

University of Mississippi
Department of Physics and Astronomy

**Physics 223 Syllabus Spring, 2021
Laboratory for Physics 213**

Instructor of Record:

Dr. Jennifer Meyer – 211B Lewis Hall; jameyer2@olemiss.edu

Lab Physicist:

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Required Materials: Notebook, calculator, and pencil.

Lab completion: Completion is mandatory. A zero grade will be assigned for unsubmitted labs.

Missing three labs will result in a final grade of F.

General Guidelines and Format:

Given the current circumstances, this lab will be conducted in a hybrid format. The central aspect of a science lab is the real world execution of some experiment and data collection, in an effort to confirm and illustrate the principles being covered in the corresponding course, and to demonstrate that in reality things rarely work as neatly as on paper. To this end, students will complete each experiment and collect all of their own data, while everything else is moved online via Blackboard, YouTube, and the Lab Website. Some of the labs do not require any special equipment, and you will not need to physically come to the lab at all those weeks. The general format will be for lab materials to be provided on blackboard at least 3 days before your lab, along with a prelab quiz. Students are expected to review those materials and complete the prelab quiz before attending their lab for the week. One half of each section will attend for the first hour, and the second half for the second hour, divided by last name. The prelab material will include not only the printed instruction, but a video introduction and walk-through of the procedure, demonstrating the function and use of any and all equipment utilized. Upon arriving to the lab, you may proceed directly to your table; once at your table, you may sanitize all equipment and begin collecting your data, and you may leave as soon as you have collected your data. If the equipment is not functioning properly, your TA will be in the room to assist, but please consult the video walk-through before asking your TA to come over to your table. You will generally have one week to complete the rest of the worksheet and submit it on blackboard for grading.

Graded Work

- Math Review – One math review will be given to assess requisite mathematics skills. Assigned and submitted on Blackboard the first week.
- Quiz – Conceptual and comprehension questions, the focus is on the current experiment. To be completed on blackboard prior to coming to lab to complete an experiment.
- Worksheet – To be completed as the experiment is conducted. While some experiments will be fully online, most weeks an experiment will be conducted and data collected in lab, with conceptual questions answered later and the work submitted on blackboard.
- Lab Reports – Students are required to write two lab reports. Lab reports are due as announced. Further instruction will be given prior to the first report.

Late Policy: Lab reports are subject to the following late policy.

0-24 hours late: 10% deduction

24-48 hours late: 30% deduction

>48 hours late: zero grade

Plagiarism Policy:

As per the M book, in cases of plagiarism both the student who copied and the student who provided the copied material will be penalized in the same manner. Sharing lab reports for any reason is strongly discouraged. Safe Assign, the software which will be used to evaluate reports for plagiarism, is far more sophisticated than most students realize. Please do not try it, you will get caught.

Grades will be posted on Blackboard so that you can verify and keep track of your grades in lab. Keep all graded assignments until your final grade is posted at the end of the term. Grading mistakes will not be corrected without the TA-graded assignment.

Your final grade is based on: Quiz Avg: 20%, Worksheet Avg: 45%, Lab Report Avg: 30%, Math Review 5%

Grading Scale: A ≥ 90 > B ≥ 80 > C ≥ 70 > D ≥ 60 > F

The instructor of record reserves the right to decide whether or not to curve or adjust any/all grades.

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COVID-19 Guidelines:

- Face coverings are required when in Lewis Hall (as is the case for all University buildings). You will be provided disinfecting wipes in the event that you wish to wipe down surfaces that you will touch while in the lab.
- As with any contagious illness, if you have virus symptoms or test positive, do not come to lab. Follow University guidelines and send an email to both your lab TA and Dan Miller to make alternative arrangements to complete that week's lab. If you do not notify your TA and Dan Miller, you may not be afforded the opportunity to make up missed assignments. Documentation is not strictly required for those experiencing COVID-19 symptoms, but you are to follow university guidelines.

