Advanced Chemistry 2008-2009 Dr. Katz
Laboratory Report Guidelines

Adapted, with permission, from C. Renaud, Greenhills School, 2008

After most experiments you will be required to complete a formal lab report. You will be given one week to finish a report once all of the data has been gathered. You will record your data and observations into your lab notebook (see below for Lab Notebook Guidelines)

There are several components to a good lab report. If you are unsure whether you are setting things up properly please ask. If you receive a 4 or 5 on the AP exam and want to receive college lab credit for the course, a proper lab notebook with well written lab reports are often the key to placing out of first year chemistry in college.

1. **Title of the Experiment** – The title should be descriptive. Experiment 3 is not descriptive. Place the title at the top of every new page. Underline the title so that it will stand out from the rest of the writing on the page. Include your name and the date the experiment was carried out at the top of each page as well.

2. **Purpose** – Provide a brief statement of what you are trying to do. Make sure the purpose relates to the question you are investigating in the procedure.

3. **Experimental Design (Procedure)** – You may refer to the lab worksheets. Indicate the relevant page numbers from the lab manual or refer to the sheet that you were given. Describe any changes that have been made to the procedure outlined in the lab manual. Do not include lengthy, detailed directions. Summarize the materials and methods in a brief paragraph or numbered list.

4. **Diagram of Apparatus** – Use 1/4 to 1/2 of a page to draw a neatly labeled diagram of the equipment used. Draw in ***pencil*** and use a ***ruler*** where appropriate. Make sure you ***label*** all parts of the apparatus. If you must attach a separate piece of paper for a diagram, attach one to both copies.

5. **Data and Observations** – Record data (measured numbers) and observations into this clearly labeled section of your experiment. You should not jot numbers haphazardly down into your notebook. Use tables where appropriate to help with organization. You can prepare tables BEFORE coming to lab by pre-reading the procedure and determining what data you will record as shown in the following example:

   Table 1: Mass measurements

mass of crucible	21.21 g
mass of crucible + magnesium before heating	24.38 g
Mass of crucible + magnesium after heating	

   Remember to include ***units***. Also indicate what you observed. Was there a color change? Was smoke produced? Was there a noticeable change in temperature? Did you hear anything? Smell anything? If so, ***describe*** it using your senses. You will analyze it later!

6. **Complete any calculations or Post-Lab activities required** – As we progress through the experiments you will be told which sections to include and which ones to omit if needed. Show at least one full calculation, with units and significant figures, for any assigned work. Every new calculation should be shown (even simple ones like subtraction!). You need to demonstrate your understanding to your evaluator, don't assume it is so easy that you don't need to show work!

7. **Answer the questions** – Questions are often located at the end of each experiment. Use **complete sentences** that incorporate the question into the answer. The other option is to write the question and use full sentences to answer it.

8. **Discussion of Theory** – In this section you should address the ***underlying theory*** we have covered in class and how it relates to the experiment. What do the calculations show? Refer to the purpose and discuss if you achieved what you set out to do. Did the experiment work or not? What is your evidence?

9. **Experimental sources of error** – In a short paragraph, describe specific sources of error. How was your data affected? Were the values obtained larger or smaller than expected? What problems did you encounter? What would you do differently in the future if you were to repeat the experiment? Avoid blaming human, calculator, and instrument error for problems encountered unless you know they had a major effect (i.e. someone spilled half of the original sample) as both of human and instrument factors will always be present to some extent, and calculator errors should NEVER be!

10. **Conclusions** – Provide one simple statement that outlines what was concluded about the experiment. Do not use the words, "I," "we," or any first person narrative.

Laboratory Notebook Guidelines

We will be using a bound laboratory notebook to record your data and observations during experiments. Your lab report will also be written INTO your notebook. At the end of each lab you will be removing all duplicate pages (yellow pages) and submitting them into my inbox as evidence of lab participation. These will be returned to you and should be included with your formal lab report.

As you prepare to use your lab notebook, please keep the following guidelines in mind:

1. Write your name and class section on the front cover and inside cover of the notebook.

2. The first two pages will be used for the table of contents. Leave them blank initially and then add the experiment number, title, date carried out and page location in the notebook as data and observations are added.

3. **Write all data and observations in ink**. All data and observations should be entered into the notebook IN LAB, not after lab from memory or by copy a lab partner. This is unacceptable.

4. **DO NOT ERASE** mistakes. Rather, draw a **SINGLE LINE** through your error and continue with your work. A perfect, error free notebook is not expected or likely to occur. Everyone makes mistakes. A true science notebook is strewn with mistakes, but is nonetheless legible.

5. When writing your data and observations, do not use the first person and avoid a "chatty" style of writing. Get to the point and clearly state the information. Full sentences are not required.

6. Most duplicate page-type, bound, lab notebooks require a cardboard-back spacer to separate pages so you don't write through more than one page. This is the trickiest part of using these notebooks. I urge you to remind each other about this. If I can't read your yellow pages, I can't grade them! So, if you write through too many pages, you will have to spend time re-writing over the yellow pages in blue or black pen to make them legible. ☹ This ends up being a big waste of time.