>
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</tbody>
</table>

Attendance is based on presence and timeliness. Attitude is based on your concentration and respect for others in lab. I will drop the lowest lab score and quiz score at the end of the semester. Late lab write-ups will have 20% subtracted from the final grade if turned in before the next lab and 50% subtracted from the final grade if turned in after the next lab. There are, of course, exceptions please speak with me if there is a need for more time.

The labs themselves will be graded as follows out of 100pts:

- Introduction: 5pts
- Procedure: 5pts
- Data: 30pts
- Analysis: 40pts
- Conclusion: 10pts
- Questions: 5pts
- Units: 5pts

When I grade, I’m not looking for things to be broken down exactly like this, but I do expect the necessary information to be your report.

### In Conclusion...

I would like to thank Scott Carr and Rebecca Scott for use of their syllabi. I am extremely flexible with the lab report requirements; the important things that I am looking for are attendance, effort, improvement and completion. We can have a great semester if we all just remember that nobody is perfect in this room. Please don’t hesitate to ask questions related to lab, recitation or your lectures.
<table>
<thead>
<tr>
<th>Dates (TWRF Days)</th>
<th>Experiment</th>
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<tbody>
<tr>
<td>18-Aug</td>
<td>Classes Begin</td>
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<tr>
<td>18-Aug - 20-Aug</td>
<td>No Labs</td>
</tr>
<tr>
<td>24-Aug - 27-Aug</td>
<td>Statistical Analysis, Propagation of Errors, and Linear Regression</td>
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<tr>
<td>31-Aug - 3-Sep</td>
<td>Statistical Analysis, Propagation of Errors, and Linear Regression, cont’d</td>
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<tr>
<td>7-Sep - 10-Sep</td>
<td>Force Table</td>
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<tr>
<td>14-Sep - 17-Sep</td>
<td>Acceleration Due to Gravity</td>
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<tr>
<td>21-Sep - 24-Sep</td>
<td>Conservation of Mechanical Energy</td>
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<tr>
<td>28-Sep - 1-Oct</td>
<td>Conservation of Linear Momentum</td>
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<tr>
<td>5-Oct - 8-Oct</td>
<td>No Labs -- Fall Break Oct 15 &amp; 16</td>
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<tr>
<td>19-Oct - 22-Oct</td>
<td>Boyle’s Law</td>
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<tr>
<td>26-Oct - 29-Oct</td>
<td>Simple Harmonic Motion</td>
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<tr>
<td>2-Nov - 5-Nov</td>
<td>Standing Waves I &amp; II</td>
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<td>9-Nov - 12-Nov</td>
<td>Refraction</td>
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<td>16-Nov - 19-Nov</td>
<td>Simple Lenses</td>
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<tr>
<td>23-Nov - 26-Nov</td>
<td>No Labs -- Thanksgiving Holidays Nov 25 &amp; 26</td>
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<tr>
<td>30-Nov</td>
<td>Lab Final/Makeup</td>
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<td>1-Dec</td>
<td>Study Period</td>
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