Teaching lab sections for large intro classes
Common syllabus

- Lab sections for every section will have a common syllabus developed by TAs and/or instructor

- **Requirements:**
  - Your name and contact info
  - Break down of grade – quizzes, attendance, lab reports
  - Absence and late work policy
  - Text book
  - Lab schedule

- **Consider listing:**
  - Disability statement
  - Schedule
  - Grade – be sure not to conflict w/ instructor!
  - Honor statement
  - Your hours at tutor center
  - Grading criteria

- See sample syllabi
A syllabus is like a contract

- Grade appeals often depend on contradictions between the syllabus and practice.
- It tells students what you expect of them and what they can expect from you.
- A good syllabus preempts problems and lays out rules for dealing with problems that occur. It allows students to anticipate the work load, plan their semester, and evaluate their ability to succeed in the class.
- A good syllabus should not include rules that you may not be able to follow, for example:
  - Detailed grading guidelines or cut-offs
  - Overly strict absence or late work policies
Your responsibilities

- Show up to class on time (preferably ~10 minutes early).
- Show up prepared – you should have done the lab and spent some time anticipating problems.
- Understand the lab equipment and make sure that all lab stations have working equipment before lab.
- Put lab equipment away and report/repair any broken lab equipment.
- Grade students' work fairly, accurately, consistently, and in a timely manner.
  - Timely = 1 week after turned in. 2 weeks in exceptional cases.
  - If I have to ask a TA to grade students' work, I'm already angry.
- Report students' grades to them and the instructor, usually in Blackboard.
- Respond to emails from students in a timely manner. (Timely ~1 business day)
- Treat students, fellow teaching assistants, and the professor with respect.
- Report plagiarism and cheating or evidence thereof to the professor. Discuss unconfirmed suspicions with the prof. (Note that failure to do so is a violation of the honor code.)
- Treat students equally, within reason.
You should expect

- You should not work more hours than you are paid for. You are also a student and your teaching should not interfere with your studies. If you find you are spending more time on teaching than your stipend covers:
  - 1. Consider ways you can be more efficient and budget your time.
  - 2. Discuss how you can be more efficient with the instructor.
  - 3. If you still think your teaching responsibilities exceed the amount of time you are being paid for, discuss it with Jim Parks.

- You should be treated respectfully by students (and other TAs).
  - Refer problem students to the instructor. Discuss how to deal with problem students with the instructor.

- Teaching schedules should not interfere with your class schedule.

- Enough working lab equipment to teach the class. If this is a problem, discuss it with Jim Parks and the prof.

- The previous TA should leave the lab in working order, even if that means (s)he has to stay late to do so. If the previous TA does not do this, ask nicely 2-3 times. If it's still happening and it's interfering with your lab, contact the prof and Jim Parks.

- You should be able to understand the professor's expectations and any class rules. If you do not, you should able to get clarification from the professor.

- You should be able to ask the professor if you are having trouble with the material. It is better to do this before you are done grading.
You don't have to:

• Reply to students' emails immediately.
• Answer homework questions over email. You can insist they come in. (Typing equations is hard!)
• Give students your cell phone number. (Strongly recommend not doing this.)
• Meet with students outside class and outside your TA hours.
  – You can as long as this does not become overly burdensome. Consider referring your students to other TAs so it works better for others' schedules.
Grading

• Usually you will not get detailed instructions from the professor and you are expected to come up with your own guidelines.
• Discuss reasonable guidelines with the prof if you are unsure – but don't expect to get hours of guidance.
• Above all, grade all students consistently.
  – Recommend keeping notes, grading each part consecutively.
• You will make mistakes. This is OK. Fix genuine mistakes quickly and without complaint. Hold your ground if you did not make a mistake – never give unearned points back.
• Premeds want clear, consistent, fair grading. Use objective grading criteria whenever possible and when using subjective grading criteria, give an explanation.
• Grade each lab out of the same number of points throughout the semester and make the grade book clear so that the professor can understand what you did. K.I.S.S.
• Ask for help on Blackboard if you need it.
Writing quizzes

• Many of you will give lab quizzes. Usually the TAs write these quizzes.

• You will (almost definitely) over estimate the level of the students at first.

