**Pre-Lab and Lab Write-Up Format and Guidelines**

A laboratory notebook should be used to record all laboratory observations, collect data, and show how calculations were made. It is the record of your work and should be used when writing your lab report. So, it is important that your notebook be used routinely as the primary recipient of observations and be completely honest. If the experiment works, everything in the notebook needs to be 100% true so that others can reproduce your results. If an experiment doesn’t work, an accurate record can save other people hours of time by showing them what doesn’t work. The record of a researcher’s laboratory work is an important document, which will show the quality of the laboratory work performed. As you record information in your

notebook keep in mind that someone who is unfamiliar with your work may be using this notebook to evaluate your laboratory experience in chemistry. When you explain your work, list your data, calculate values, and answer questions, be sure that the meaning will be obvious to anyone who reads your notebook.

**“Think first, and then write” should be your motto.**

The entire lab from pre-lab to finish must be handwritten and in standard blue or black ink pen or you will receive no credit. If you make a mistake **DO NOT ERASE OR USE WHITE -OUT**. Just draw ONE LINE through your error and continue. It is expected that some errors will occur. You will not produce a perfect, error-free lab write-up.

Pre-Lab Prep

Before you come to class you must be dressed lab appropriately and your lab in your notebook should be prepared with the information ready to be used in order to participate in the lab and receive pre-lab credit:

1. **Title** - The title should be descriptive of the lab (the title on the entire notebook page does not count as a lab title.

2. **Date** - The date you performed the experiment (always need dates on assigned notebook pages).

3. **Purpose** - A brief statement of what you are attempting to do.

4. **Materials** - A bulleted list of the things used to perform the activity.

5. **Safety Precautions -** very brief bulleted list that relates to lab being conducted (do not include dress appropriately steps)

6. **Procedure** - A bulleted summary of the method you are using based on the reading of the lab steps to be followed without plagiarizing the numbered steps given in the lab you read.

7. **Data tables** – All data tables must be drawn using a straight edge, given a number, and a descriptive title.

During Lab and Post Lab

After you have performed the lab and collected all the necessary data you need to finish the

lab with the following:

1. **Observations** - Record all observations directly into your lab book.

2. **Graphs** - Graphs should be large, neat, and done on graph paper. Follow the good graphing rules. Graphs should be large, neat, and done on graph paper and should Follow the good graphing rules.

3. **Calculations** - All calculations should be neat and shown to justify your work.

* You must show step-by-step work for all calculations done with your data. For calculations that are done repeatedly because of many samples or repeated trials, one example of the calculation is enough.
* Final answers should include correct significant figures, a unit, and have a box drawn around them.

4. **Analysis** - Discuss what you observed, give your opinion and be sure to give the

reasons for any errors you might have encountered.

* Some laboratory activities will include questions to help you understand the lab results and their application to everyday life. All questions need to be answered in complete sentences (include references to sources used, if necessary, AFTER LAB)

5. **Conclusion** - Interpret the results of the experiment. Don’t repeat the discussion

or the procedure. What was demonstrated? Each lab must include at least a one-paragraph (at least 5-6 good complete sentences) conclusion.

**A complete conclusion will include the following:**

1. Purpose of the lab and whether the purpose of the lab was fulfilled,

2. a summary your final results (NOT a summary of the procedure)

3. a comparison of your results to accepted values (% error)

4. your analysis of at least two major sources of error in your results

**Note:** Sources of error – in any real-time hands-on laboratory work, there will be uncertainties in measurement caused by the limitations of the equipment used, and there will also be effects on results caused by “mistakes” you or your lab partner make. These are generally the sources of error you will be discussing in your analysis. Your error discussion should NOT be a random list of things you consider “went wrong” as you carried out the lab. Instead, start by looking back at all the measurements you made in the lab, and listing the uncertainty in each of them. Then look back at your procedure and observations, and list anything you did or observed that did not go according to your plan (this may or may NOT be an error!). Then discuss the effect that each of these uncertainties or “mistakes” would have on your measured result. (See sources of error sheet)