# TAMUCC PHYS Lab Policy

Posted online: [http://physlab.tamucc.edu/TAMUCCPHYSLabPolicy.pdf](http://physlab.tamucc.edu/TAMUCCPHYSLabPolicy.pdf)

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Lab Safety

COVID-19

Masks are required on campus, in all classrooms, labs, and all other public spaces. The only exceptions are while eating, in private offices, and outdoors when you can stay 6 feet away from others.

- Campus Policy
- Mask FAQ

Lab Safety is our highest priority. Students must be informed about safety issues and must obey any safety rules posted in the lab or given by the instructor.

- University policy, OSHA regulations, and common sense require that all students are informed about laboratory safety before doing anything remotely dangerous in the lab. You must be registered for SMTE 0095 every semester. This is a zero-credit, zero-cost course.
- Every Semester, complete SMTE 0095 Physics Safety Seminar on Blackboard by the Census Date. During a long semester, this is the 12th class day. During a 5-week summer session, this is Friday of the 1st week.

Physics-specific policies:

- **No food or drinks in the labs.**
- **Closed shoes** are required by University policy.
- You must occasionally wear **impact-resistant goggles**. We have several pair of these in the lab, but you may want to bring your own.
- You must have access to **chemical lab goggles**. These must be goggles with indirect venting to prevent chemicals from getting in your eyes. Check the lab instructions ahead of time to know what kind of eye protection is required for what labs. Here are some sources of chemical goggles:
  - University bookstore (~$10)
  - Home Depot, Lowes (~$4)
  - Amazon.com (~$5)

General Description

- Physics Laboratories start on Monday of the first full week of the semester.
- **Face-to-face attendance**
  - To meet the CDC distancing guidelines, all laboratory experiments will be performed in groups of three (or two depending on the total number of students interested in the face-to-face lab participation) **with only one lab partner physically present** for conducting the experiment and recording experimental observations and data. The other lab partners will participate in data collection via live video conferencing.
  - Each week a different lab partner will be attending the lab in person, with other team members connected via video conferencing.
  - Each group will schedule their weekly rotation and present it to the lab instructor during the week of the first experiment. The schedule isn’t set in stone, but we want to make
sure each lab group has a plan for somebody to attend.
○ Each student will be able to attend a minimum of 4 face-to-face labs throughout the semester. If none of the lab partners can be present in the lab and, in specific circumstances, the entire lab group opt out of in-person interactions, a group will follow the Remote attendance described below.
○ Students opting out from face-to-face participation need to inform the instructor about their choice in order to be assigned (or re-assign) to an appropriate remote group.

- **Remote attendance**
  ○ A student could opt out from face-to-face lab participation. Alternative, virtual experiments/simulations or videos of prerecorded experiments are available to this group of students on [https://physlab.tamucc.edu/](https://physlab.tamucc.edu/).
  ○ Students opting out from remote participation need to inform the instructor about their choice in order to be assigned (or re-assign) to an appropriate face-to-face group.
  ○ All remote students attend the lab instructor’s live video conferencing at the beginning of the lab period.
  ○ For the rest of the lab period, the remote group will work on the lab activity in groups of two or three, communicating by email/videoconference. The instructor will still be available for a videoconference/email to answer any questions that come up. Analysis and writing can continue after the scheduled lab period, if necessary.

- **Asynchronous attendance**
  ○ Under special circumstances, the lab instructor may approve asynchronous lab work.
  ○ Asynchronous learning is when students engage in course material in a time window, instead of at a scheduled time. The instructor in an asynchronous situation is available to answer questions by email or by appointment, but not in real time.
  ○ Asynchronous lab students would view the prelab videos and complete the lab quizzes and remote lab activities without attending a live Webex session.
  ○ **Asynchronous lab students will work individually** on lab activities and reports.
  ○ Weekly due dates for lab quizzes and lab reports will be unchanged, to pace the workload during the entire semester for both students and instructors.
  ○ Questions about the prelab or lab activity can be asked by email to the lab instructor.

- The lab grade is 25% of the course grade. The lab grade is determined by:
  ○ 20%: Average of 12 Pre-lab quizzes
  ○ 50%: Average of 9 Data Reports (See below.)
  ○ 30%: Average of 3 Formal Reports (See below.)