• Quizzes should be legible and straightforward.

• Writing quizzes and homework problems is actually pretty hard.

• Don't try to be too clever with your questions.

• If you write a bad question, own up to it, issue a clarification if it's not too late, and choose a fair way to grade it.

• I strongly recommend writing the quizzes as a group, with your fellow TAs, and using the same quiz for all sections, even if this is not required by the professor.
Cheating and plagiarism

- Common lab issues:
  - Turning in lab report from previous section
  - Copying data
- Tell your students not to save a copy of their lab report on the desk top and periodically check.
- Spot check for copied data.
- You won't catch all of it but that's ok – it doesn't help most of them anyways.
- **DO NOT DEAL WITH IT YOURSELF. REPORT IT TO THE PROFESSOR.**
- He or she may be fine with what you want to do in response but the professor needs to know. There may be a pattern.
Time management

• Your biggest issue as a graduate student

• Prioritize:
  – Teaching lab, preparing for lab, cleaning up after lab, grading students' work
  – Grading is the most elastic. It can take as much time as you give it.

• Experiment I did as a TA:
  – Graded labs with stop watch, making myself go through them quickly
  – Went back and looked to see if I would have graded differently with more time
  – There were a few points here and there I would have changed but nothing major.

• Discuss the lab with other TAs, including TAs who have taught the class before. They can tip you off to major problems before you run into them.

• Budget time replying to student emails.

• Limit time meeting with students outside of class hours. Refer them to the tutor center.
Tips

• Learn your students' names.
  – This makes a major difference in teaching evals and it demonstrates to the students that you see them as people.

• In the second week of class, ask students some questions about themselves – why they're taking this class, what they hope to get out of it, and something interesting about themselves. It makes it easier to remember their names and it changes students' perceptions of you – another easy way to get better teaching evals.

• Treat your students like human beings.

• Grade harder in the beginning. You can back off later but you can't get stricter later.

• Have a strict but reasonable policy on late work.
Don't date your students. Just don't.

- Consider meeting with students only in a shared office or the tutor center.
- Socializing with your students outside of class is strongly discouraged. (Mentoring is different. Discussing careers in physics over coffee is acceptable and even encouraged. Drinking at a party with your students is a bad idea.)
- You are now in a position of power. Use it wisely.
Instructor: Amal al-Wahish  
E-mail: wahish@utk.edu  
Office hours: 1:15-2:25 Tuesday, Room 201, or contact me by e-mail to arrange an appointment.  
Recitation hour: 9:05-10:05 Am Wednesday, and 4:40-5:30 Pm Thursday, in room 608.  
Lab hours: 10:10-12:05 Wednesday, 5:45-7:35 Thursday, in laboratory room 510.  
Text: Selected Introductory Physics Experiments by James E. Parks  

Lab policy:  
1. Attendance is mandatory for both recitation hour and lab hours, there will be quiz every first 10 minutes in each recitation hour, so please be on time.  
2. Absence will affect your grades. So try your best to avoid that.  
3. Makeup, one lab only (with an official excuse) can be made up during the make-up session.  
4. Prepare to the lab, by reading the experiment from the laboratory manual and from Serway and Faughn text.  
5. Prefer to bring your calculator.  
6. Participation is important, ask questions, take initiative, be active in group work.  
7. Type your report by taking into account the general instructions for student from teaching assistant’s Manual, Page 13-15: http://www.phys.utk.edu/labs/tamanual0806.pdf  
9. Turn in your report on time on the next meeting and don’t forget to solve problems in the manual for that experiment.  

Grades:  

60% on the report.  
25% on quizzes.  
15% on participation.
# Physics 222 Laboratory

