

General Information/Format: The lab notebook is a basic tool for any experimental work. It is primarily for the experimenter's own use, but another person with similar technical background, including yourself, **MUST** be able to understand and duplicate any experiment, data, and conclusion, or to prepare a report by following only the lab notebook details. It should be a neat, organized, and complete lab record. The notebook should be bound, never loose-leaf or spiral. I prefer a composition book with graph paper for easy data tables.

- The inside cover should have information such as your name, email, address, home/cell phone number, instructor, etc. This will help to ensure that the notebook and all the data that you have worked so hard to obtain will always find its way back to you.
- Write in blue or black ink. Pencil smears and is not permanent.
- **All** pages numbered consecutively in the upper right-hand corner.
- Use page 1 and 2 for a table of contents. On the top of page one, write "Table of Contents" and make a table that includes the following columns, Date, title of Experiment, Page #'s.
- Correct any mistakes by using a single line through the portion that is in error. White-out should **NEVER** be used.
- Writing should be only on the right-hand pages. The left-hand pages may be used for scratch work.
- Do not tear pages out, hence the need for numbering.
- Avoid leaving blank pages. If you accidentally skip a page, mark it with a big X to show that the page will not be used.

Preparing Your Notebook for an Experiment

Before you come on a lab day, you should complete the following items in your lab book.

- prior to the experiment (title, procedure, pre-lab information)
- during the experiment (data – both quantitative (#) and qualitative (☹☹))
- after the experiment (calculations, discussion)

Before You Come to Lab: Pre-Lab Work

Before coming to the laboratory, you should have the following items in your lab notebook.

Title: the title should be descriptive. For example, "Titration of Vinegar" is descriptive and "Experiment #2" is not.

Guiding Question: What question(s) is/are this lab trying to answer? (leave a space and write question last)

Pre-Lab: Most labs have questions to answer before you start the lab. You will need to either rewrite the questions or incorporate the question into your answers. The idea here is that when someone (like a college professor) looks at your lab book, they should be able to tell what the question was by reading your answer.

Equipment & Chemicals:

- A bulleted list of all the equipment and chemicals you will use in this experiment. Be specific. 3 x 100 mL beakers is better than just beakers.
- Safety Considerations: Including but not limited to...

Chemical Name/Formula	Potential Hazards (SDS)

Procedure:

- Student's own description/outline/flowchart/summary of the procedure. Don't just copy verbatim from the handout. Your procedure needs to be sufficiently detailed that you can conduct the experiment with only your lab book for reference because *your lab book is the ONLY document you may have at your lab station during the experiment.*

- When doing an inquiry lab, write the complete, step-by-step procedure that you develop.
- Sketches of new or complicated lab set-ups.

Data Tables:

- Prepare any needed data tables before you come to class. Please use a ruler.

During The Experiment

Data/Observations: This is a real-time recording of your work. It is not to be copied into your lab book at a later time. All observations and notes taken while carrying out the procedure should be included in this section.

- Record all entries legibly and directly into your lab book while performing the activity.
- All necessary data should be easy to find and neatly organized utilizing tables and charts whenever possible.
- Headings should be included when there are multiple sets of data.
- All measurements should reflect the precision of the measuring tool (estimate a digit) and should be written with proper units.
- Record both qualitative and quantitative observations of the experiment as it progresses.
- Note any deviations from the expected procedure.

After You Complete the Experiment

Calculations and Graphs:

- Include a sample calculation of each calculation type with appropriate units and substance labels. Please explain your calculations as you are doing them.
 - write the equation, show substitution with units.
 - provide a summary table to present answers for each trial and the average value
- If graphs are required, use a spreadsheet, print and tape the graph into your lab book. Graphs should have a title and a label on each axis with units.


Conclusion:

- Claim: What is the answer to the guiding question?
- Evidence: Refer back to the specific data from the experiment (relevant & sufficient, not all).
- Reasoning: Describe how the evidence supports your claim citing relevant scientific principles.

Error Analysis:

You should always discuss the possible sources of systematic and random errors that occurred during the experiment. Which source is likely to be the most significant error? You should also include a comparison to the accepted value, if there is one, in the form of a percent error calculation (watch your sig figs!).

In AP FR Format – would the error cause the results to be too high, too low or remain the same? Justify your choice.

Claim:	
Evidence (#, )	Reasoning:

Please do not include “human error,” mistakes in reading a measurement or things you might have done wrong. Laboratory errors made by the experimenter should only be noted if they have a significant effect on the data.

Post-Lab Questions: Most labs have post-lab questions that should be answered here.

Remember: It is better to put in too much in your notebook than too little!

Neatness, organization, spelling and grammar count! Accordingly, data and information in the lab notebook must be presented in an organized, logical way. Ideally, all statements should be complete sentences and be written using correct English grammar and spelling. You may need to show this notebook to the college you attend.

This lab book is for you to show the college that you attend that you performed sufficient lab work to earn college credit for this class. Not following the above guidelines will reflect poorly on you in this goal.