- Pre-laboratory practice is assigned ahead of each lab and posted on the TAMUCC Physics labs webpage ([https://physlab.tamucc.edu/](https://physlab.tamucc.edu/)) with provided answers. Each pre-lab Practice accompanied with a review video also posted on the TAMUCC Physics labs webpage. Questions from pre-lab practice along with questions on the prior lab analysis will be used in online Lab Quizzes posted on the course Blackboard for students’ completion. Students work on the Prelab Practice exercises, watch a review video, and **complete the lab quiz prior attending the lab.**

- The type of report will be specified on the lab schedule, in the report rubric, and on the report submission pages.
- One report will be submitted for each group unless otherwise specified by the lab instructor. Students must participate in the lab activity (face-to-face or remotely) to get a grade. Each
component of the report (for example table, graph, abstract, etc.) should credit the lab
partner(s) responsible for its completion.

- **Though students must work in groups, with instructor approval, individual reports can be submitted.** The instructor may grant permission for an individual submission per student’s request but the maximum possible score may be reduced by 10 points for lack of collaboration. A report submitted individually should have only one name in the header of the document.

- All reports will be due at midnight of the day of the next lab period unless the lab instructor grants an extension. Valid reasons for an extension are (1) health related, backed by a doctor's note, (2) family emergency which can be documented, (3) job interview with the letter of invitation for the interview, and (4) participation in a previously scheduled athletic, or university event or travel to a conference.

- Late reports will be accepted at the discretion of the lab instructor but with the **minimum penalty of 10% per week.**

- **Plagiarism is forbidden.** This means you can’t copy-and-paste from the lab instructions, take data from another lab group, or copy text from any book or website. Even paraphrasing is considered plagiarism if the source of the original sentence isn’t cited. A lab report containing plagiarism will be rejected, and we will refer the case to the office of Judicial Affairs.

**Student Responsibilities**

**Lab Safety**

Log in to Blackboard and complete the SMTE-0095 Lab Safety course. ([See above.](#))

**Pre-Lab Activities - to be done prior the lab session**

- **Pre-Lab Practice:** is posted on [http://physlab.tamucc.edu](http://physlab.tamucc.edu). Read the referenced textbook sections. Work on the problems and questions of the pre-lab Practice in advance. Compare your answers with the correct answers given in parenthesis.

- **Pre-Lab Video:** is posted on [http://physlab.tamucc.edu](http://physlab.tamucc.edu). Watch the review video before/after/while working on the pre-lab Practice. The video goes through each practice problem step-by-step.

- **Pre-Lab Quiz:** is posted on the Blackboard page of your course. Take this 30-minute quiz, which is part of your lab grade before attending the corresponding lab. Calculator, computer, book, notes are all okay, but the quiz is *individual*. No collaboration.

- **Lab Instructions:** are posted on [http://physlab.tamucc.edu](http://physlab.tamucc.edu) and printing of the document is optional; however, make sure to read the instructions thoroughly, pay special attention to the requirements for the report and rubric at the end of the document.

**Lab Activities - to be done during the lab session**

- **Pre-Lab Recitation:** The lab instructor will go over individual questions in the Pre-Lab Practice if requested by students. *Participate, Ask Questions!*

- **Lab Overview:** The lab instructor will review the basic theory behind the lab and possibly discuss parts of the lab setup and procedure.
- **Conduct the experiment, run simulations or take observations from prerecorded video** (depending on your participation method).
- **Measurements:** Make sure to record all required measurements as listed in the requirements for the report (see lab instructions). Suggestion: Construct a spreadsheet like Excel or Google Sheets while reading the lab Instructions before the lab, so that the calculations can run parallel with the data collection. An unexpected result may point out an incorrect measurement or recording, which should be fixed before ending the experiment.
- **Analysis:**
  - Complete the required data analysis such as graphs and calculations as listed in the requirements for the report (see lab instructions).
  - Use of a spreadsheet like Excel or Google Sheets for the data analysis is required.
  - Consult the instructor for possible discrepancies.
- **Share the Data:** The recorded data must be available to all lab partners at all times. The Blackboard Group File Exchange is a good method for doing this.
- **Clean-up:** Return the equipment neatly to where you got it.

**Lab Reports - to be done after the lab session**

- Consult with the requirements for the report (see lab instructions) placed at the end of each set of Lab Instructions.
- Know whether you must complete a **Data Report** or a **Formal Report**.
- Communicate with your group so that everyone has input into the lab report. Don’t leave the entire process up to one partner.
- Complete the lab report by midnight on the day of your next lab.

**Absences and Makeup**

Attendance at lab is required (face-to-face or live video conferencing), and absences must be avoided at all costs. That being said, emergencies happen. The most important thing is to communicate with everyone involved. This includes your instructor, your lab partners, and instructors of other lab sections if necessary. The formal policy is included. ([See Below.](#))
Instructor Responsibilities

So much Syllabus space is devoted to what students must do. It’s good for students to know what they can expect of their instructors.