## Section 22204 Wednesday

<table>
<thead>
<tr>
<th>Dates</th>
<th>Experiment</th>
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</thead>
<tbody>
<tr>
<td>January 9-11</td>
<td>Classes Begin</td>
</tr>
<tr>
<td>January 16</td>
<td>Electric Fields</td>
</tr>
<tr>
<td>January 23</td>
<td>Ohm's Law I, II, and III</td>
</tr>
<tr>
<td>January 30</td>
<td>Ohm's Law I, II, and III cont'd</td>
</tr>
<tr>
<td>February 6</td>
<td>Wheatstone Bridge</td>
</tr>
<tr>
<td>February 13</td>
<td>Resistance vs. Temperature</td>
</tr>
<tr>
<td>February 20</td>
<td>Electrical Energy</td>
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<tr>
<td>February 27</td>
<td>e/m Ratio</td>
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<tr>
<td>March 5</td>
<td>Ampere's Law</td>
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<tr>
<td>March 12-14</td>
<td>No lab--Spring Break 3/14-3/20</td>
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<tr>
<td>March 19-21</td>
<td>No lab-- Spring Recess 3/21</td>
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<tr>
<td>March 26</td>
<td>RC and RL Circuits</td>
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<tr>
<td>April 2</td>
<td>Photoelectric Effect</td>
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<tr>
<td>April 9</td>
<td>Blamer Series</td>
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<tr>
<td>April 16</td>
<td>Half life of Ba-137m</td>
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<tr>
<td>April 23-25</td>
<td>Lab Final/Makeup</td>
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<tr>
<td>April 25</td>
<td>Classes End</td>
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<tr>
<td>April 28</td>
<td>Study Period</td>
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<tr>
<td>Dates</td>
<td>Experiment</td>
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<tr>
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*The following instructions for writing the report are from the general instructions for student from teaching assistant’s Manual, Page 13-15. http://www.phys.utk.edu/labs/tamanual0806.pdf*

**The Report**
Your lab write-ups are to be turned in at the beginning of the following lab session. Begin each of the following topics on a separate page using additional pages as necessary. It should contain the following information:

- **a. Title page:** A title page should include the following: (1) the name of the experiment, (2) your name, (3) the name of your partner, (4) the course name and number, (5) the section number, (6) the name of your lab instructor, (7) the date the experiment is performed, and (8) the date the report is submitted. Make sure the partners listed on this page 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. Purpose and method:** This should be short: a paragraph or two describing what measurements were made and for what purpose. You are trying to show that you understand the relationship between the experimental procedures and the theory. This can sometimes be fairly obvious or simple and may only take a sentence or two. Procedural details should not be given, unless they are in some way original or non-standard.

- **c. Data tables:** The original or photocopies of the original data sheets, collected in class and initialed by the instructor, should come first. Neatened or expanded versions of the data with additional derived quantities may come next. Once again, remember labels, units, and uncertainties.

- **d. Calculations, including Error analysis:** 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 and show all work. If you do the calculations with the spreadsheet, remember to put labels and units on any additional columns, and state in the report how these columns were calculated.

- **e. Graphs:** When appropriate, should include a title, and axis labels with units. These should also be done in the lab, if possible. 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 and their uncertainties. Draw in the regression line determined from the slope and intercept. Whenever possible put error bars on each graph point. This is too tricky to do with the spreadsheet program – so you may have to add them after the printout from the spreadsheet has been made. If the error bars are too small or data points are difficult to see on the graph, put a
small circle around each one.

f. Conclusions: 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: For example: “The slope of the graph of … versus … as determined by (linear regression, hand fitting) was …±… (units). This value, together with Eqn. …, and the measured quantities …=…±… (units), and …=…±… (units), allowed for a determination of …=…±… (units). This is within … standard deviations of the accepted value of … (units).” Discuss the main sources of error. “The main sources of uncertainty in the determination of … are ….”

g. Questions: Answer all questions posed in the handout.
Physics 221 Recitation and Laboratory Syllabus

Time
Day: Tuesday
Recitation: 4:40pm-5:30pm    Laboratory: 5:45pm-7:35pm

Instructor
John Carruth  jcarrut2@utk.edu
Office Hours: 11:15am-12:05pm or by appointment
Physics Tutorial Center (Nielsen 201)
TA Office: Nielsen 609-2

Course Description
This is the supplemental laboratory phase of the Physics 221 course. The purpose of this laboratory is to expose you, in a hands-on laboratory setting, to the physics topics covered in lecture. You will be required to perform experiments covering a wide range of physics concepts in kinematics, heat transfer, electricity and magnetism, and optics.

Course Materials
All of you should have a copy of the laboratory manual, Selected Introductory Physics Experiments by Dr. James Parks. Please make sure to bring this book to every laboratory session. Also, you will be allowed to use a scientific or graphing calculator.

