

# TAMUCC PHYS Lab Policy

Posted online: <https://physlab.tamucc.edu/>

## Table of Contents

|                                  |   |
|----------------------------------|---|
| Lab Safety.....                  | 1 |
| Lab Grade components .....       | 1 |
| Lab Format and Expectations..... | 2 |
| Lab Report Formats.....          | 3 |
| Data Report .....                | 3 |
| Formal Report .....              | 4 |
| Grading Rubrics.....             | 5 |
| Sample Rubric .....              | 5 |
| Absences and Penalties.....      | 5 |

## Lab Safety

The safety of students and staff is our highest priority.

- All PHYS Lab students must be registered for SMTE-0095 as a corequisite. Students must ensure that they have credit for that semester's SMTE-0095 quiz in Canvas. If a student has already completed an SMTE-009x quiz in the current academic year, they may be given automatic credit in Canvas. If credit was not given, they must take the course and pass the quiz.
- **No food or drinks in the labs.**
- Closed shoes are required.
- Two types of personal protective equipment may be necessary:
  - Impact-resistant goggles (safety glasses).
  - Chemical lab goggles.

Each lab's instructions specify what is needed. Students may borrow from the lab or bring their own.

## Lab Grade components

- Lab QUIZ Average - 20%
- Data Report Average – 50%
- Formal Report Average - 30%

## Lab Format and Expectations

Physics labs are in person. All students are required to attend except in cases of excused absence.

**Recitation:** The lab instructor will be in the lab classroom.

- The lab instructor will begin each lab session by giving a lesson and/or answering questions about the prelab practice material. ***Participate, ask questions!***
- The lab instructor will give any needed explanation or demonstration of the lab activities.
- Recitation will be concluded by a completion of the lab quiz by each student individually on Canvas. If desired, students may complete the quiz ahead of the recitation.
- A student may retake up to one (1) lab quiz per semester if the student gets a zero for any reason.

### **Data Collection:**

- Students absent from data collection will receive a zero for that lab, unless excused.
- Students work in lab groups, typically with 3 in a group, though groups of 2 are allowed.
- There are 3 job roles each week:
  - **Hardware:** This is the student manipulating the equipment.
  - **Software:** This student will take data and set up analysis calculations in Excel.
  - **Notes:** This student will take notes to make sure the report requirements can be fulfilled.
- Each week, students will take on different job roles. The lab group will keep a schedule of the job roles (Hardware, Software, and Notes) in their Group File Exchange.
- Before leaving the lab, students are responsible for saving two documents in the Group File Exchange on Canvas. Missing or inadequate files may be used as evidence that the student was not participating in the lab, with a 25 -50% penalty on that lab report.
  - **Excel file:** Completed by Software. Contains collected data and data analysis.
  - **Word file:** Completed by Notes. Contains a draft of the report with introductory, procedural and logical information related to the lab.

### **Report on the collected Data:**

- The type of the required report (Formal or Data) is listed on the Physlab page ([physlab.tamucc.edu](http://physlab.tamucc.edu))
- Collaboration on the report is required and is separate from Data Collection (i.e., Job Roles). Names of lab partners who don't contribute to the written portion must be excluded from the header. These students will receive a zero for the submitted lab report.
- Communicate with your group so that everyone has input into the lab report. Reference written contributions of each lab member at the end of the report.
- Lab report must be completed and submitted by midnight on the day of the next lab. The last lab must be completed on the day of the lab (with an abbreviated report).
- There are three submissions allowed per lab. In case a discrepancy noticed after the submission, the report can be re-submitted twice where the latest submission will be graded. Past due additional submissions ***will not*** be penalized.
- A student can opt out of collaboration and submit an individual report; an individual report will be penalized by 10% unless approved by the instructor.

# Lab Report Formats

## Data Report

A data report contains 3 parts: **Heading**, **Abstract**, and **Tables/Figures**