Lab Safety

- Make sure students have completed the SMTE-0095 Lab Safety course. (See Above.)
- Report any incidents requiring medical attention (even a band-aid) to the Lab Coordinator, Norma Jimenez.

During Lab

- **Take Attendance**
  - Each lab group should have one team member present in the lab (if face-to-face participation was chosen). Remaining students will connect with the instructor at the beginning of the lab (applies to all students)
  - Verify that everyone in the lab is complying with current safety protocols.

- **Run a WebEx session**
  - Answer any pre-lab questions students may have related to the quiz.
  - Review the basic theory of the lab and how the experiment demonstrates that theory.

- **Lab Activity**
  - Help students set up the equipment or simulation, but obviously don’t do the lab for them. Occasionally build a sample setup at the front of the room or show the sample simulation on a computer to students working remotely.
  - Review student results and make suggestions regarding what errors can be explained and what errors are “mistakes” that must be fixed.

Grading

- **Quiz Grading** - Pre-lab quizzes are graded automatically and grade is available in Blackboard upon completion of the quiz.
- **Lab Grading** - Grade labs within 1 week of submission, with comments on the submission and filling in the rubric scores.

Office Hours

- Full-time instructors must have 5 hours/week of Office Hours when students may drop in and ask questions.
- Lab-only instructors may make themselves available for Office Hours before and after lab.
Lab Report Formats

Data Report

A Data Report must contain:

- **Heading** – at the top of every page as a header.
  - Title of Lab Report
  - List of Authors (only lab partners listed will be credited for the report)
  - Date of Lab
- **Abstract** – a one or more paragraphs of text that *summarizes the lab activity as specified in the requirement for the lab report section of the lab instruction.*
  - It is not divided into sections.
  - The Introduction should be 1-3 sentences.
  - The Methodology should be fairly general. Only a few sentences are needed. This is only an Abstract, so less detail than in the Main Body. Describe what the equipment did, what was measured, and how that is related to the final analysis.
  - The Discussion must contain a summary of the results. This means some numerical value(s), such as the final result of the analysis, must be given. If there is a list of final values, give the most important one or a typical or average value. If there was a trendline equation, state it and extract the important numerical result.
  - The Conclusion should be 1-3 sentences, and it must depend on the results. An explanation of any source of error should be included.
  - Should give credit to the lab partners responsible for composing, editing, and proofreading the abstract, etc..

- **Tables and Figures**
  - All of your results of measurements and analysis should be presented in Tables and/or Figures generated using the Excel, Google Sheet or similar spreadsheet software.
  - Each Table and Figure must be labeled (Table 1, etc.) and captioned.
  - Should give credit to the lab partners responsible for calculations, constructions of the tables and graphs, proofreading results, etc.
  - Do beautify your Tables.
    - Tables should be copy-and-pasted as text, not as graphic or screen shot.
    - Make sure the results are readable.
    - Trim out unnecessary decimal places.
    - Label each row and/or column. This should include the name and/or symbol, along with the units in parentheses.
    - Include the expected accuracy of the value (when requested).
  - In a graph, the axes must be labeled with a name or symbol, with units in parentheses.
    - If a trendline is requested, leave the equation on the graph.
    - Transcribe the trendline equation into the caption using physics variables.

Note that there is no Main Body (the longest part of most Lab Reports).
Formal Report

This format closely matches what academic publishers want for scientific journal articles. A Formal Lab Report contains:

- **Heading** – Just like a Data Report.
- **Abstract** – Just like a Data Report.
  - Remember it is a summary, not an introduction.
  - The Abstract should not say anything that is not stated elsewhere in the report.
- **Main Body** – 1-2 pages of prose. This is the main text of your lab report. Divide this text into sections:
  - Introduction – for the reader, not from the Instructions!
  - Methodology – Not a “standard operating procedure”. Just describe what you did, with enough detail that a knowledgeable person could figure it out. Include any equations that will be used in the analysis.
  - Discussion – Describe the measurement results, analysis, and results of the analysis. Be clear about how each value was obtained. Don’t list lots of similar values. Give a sample value or range of values, and refer to the Tables for the rest. Intermediate calculation results aren’t needed here.
  - Conclusion – A sentence or two that summarizes the scientific results (not the skills gained). For example, you might compare the results of your data analysis with the expected values to say whether your results support or appear to contradict the theory. The theories we test are well-established, so if the theory is contradicted, you should explain where the errors may have come from. The conclusion must depend on your numerical results! It cannot contradict your results.
- **Tables and Figures** – Just like a Data Report.