Recitation
Before every laboratory there will be an hour-long recitation period. You are expected to come to every recitation. Please come to class having read the new lab! I will give a quiz at the beginning of every recitation over the new laboratory material, a few questions covering basic lecture concepts thrown in as well. There will be no makeup quizzes! Following the quiz, we will review specific problems or topics related to what you are covering in lecture. I will not help you with specific homework problems in recitation, though I may work with the class on similar problems that display the relevant concepts. We may also perform other fun or interesting physics related activities, depending on the day.

Laboratory
You are expected to read the experiment before coming to the lab session. Generally you will work in pairs to perform the experiments. I want partners to collaborate and have equal contribution when performing the experiments. At the end of the lab, data sheets may be printed out or sent electronically to another computer. Lab reports are due at the beginning of the following lab. Every student must write their OWN lab report. I will also assign questions from the end of each lab that must be answered and handed in at the following lab period.

Lab Reports
At the start of every laboratory session, you will be required to hand in a lab report over the previous week’s experiment. This lab report will need to include all of the following:
Heading: Title, your name and your partner’s name, and the date you performed the experiment
Introduction: a clear statement about the scientific objective of the lab and a little on the theory behind it including relevant equations, variables and units

Procedure: Don’t quote the manual word for word, summarize what you did. Keep it short!

Data: All relevant data, analysis and graphs

Results: An analysis of the results. What does the data say happened? Include possible sources of error.

Conclusion: What did you learn in the lab? Argue the significance of your results.

Computer Use
A substantial portion of your time in this course will be spent taking, recording, and analyzing data. This process will frequently require use of the computer terminals we have set up in the laboratory. While this course does not require more than a basic knowledge of computers, I would recommend that you familiarize yourself with Microsoft Excel, as it will prove a very useful tool for analyzing your data.

Attendance
Lab attendance is mandatory. I expect you to show up on time for every recitation and lab session. Do not be late. If you must miss lab due to extenuating circumstances (ie. serious injury, illness, or a death in the family) it is your responsibility to contact me as soon as possible. I may allow you to make up the laboratory during the same week.

Grading Procedure

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lab Reports</td>
<td>65%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Questions</td>
<td>10%</td>
</tr>
<tr>
<td>Participation</td>
<td>5%</td>
</tr>
</tbody>
</table>

Classroom Policies
Please respect your fellow students and please respect me. Do not come to class late. Do not talk when I am talking. Turn off your cell phones, beepers, and MP3 players and pay attention!

Academic Honesty
All students are expected to abide by the University Honor Statement. I will not tolerate cheating of any kind. In this course, cheating might include making up data, copying off your neighbor on quizzes, or handing in a lab report that is partially or fully identical to another student’s. If I catch you cheating, I will assign you a zero for whatever it is you are cheating on. A second offense will result in a grade of zero for the laboratory portion of the course and a report to the Office of Student Judicial Affairs.

Course Outline
The schedule of experiments can be found online at http://www.phys.utk.edu/labs/ph221syl.pdf
If this schedule changes, I will notify you by e-mail.
Physics 222 Recitation and Lab Fall 2009 Syllabus

“All science is either physics or stamp collecting.” – Lord Kelvin

• Course Information  PHYS 222 includes 1 hour of recitation, which will be held in Nielsen 608; this will be followed by the lab, conducted in Nielsen 510.

• Instructor Information  My name is Rachel Miller, and I am a GTA. I will be conducting your recitation sessions and your labs. My e-mail address is rmille41@utk.edu, at which you can feel free to contact me at any time. I can be found in Nielsen 201 on Thursdays from 11:15-12:15, or you can e-mail me to schedule a meeting with me. The Director of Undergraduate Laboratories is James Parks, 865-974-8952, jeparks@utk.edu

• Recitation Sessions  These will last an hour and will be held right before your lab. The purpose of these sessions is for you to develop problem solving skills in a smaller, more comfortable class setting. Please do not hesitate to ask questions! You might as well take advantage of this time.

• Labs  The labs are an important aspect of the course, and can be a powerful learning tool. You get to experience the physics concepts that you discuss in lecture first hand in the lab. Your lab reports are due at the beginning of the next week’s recitation period.