Attendance Clarification:

- If you must miss lab for a justifiable reason (official university absence, medical illness, or death of a family member are the most common reasons) you must be prepared to provide documentation. In the case of an official university absence you should have something on university letterhead from a faculty member requesting that I excuse your absence; in these cases it is your responsibility to notify me and provide documentation well in advance so that we can arrange for you to make up with a different section. In the case of illness, you will be required to provide a doctor's excuse **for the day you are absent**. A receipt from a medical clinic visit on Monday will not excuse you from lab on Tuesday; you must have a note that says you were not to return to classes until after the day of your scheduled lab. Should you suffer the loss of a family member, I will have to ask for a copy of the program from the ceremony. Greek events are not justifiable reason to miss lab, this policy is strictly enforced regardless of your roll within your organization. You will not be allowed to reschedule lab because of a test in another class, it is that instructor's responsibility to work around the courses which you are registered for, this syllabus should serve as adequate documentation should they request it. If you have an absence and are unsure if it would be excused or wish to see if an exception will be made, please ask, the worst I will do is say no.
- If you must miss for one of these reasons, the burden to communicate lies with the student. If you email me and say "I'm sick and have a doctor's note saying not to return until Wednesday." I will assume you are coming to see me as soon as you have time on Wednesday; if you simply show up to your regular lab the next week, you may not be afforded the opportunity to make up the lab you missed; had you talked to me when you returned to campus, you likely could have simply attended a different section that week, but after the week has ended that experiment has been taken down. I will always do my best to respond to emails, but keep in mind that I coordinate labs for over 300 students; occasionally an email is overlooked, or I forget to respond; please do not hesitate to send me another email the next day.
- The easiest way to complete this lab to come to lab at your scheduled time. Make up labs are inevitably inconvenient for both students and instructors. Due to other labs occurring all week, should you miss, you will likely end up making up in a late evening section or on Friday.

Nonsense points

- You are expected to use common sense in this lab. Should you submit completely unreasonable answers, you may lose more points than are marked on the worksheet (e.g. In response to "Measure the length of the block," you submit "23 meters," that's about the width of a 100 seat auditorium...). Every experiment in this lab exists in reality; thus you should check to make sure your data is realistic. 1 meter is just over 3 feet; 1 meter per second is about 2.24 miles per hour (a ball fired with a velocity of 120 m/s would put a hole in the wall or you); objects in free fall near the surface of the earth accelerate at 9.81 meters per second squared (unless there is some force other than gravity acting on an object, it cannot accelerate at a rate greater than this); a 120lb person has a mass of about 55kg and a weight in standard units of about 500 Newtons.
- The importance of **units** cannot be overstated. Recognizing proper units will help you to both communicate more effectively and understand the quantities being explored. For each measurement recorded with the wrong units you may lose either 1 or 3 points, 1 point for the wrong prefix (something such as millimeters (mm) instead of centimeters (cm)), and 3 points for the wrong units entirely (something such as kilograms (kg, units of mass) instead of Newtons (N, units of force)).

Basic definitions to keep in mind

- **Mass:** A measurement of how much stuff (matter) something is comprised of.
- **Weight:** A measurement of force due to gravity. *Mass and Weight are NOT the same thing!!!!*
- **Force:** An action capable of accelerating an object. When you jump you exert a force on the ground to push yourself upwards, and the force of gravity acts to pull you back to the earth.
- **Heavy/Light:** These are vague terms and their definitions change depending on the context. One might say that "lead is heavier than cotton" to say that lead is more dense, "a truck is heavier than a car" to say that the truck has more mass, or "an object is heavier on earth than it is on the moon" to say that it has more weight. Refrain from using the words heavy and light in this lab. Rather, say "lead is more dense," "a truck has more mass," or "weight is greater on earth."

Some helpful advice

It is far too common for students in this course series to be their own worst enemy. You already know how most of these principles work and employ this knowledge on a daily basis, we are simply showing you the math behind them. Most students create the difficulty associated with physics themselves: they decide before even entering the room that "physics is hard and I won't be able to understand this." Every semester we see hundreds of students over-complicate simple problems because "it can't be that easy." It is that easy, and you can do this. Stop telling yourself you can't and your odds of success will increase drastically. This is an incredibly difficult course to attempt to memorize your way through, every problem can be presented many different ways. If, instead, you learn the underlying concepts and principles, you will find the majority of this material to be intuitive and straightforward.