Grading Rubrics

Grading rubrics are posted in Blackboard and students are advised to refer to them before submission and after receiving grades.

**Data Reports**

Here are examples of common ways of losing points, and approximate values of each rubric category

- **5 points**: Heading.
  - -2 to 5 points: Pieces or blocks of unreadable material.
- **50 points**: Experimental Data and Results
  - Basically grades the Tables and Figures. Full credit if all measured values are presented in Table/Figure form, all requested results are present, and all results are within the acceptable margins of error without mistakes.
  - -5 points: Missing captions.
  - -10 points: Missing Table or Figure.
  - -5 points: Table heading or Graph axes not properly labeled with units.
  - -5 points: Graph missing trendline and equation when requested.
  - -5 points: Inappropriate trendline (e.g. linear trendline when the data is inverse proportional or exponential trendline when the data is polynomial ).
○ -5 to 20 points: Mistake in data taking or in analysis.
○ -5 to 10 points: Confusing experimental with accepted or theoretical values

● 45 points: Abstract
  ○ -10 points: Giving an imperative step-by-step procedure instead of general methodology.
  ○ -10 points: Summarizing results without any numerical values.
  ○ -5 points: Presenting a vague conclusion that does not depend on the results.
  ○ -5 points: Quoting a trendline in terms of $x$ and $y$, when different variables are used in the physics models.

### Formal Reports

- 5 points: Formatting
- 20 points: Abstract
  ○ -5 Points: Making an observation about the data or a conclusion that was not mentioned in the body text.
- 10 points: Procedure
  ○ Includes the Introduction and Methodology in the text.
- 25 Points: Collected Data
  ○ Includes most of the Tables and Figures.
- 20 Points: Data Analysis
  ○ Includes processed values in the Tables and Figures.
  ○ Includes text description of how analysis was performed.
- 20 Points: Discussion and Conclusions
  ○ Final sections of the text.
  ○ Major results must be described and conclusions must be drawn from the results.

### Sample Data Report

A sample Data Report is available as a separate document:

[https://goo.gl/Kfl57H](https://goo.gl/Kfl57H) (lower-case letter “ell” in the middle)

### PHYS Lab Makeup Policy

Lab is a vital part of the Physics experience, so it’s a required part of the course. There are only 12 or so labs, and each one is important. **Generally, don’t miss a lab.** Adjust your work schedule so that it doesn’t conflict with the lab. If you do miss a lab, you cannot just help with the report to get credit. You must make up the activity **and** help with the report to get credit. If your group already submitted their report by the time you make up the activity, you’ll have to write your own original report.

### Allowable Absences

Students may miss lab under the following circumstances:

- With 24-hour minimum advance notice, for school-related events, job interviews, NCAA athletic competitions, etc.
- Without advance notice, for emergencies only. Examples of emergencies are a car accident, court subpoena, doctor appointment you can’t reschedule, death or sickness in the family.
Documentation is required within one week of a missed lab for an emergency. The documentation may include an accident report, citation, doctor’s excuse.

**MakeUp Methods**

To make up a missed lab, a student may:

- **Attend another lab section.** This only works if the other lab section is doing the same lab you missed. Use the procedures below to communicate and get permission. After doing the lab, you should get together with your normal lab group and help them write the report. You can use either set of data (yours or theirs) in the lab report. Hand it in with your lab group as usual.

- **Delayed makeup.** Up to two (2) labs may be made up by one of these methods:
  - **End-of-semester makeup.** If there is a makeup week, one (and only one) lab may be made up at the end of the semester. Because of the University schedule, not every semester has a makeup week.
  - **Exempted from lab report.** The lab report(s) may be exempted. This is only allowed if you cannot make up a lab for unforeseen circumstances. Your instructor must agree that this situation was unavoidable. In this rare case, it can be exempted from the lab grade computation. The lab quizzes must still be made up, possibly by substituting the grade from the first lab quiz.

- **Accept a zero (0).**

**Communication and Make-up Permission**

Talk to your lab instructor as soon as you know you will miss a lab, especially if you are an athlete. Students attending another lab section must contact the hosting instructor!

- At least 24 hours ahead of time, send an email, copied to both your lab instructor and the lab instructor who oversees the lab you want to attend.
- The instructor has the right to deny students if the room is already full or if the students are abusing this privilege.
- In the email, introduce yourself and say why you think you should be allowed a makeup. Make sure to include in the message:
  - Your full name,
  - Your lab section (number and day/time)
  - Date and title of the lab,
  - Date you want to make it up
- When attending the other lab section, bring a piece of paper with the same information. (Maybe print the email.)