• Schedule of Labs

<table>
<thead>
<tr>
<th>Date (R,F)</th>
<th>Experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 27, 28</td>
<td>Electric Fields</td>
</tr>
<tr>
<td>Sept. 3, 4</td>
<td>Ohm’s Law 1</td>
</tr>
<tr>
<td>Sept. 10, 11</td>
<td>Ohm’s Law 2</td>
</tr>
<tr>
<td>Sept. 17, 18</td>
<td>Wheatstone Bridge</td>
</tr>
<tr>
<td>Sept. 24, 25</td>
<td>Resistance vs. Temperature</td>
</tr>
<tr>
<td>Oct. 1, 2</td>
<td>Electrical Energy</td>
</tr>
<tr>
<td>Oct. 8, 9</td>
<td>E/M Ratio</td>
</tr>
<tr>
<td>Oct. 15, 16</td>
<td>Fall Break - NO LAB</td>
</tr>
<tr>
<td>Oct. 22, 23</td>
<td>Ampere’s Law</td>
</tr>
<tr>
<td>Oct. 29, 30</td>
<td>RC and RL Circuits</td>
</tr>
<tr>
<td>Nov. 5, 6</td>
<td>Photoelectric Effect</td>
</tr>
<tr>
<td>Nov. 12, 13</td>
<td>Balmer Series</td>
</tr>
<tr>
<td>Nov. 19, 20</td>
<td>Half life of Ba-137 m</td>
</tr>
<tr>
<td>Nov. 26, 27</td>
<td>Thanksgiving – NO LAB</td>
</tr>
<tr>
<td>Dec. 1</td>
<td>Classes End</td>
</tr>
<tr>
<td>Dec. 2</td>
<td>Study Period</td>
</tr>
</tbody>
</table>

3083-8 and is available at the UT Book and Supply Store. Material for recitation will come from *College Physics*, your lecture book.

- **How Your Lab Grade Is Determined** It is important that you strive to attend all 12 of the labs; however, I understand that issues can arise and that you may have to miss a day. Therefore, I will drop each student’s lowest lab grade, so that your overall lab grade will be the average of the remaining 11 labs. However, I do think that good attendance deserves to be rewarded, and any student who attends and completes all 12 experiments will receive three additional points to his or her final lab grade.

- **Grading Scale**
  
<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>90 and above</td>
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<tr>
<td>B</td>
<td>80 to 89</td>
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<tr>
<td>C</td>
<td>70 to 79</td>
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<tr>
<td>D</td>
<td>60 to 69</td>
</tr>
<tr>
<td>F</td>
<td>59 and below</td>
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</tbody>
</table>

- **Your Lab Report Should Contain:**
  1. Your name, your partner’s name, and title and date of experiment.
  2. The purpose of the lab. What is the lab designed to demonstrate, and how?
  3. The raw data; don’t forget units! (I have to initial your data before you leave.)
  4. Any calculations or graphs you made.
  5. A conclusion, telling whether you felt your particular experiment was successful, or if it was flawed (and why this problem arose).

- **Students With Disabilities** If you have any disabilities that you think that I should be aware of, please let me know and we will arrange to discuss this in private.

- **Other Stuff Which Is Hopefully Common Sense** It is important that you arrive to the recitation sessions/labs on time. Please read the lab thoroughly beforehand. No food, drink, or smoking is permitted in the laboratory. Please put cell phones on vibrate and do not talk during recitation sessions. Cheating (i.e., copying someone else’s lab report) will not be tolerated.
Physics 231 Lab Syllabus  
Sections 231005 & 231002 - Spring 2013

Details

**Lab Time**: Section 231005: 10:10am - 12:05am Monday, Section 231002: 12:20am - 2:15pm Monday.  
**Lab Location**: Nielsen Building Room 510  
**Instructor**: Paul Thompson  
**E-mail**: pthomp14@utk.edu

**Office Hours and Tutoring**: Wednesday 11:15am - 12:15pm in Room 201. If you cannot make this session and need to see me, e-mail me. Feel free to e-mail me at any time.

Lab Manual

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. Please note that this is a **required text** and that you must bring it to every lab session.

