Phys 221: University Physics II Lab
SCI 206
Section 100: T 2:00pm – 3:30pm

Instructor: Steven Wiles
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Email: swiles@msubillings.edu
Office Hours: M 2-3, T 12-1 & 3:40-4:40, R 5-6, F 2-3
Also, whenever my door is open or by appointment.

Course Description:
This course is the laboratory complement to the lecture material covered in Phys 220. This course will give you experience with the real-world application of physical principles you are covering in class. This experience will help reinforce your understanding of the lecture material, as well as give you an appreciation for all the real-world complexities that are not recognized in the theoretical presentation of physics.

Grading:
Your grade in this course will be based on nine labs, listed under Schedule. After performing each lab, you are expected to complete and submit a write-up for grading. The labs will be weighted equally with respect to your final grade. These lab write-ups will be worth 20 points each. There are no lab exams in this course. Your final grade in the course will be the average of the nine lab grades. Letter grades will be based on the standard 10 point scale (>90% = A, 89%-80% = B, etc.).

Each lab write-up will be due by 5:00pm on the Friday after you perform the lab. You can turn your labs into the box outside my office. Your grade will be docked by 10% for each day that your write-up is not turned in. Labs should not be slipped under my office door, as they are likely to get stepped on, mutilated, or lost.

Each of you will be working with at least one lab partner during your regular lab meetings. You will collect the same data from your labs, and it is expected that you will collaborate on analyzing the data and will have the same numerical results. However, anytime you write an English sentence, it should be in your own words (answering questions, for example). Lab partners should not be turning in identical lab write-ups. If partners turn in absolutely identical lab write-ups, they will receive a zero.

You will be expected to have read the lab manual before you perform each lab, and come into lab prepared. The manual for this course may be downloaded from my course homepage http://www.msubillings.edu/ScienceFaculty/Swiles/Phys221.htm.
Lab Write-ups:

Each write-up needs to have a cover sheet with the following information

Name and Number of Lab:
Prepared By:
Lab Partner:
Date:
Section Number:

Your lab write-ups will consist of answering all the questions and performing all the calculations requested of you in the lab manuals. You may complete these write-ups on separate pieces of paper, or you may use the lab manuals themselves. The lab manuals often have sections set aside within them for just such a purpose. In either case, the write-ups must follow certain basic ground rules:

- The write-ups should be neat and legible.
- Answers to questions should be complete sentences and complete thoughts, and should refer back to the appropriate question in the lab manual in an unambiguous fashion (writing the question again before the answer is the best way to do this.).
- Any calculations you do must include the following: the original data used in the calculations, the formula being used (in algebraic form), the formula with the appropriate numbers plugged in, the final answer.

Example:

\[ m = 125 \text{ g}, \ a = 9.806 \text{ m/s}^2 \]
\[ \Rightarrow F = m a \]
\[ \Rightarrow F = (0.125 \text{ kg})(9.806 \text{ m/s}^2) \]
\[ = 1.23 \text{ N} \]

- All quantities must be written with correct units. This includes original data, quantities used mid-calculation, and final answers.
- All calculations must involve correct use of significant figures.
- You will occasionally be required to do graphs. These graphs should follow these rules:
  - They should be drawn neatly on graph paper (available at the bookstore or any office store), not sketched by hand.
  - Each graph should be given a title identifying it, and its axes should be labeled by name and with appropriate units.
  - Each graph should occupy a single sheet of paper. You may use the front and back of double-sided graph paper, each side for one graph.
  - The scale of axes should be chosen so that your data points use nearly the whole graph.
  - When determining slope, show points used and calculations of the slope on the graph.
Schedule:

The schedule of labs we will be performing is shown below. If for some reason you have to miss a scheduled meeting, you will have to perform the make-up lab scheduled on April 18th to replace it. If you know you will be missing a lab beforehand, I expect to be informed of your upcoming absence, or you will not be allowed to make up the lab.

I will only allow a student to perform a make-up lab for a valid reason. I am the final arbiter for what constitutes a valid reason. I will also require a signed note (from a coach, police officer, next of kin, etc.) explaining the reason for the absence. If you do not make up a lab and do not provide a valid excuse, you will receive a zero for that lab.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lab</th>
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<tbody>
<tr>
<td>Jan 24</td>
<td>Standing Waves on Strings</td>
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<tr>
<td>Jan 31</td>
<td>Mechanical Equivalent of Heat</td>
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<tr>
<td>Feb 7</td>
<td>No lab (Exam 1 scheduled)</td>
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<tr>
<td>Feb 14</td>
<td>Specific Heat</td>
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<tr>
<td>Feb 21</td>
<td>Electrostatic Experiment</td>
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<tr>
<td>Feb 28</td>
<td>Ohm’s Law</td>
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<tr>
<td>March 7</td>
<td>No lab, Spring Break</td>
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<tr>
<td>March 14</td>
<td>No lab (Exam 2 scheduled)</td>
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<tr>
<td>March 21</td>
<td>Kirchoff’s Law</td>
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<td>March 28</td>
<td>Faraday’s Law of Induction</td>
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<td>April 4</td>
<td>No lab (Exam 3 scheduled)</td>
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<td>April 11</td>
<td>LC Circuits</td>
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<td>April 18</td>
<td>Make-up Lab</td>
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<td>April 25</td>
<td>Lenses</td>
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**POLICY ON ACADEMIC HONESTY:** It is your responsibility to familiarize yourself with the Student Handbook. In particular, you should understand Part IX: Code of Conduct, paying special attention to subsection B.1, page 78 (Academic Misconduct). All students are expected to adhere to the highest standards of academic honesty and refrain from any action that is dishonorable or unethical. In all examinations, quizzes, and lab reports, students are expected to submit their own work entirely. Cheating or alleged cheating on an exam or quiz in this class will result in a grade of zero (failure) for the exam or quiz involved, and may lead to a zero in the course.

**POLICY ON STUDENT CONDUCT:** Disruptive behavior such as loudly talking amongst yourselves, ringing cell phones, talking on cell phones, and reading non-course material during lecture will not be tolerated. Any students indulging in such behavior will be asked to leave the class. Cell phones must be turned off prior to lecture.

Occasionally, a student will have a disagreement with the professor or with the teaching assistants over an issue of grading. Such discussions, whether in class or in office, are to be kept civil. Verbal abuse in any form will NOT be tolerated. Any student indulging in such behavior will be reported to the Dean of Arts and Sciences and The Office of Student Affairs.

**DISABILITY SUPPORT SERVICES:** Students with documented disabilities, whether physical, learning, or psychological, who believe that they may need accommodations in this class, are encouraged to contact Disability Support Services as soon as possible to ensure that such accommodations are implemented in a timely fashion. Please meet with [DSS] staff to verify your eligibility for any classroom accommodations and for academic assistance related to your disability. Disability Support Services is located in the Academic Support Center, 657-2283 and the College of Technology, 247-3029.