- **Heading**: Title of Lab, List of Authors, Date of Lab
  - Only list those authors who contributed to the experiment and report.
- **Abstract**: One or more paragraphs of text that summarize the entire lab activity.
  - Make sure to meet all requirements listed at the end of the lab instructions.
  - An Abstract is **not divided into sections as traditional report** and should not exceed two pages.
  - Generally, the pattern is as follows:  
(1) *What was done?* – (2) *Why it was done?* – (3) *How it was done?* – (4) *What was observed and why?* – (5) *So what?*
  - (1) The goals/purpose/objectives of the experiment: what was investigated/verified/calculated/analyzed/determined during the lab.
  - (2) Introduction: should be 1-3 sentences of brief introduction of the physics concepts connected with the objectives. **Do not copy or paraphrase** the lab instructions.
  - (3) Methodology: can be general. This is not a procedure. Do not paraphrase the instructions. Consult the notes taken during the lab and the requirements for the report stated at the end of the lab instructions. Describe how the experiment was conducted: what was measured and with what instruments, how the collected measurements were analyzed (were there any calculations? by what formula? was the data graphed?). Do not state values here unless it is a range or increments used in the measurements.
  - (4) Discussion: summarizes the results, starting with the direct measurements and proceeding to the result of analysis. Often, there is some comparison between the experiment and a theory or model. If there is a list of final values, give the most important value, a typical value, or an average value. If there was a graph with a trendline, state the trendline equation (translated to physics variables) and describe the important part of the trendline equation as part of the results.
  - (5) Conclusion: make an objective statement, backed up by the results. An explanation of any sources of error and estimates of sizes of those errors should be included.
- **Tables and Figures**: When scientists write reports for publication, the tables and figures are always provided separately (not embedded in the text). This section approximates that pattern. Often, the instructions provide templates for the tables/figures and their captions.
  - **Captions: Every Table/Figure must have a caption.**
  - **Label**: e.g., “Table 1”, “Figure 2”.
  - **Text**: 1-2 sentences giving that data context. If there is a controlled variable, state it in the caption. Make a note which values were measured, and which values were calculated. Include formulas for calculated values.
  - **Credit**: Give credit to the lab partner(s) responsible for generating the table/figure.
- **Tables: Start with copy/paste from Excel but do beautify the Tables.**
  - Use text, not a screen shot. Screen shots don’t match the font/style of the document and often make text blurry or tiny.
  - Keep within the page. If it’s too wide/long, consider ways to consolidate.

- Round off unnecessary decimal places.
- Label rows/columns with units in parentheses of the label.
- Do not include units next to each value.
- **Figures:** Start with a copy/paste from Excel.
  - Do not use a screen shot. Copy/paste as an object.
  - If the text comes out the wrong size, make the graph larger/smaller in Excel and copy/paste again.
  - Make sure the trendline equation is readable.
  - Transcribe the trendline equation into physics variables in the caption.
- Reference written contributions of each lab member at the end of the report.

## Formal Report

This format closely matches what academic publishers want for scientific journal articles. It contains **Heading**, **Abstract**, **Main Body**, and **Tables/Figures**.

- **Heading:** Just like a Data Report (see above).
- **Abstract:** Reduced version of a Data Report Abstract (a couple of paragraphs).
  - Remember the Abstract is a summary, not an introduction.
  - The Abstract must summarize the results/conclusions, not just the intro/method. In other words, if a reader reads **only the Abstract**, they should get the gist of report.
  - The Abstract should not state anything that isn't summarized from the Main Body. In other words, if a reader **skips the Abstract**, they shouldn't be missing anything.
- **Main Body:** This is 1-2 pages of text. Divide it into sections:
  - **Introduction:** 1-5 sentences **not copied or paraphrased** from the instructions. The instructions are written for students who will do the experiment. Your audience is people interested in the results and already knowledgeable about the field. Place the work in context.
  - **Methodology:** Not a "standard operating procedure". **Do not copy or paraphrase** the instructions. Describe what object/system was studied, what it did, what was measured, and how the measurements were analyzed. Include equations used in the analysis.
  - **Discussion of the Results:** 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). Make an objective statement backed up by the results. 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/Figures** – Just like a Data Report (see above). Consult with the lab instructor for details.
- Reference written contributions of each lab member at the end of the report.

## Grading Rubrics

Each lab has a Rubric attached to the lab submission Canvas Assignment. Generally, they follow the Requirements listed in the instructions. Here are example points breakdowns:

### Sample Rubric

- (5 points) Heading
- (45 points) Data, i.e. measurements and analysis.
- (50 points) Writing, i.e. Abstract, Main Body, and Captions.

## Absences and Penalties

- Students must be involved with the lab activity to get credit for a lab. Students not participating in data collection and the written portion will receive a zero. “Providing moral support” or “being a sense of reason” is not enough to get credit.
- If a document (results in Excel, the draft in Word) is missing from the Group File Exchange at the end of the lab period, the student with that job will be presumed to be not fully participating and will have up to a 50% penalty applied to their individual score.
- Students are allowed 2 excused absences during the semester. There are no makeup labs. To be excused, the lab instructor must be informed, ahead of time if possible.
  - Examples requiring advanced notice: school-related events, job interviews, NCAA athletic competitions, doctor appointment, etc.
  - Examples of emergencies: car accident, sudden illness, loss of childcare. Contact the lab instructor as soon as practical if there was an emergency.
- A student who is absent without leave, leaves early without permission, or is generally not participating earns an unexcused absence. An unexcused absence results in a zero grade for that lab.
- Students with extenuating circumstances (e.g. extended illness, death in the family, etc.) should contact the Dean of Students office <https://www.tamucc.edu/care-assistance/index.php> . In such extenuating circumstances, the lab instructor may provide instructions for a remote version of the lab activity. The report would be completed individually, and the due date would be the same as the face-to-face activity.