WELCOME, GOALS, AND OBJECTIVES

Welcome to the Physics laboratories. We in the physics department want to present you with the most modern physics laboratories as well as the best designed for learning.

If the physics labs are meeting their goals, they should help students to:

1. See examples of and gain insight into basic physics concepts.

2. Use basic physics concepts to develop critical thinking, problem solving, and decision making skills.

3. Develop specific skills, competencies, and points of view needed by professionals in the sciences including measurement and data analysis.

4. Gain skill in discussing and writing about observations, inferences, and conclusions.

5. Learn to work collaboratively.

In the attempt to meet these goals, we are always looking for ways to improve all of our introductory physics labs. Please do not hesitate to suggest changes in the lab write-up, procedures, and topics (either to your TA or to me). We look forward to working with you and sincerely hope you have a rewarding semester in the physics labs.

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MTU ADA Statement
MTU complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act 1990 (ADA). If you have a disability and need a reasonable accommodation for equal access to education or services at MTU, please call the Associate Dean of Students, at 487-2212. For other concerns about discrimination, you may contact your advisor, department head/chair, or the Affirmative Action Office at 487-3310.
RULES AND POLICIES

1. TA’s reserve the right to remove students from lab for inappropriate conduct that could endanger themselves or others or damage laboratory equipment, or which is disruptive to other students. You are expected to follow instructions and use reasonable caution in lab. If you wish to experiment beyond the scope of the lab, check with your TA to be sure what you are planning will not create a dangerous or destructive situation.

The greatest hazards in our PH1091 labs are that we often operate electrical equipment. Electricity and liquids can be a dangerous combination. Food and drink are not allowed on the table top at any time. We will be using various pieces of mechanical equipment such that the equipment will have moving parts. Be cautious of these moving parts. Be sure to place coats, book bags, etc. well out of traffic way so that you or others will not be likely to trip over them. Immediately report any injuries, no-matter how minor, to your lab instructor. Report any hazardous conditions immediately to your lab instructor.

2. All students should attend only the lab section for which they are registered. Credit will not be given for any work done in lab sections for which students are not enrolled. Students are expected to attend all lab classes. Unexcused absences will be counted as zero.

Three or more unexcused absences will result in failure of the course.

3. Up to two labs missed for absence reasons excused (in advance, when possible) by your TA may be made up. Whether or not an absence is excused will be at the discretion of your TA within the following guidelines. Excused absences will generally be limited to serious situations beyond students control such as extreme illness, family illness or death, university sanctioned absences, etc. Students should be prepared to provide appropriate documentation to their TA before being allowed to make up a lab. If you are uncertain whether the planned activity is excused, contact your TA at least one week prior to the activity to ask for a decision. If you would like to appeal the decision of your TA, contact the lab supervisor (mrmeyer@mtu.edu).

4. The lab calendar provides designated times for makeup labs. However, in the event of an excused absence, the responsibility for planning/arranging a make-up lab rests with the student. Because some labs require a group of students, make up labs may or may not be exactly the same as the missed lab.

5. Arrangement will be made as needed for rescheduling of classes which are missed due to weather or other university-wide cancellations. In some cases, this may result in the loss of scheduled makeup lab time.

6. Students are expected to arrive for laboratory on time with their laboratory manual in hand. Failure to arrive at the laboratory with your manual within 10 minutes of the start of the session may result in an unexcused absence or a 1 (out of 10) point reduction at the discretion of your TA. If your schedule makes arriving on time consistently difficult, discuss the situation with your TA before it becomes a problem.

7. Except in extreme circumstances, students will be asked to work in groups of no more than 3 persons. You may not always get to choose your own group, and groups may vary from week to week. TA’s may ask members to switch groups for many reasons, including low attendance in a specific group or group dynamics. Group members and the roles they take in each lab are to be recorded at the beginning of each lab. Students should make an effort to assume different roles from week to week so that they participate in all roles several times during the semester.

8. The cost of this manual is included in your lab fee and pays not only for its contents, but also for the “Data and Questions” and “Summary” sections for each lab. These handouts are distributed at the beginning and must be turned in at the end of each scheduled lab session. In-lab possession of pre-completed lab handouts, notes from other lab sections, or any “scoop” from current or previous terms is not allowed. Students in possession of such information will receive a zero grade for that lab and be referred to the Dean of Students’ office for academic dishonesty.