Lab Guidelines

- **Attendance** - You must attend each lab session. Since attendance makes up 12.5% of your final lab grade, you must arrive within 5 minutes of the lab start time to receive attendance credit for that session.

- **Absence and Make-ups** - If you cannot attend a lab inform me as soon as you can so we can try and arrange for you to attend another section’s lab. Please bear in mind that I may require an official excuse, especially for repeat absences. There will be no make ups. If there are extenuating circumstances, contact me as soon as possible.

- **Participation** - Participation makes up 12.5% of your final lab grade. Each lab session everyone will be assigned one of four participation grades:
  0 - Absent or purposefully disruptive.
  1 - No participation.
  2 - Some participation.
  3 - Exceptional participation.
To obtain the full 12.5%, you need to score at least 25 participation points.

- **Plagiarism** - Each piece of work you hand in is to be your own work. Under no circumstances should you copy your colleague’s lab reports or take data from other groups. Plagiarism is cheating and will be treated as such. If anyone is found to be plagiarizing at the very least you will be given a 0 for that lab report.

- **Lateness Policy** - Lab reports are to be handed in at the beginning of the next lab. I have a generous lateness policy where I allow each student 2 days free without questions. This means each student may hand in either one lab report two days late, or two lab reports each one day late. Because of this, any other late lab reports will be given a 0 unless in extenuating circumstances. If this is the case, e-mail me as soon as possible. If you are handing a lab report in late, it is to be placed in my mailbox in Nielsen 401. Make sure to get one of the people working in the office to date and sign your report before placing it in my mailbox as proof of the time you submitted it.

- **Disability Statement** - If you need course adaptations or accommodations because of a documented disability, please contact the Office of Disability Services at 2227 Dunford Hall (telephone/TTY 865-974-6087; e-mail ods@utk.edu). This will ensure that you are properly registered for services.
Grading
This lab section accounts for 20% of your total course grade for Physics 231 and is divided up as follows:

- Lab Reports - 75%
- Participation - 12.5%
- Attendance - 12.5%

I will be dropping each student's lowest lab report grade. This means you can miss one lab report without penalty.

Schedule of Labs

Labs in Nielsen Room 510

14 Jan ................................................................. Electric Fields
21 Jan ................................................................. No lab (MLK day)
28 Jan ................................................................. Ohm’s Law I
4 Feb ................................................................. Ohm’s Law II
11 Feb ................................................................. Wheatstone Bridge
18 Feb ................................................................. Resistance vs. Temperature
25 Feb ................................................................. Electrical Energy
4 Mar ................................................................. e/m Ratio
11 Mar ................................................................. Ampere’s Law
18 Mar ................................................................. Oscilloscope
25 Mar ................................................................. Spring Break!
1 Apr ................................................................. RC & RL Circuits
8 Apr ................................................................. AC Circuits I
15 Apr ................................................................. AC Circuits II
22 Apr ................................................................. No Lab
Lab Report Guidance

Please see the sample lab report for an idea of what I’m looking for. Key points to be covered in every lab report include:

- **Purpose and Method (20%)**
  - What were the key physical principles covered in this lab?
  - What experiment did you perform and what did it consist of?
  - What were you testing?
  - Do not copy this section from the lab manual! It needs to be about 3 sentences, for example “The purpose of this lab is to study the electric field behaviour between electrodes. Lines of equipotential between the electrodes are to be found in two separate configurations and using this information the electric field strength can be found at each point between the electrodes.”

- **Equations and Calculations (20%)**
  - Which equations did you use? Explain each term in the equations used.

- **Conclusion (20%)**
  - Was your experiment successful?
  - What were your results?
  - What were your percent differences? Are they good? Why? If you have large percent differences, why do you think that is?

- **Questions (20%)**
  - Answer any questions I assign to you.

- **Data (20%)**
  - Include your data taken in the lab.

- **General Points**
  - Don’t use bullet points or first person language (I, We etc.) in your lab report.
  - Make sure your name and your partners name are on the front of the lab report. Also include the date the experiment was performed and the title of the experiment.
  - Lab reports should not exceed 2 typed pages (Excluding Data and Questions). Excessively long lab reports may be subject to penalties.