9. Any accommodation for equipment difficulties which might cause delay will be at the discretion of your TA. In general, late papers will not be accepted. Be aware that the labs are designed to be completed only by students who stay on task with minimal diversions. You are responsible for being prepared and completing the lab work.
10. Each student must turn in a lab write-up together with all the required graphs and materials to receive credit. The use of pencils (rather than pens) is strongly encouraged since neatness and clarity will affect your grade. Labs will be graded on a 10 point scale and returned during the next lab session. Points will be awarded as follows:

**Data and Questions Section (7/10 pts)**
While working through the procedure, you will be directed to record data and answer questions about the lab in the data and questions section. If you run into difficulties, feel free to seek help from your TA with this section. This section is a measure of your lab participation. If you attend, actively participate in lab, and answer questions in clear, complete english sentences with full explanations, you can expect full credit.

**Summary Section (3 pts)**
At the end of each lab, you’ll be expected to complete the summary section as a group. The summary section is designed to test whether you understood and can apply the concepts learned in lab during that session. As such, your TA will generally not answer questions about this section. Students should use the materials given and data collected in lab, and should feel free to go back and experiment further in the attempt to find answers. The summary will usually consist of 4-5 questions of varying difficulty. Often at least one of these questions will provide a challenge even to students with a good understanding of the concepts.

11. Your final lab grade will be based on the numerical scores you receive for all labs. Each lab is counted for 10 points (110 points total). Your lab grade can be determined from the scale below. (These numbers will not be curved. If everyone in the course gets 101 points (or more), everyone gets an A.) In the event there are fewer than 11 labs then the scale will be adjusted accordingly.

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<tr>
<th>Grade Scale</th>
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<tr>
<td>Points earned</td>
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You will receive a separate copy of a semester-specific lab schedule from your TA.

Registered students can find additional information about this lab by going to http://www.courses.mtu.edu, logging in, and choosing PH1091.
Frequently Asked Questions

I don’t have a lab manual, where can I get one?
There is no PH1091 manual for purchase. We will provide you with manual pages each week.

I am late for lab, what can I do?
If you are 10 minutes or less late for your first time - attend your lab. If you are more than 10 minutes late - you have missed your lab. See the policies for missed labs (#2-#6).

I missed my lab what can I do?
Obtain documentation such as doctors or counselor's notes, plane boarding pass and ticket receipt for late and canceled flights, car repair/tow bills, etc. If you are ill and you choose not to seek medical help, make sure someone other than a friend (an instructor, advisor, coach, parent, etc.) can verify that you were ill. If you have car trouble and you repair it yourself, produce some documenting evidence of the trouble, which includes the time, day, and type of trouble. Present this documentation to your TA and discuss the possibility of a makeup.

I missed my lab can I attend another lab section?
Usually not, but discuss your situation with your lab instructor.

I will have to be absent in the future - what should I do?
Notify your TA, bring appropriate documentation to get the absence excused, and arrange to make up the lab.

I missed my third lab - What can I do?
Provide sufficient documentation regarding all absences to receive a grade of incomplete for the course. (You can then make it up next semester.) If you cannot provide sufficient documentation you will have the option of dropping the course or receive a failing grade for the course.

What should my lab report look like?
Neatness Counts: You are writing to convey information to others. If others have difficulty reading what you have written - you have not communicated the information and will not receive full credit. Yes and No answers are generally not adequate answers to questions. Explain by referring to your observations. (e.g. "Yes, this is correct because when we performed .... We saw ....." or "No, This is not correct because from our observations we saw that ..." or "No, this is not what we expected because we thought that ..... ".

Answer all questions and fill in all blanks. Read lab materials carefully and follow directions. Make sure what you write really answers the question, and be as concise as possible. Writing a large amount of irrelevant prose will just tire you and take up time, without helping your grade.

Graphs should always be carefully and neatly drawn and labeled including labeling important features of graphs. Graphs should be faithfully rendered from those displayed from actual data.

I’m not happy with my score on a lab. What can I do?
Talk first with your TA. Your lab report is evaluated based on the completeness, thoroughness, and clarity of your presentation. Did you give reasons for your predictions? Did you label graphs well? Is your answer to the point and with a reasonable explanation? Do your conclusions logically follow from your observations? If after talking with your TA, you still believe there was a mistake made in grading your paper, you can arrange to submit your paper to the Lab Supervisor (mrmeyer@mtu.edu) for re-grading within one week after it has been returned to you.