Guidelines for a Successful Lab Notebook

Lab-notebooks are to be kept by each person and will be evaluated as an individual effort for 25% of your course grade. Keeping your book current is important to keep your thoughts and experiments progressing forward. They will be collected and graded at the end of each module (at the same time as the essays). Grading will be based on clarity of activities and thoughts, completeness (include as much detail as you can), and organization (so we know what part we're reading).

When you first get the notebook

- The Cover and/or Title Page of your notebook should include the following:
  - Name
  - Course #
  - Beginning date (and end date)
- Leave several pages blank so you can develop a table of contents
- Number the pages

Use alternate pages for rough and neat work

In the past some students wanted to keep rough notes during the labs often on scraps of paper or in a rough notebook and then planned to transcribe them neatly to their lab notebook afterwards. This is poor practice and you will be penalized for doing this. It is inefficient, may lead to transcription errors and may lead to you throwing away data that you think is bad but which turns out to be useful when you understand your experiment better. In extreme situations it may even lead to other scientists questioning the veracity of your work. It is important to develop the skills of keeping legible records at the time you do the science. A good lab notebook will likely include rough notes, crossed out pages with a short note stating why (e.g., 'Experiment terminated because I realized that I was misreading the Volt meter'), and pages that distill the results of earlier pages into a more compact/understandable form.

In this class we would like you to use alternate pages for rough and neat/final entries. Put rough work on the left page and neat work on the right. At times, this will lead to some wasted space (past experience suggests that you will not fill you lab book) but it will help us follow your train of thought and will get you into the habit of putting all your work into one book.

For Each Experiment

For each experiment, label a new section and date each page when you start write on it. Within each experiment section should be (at least) the subsections listed below. You don't have to answer all the questions in these subsections explicitly, but it's best if the answers are at least implicit somewhere in your records (you should read this and your book over before you turn it in and if these questions are not answered, add material where necessary). You may repeat subsections as needed (maybe you discovered a new method to try, with new results) and do not be afraid to start over if necessary, just record it all. Use pages liberally; very few will be able to fill a notebook during the quarter.

- Introduction:
  What is the issue or question? Why is it relevant to the environment? What do I know about it or what can I hypothesize about it?

- Methods:
  How can I address the issue/question? What specifically will/did I do and why?
What materials are/were needed and how are/were they used? Diagram of the set-up? Details.

- Results:
  What happened when I did certain things? Was data generated? Tables, graphs (you can tape in graph paper or print outs). More details.

- Conclusion:
  What do the results (of all forms) tell me about the main issue/question, or related sub-questions? How does this scale up (or down) to the real world? How does explain a part of the environment?

- Further investigation:
  What do various outside sources have to say about the issue/question? Attach relevant photos, graphs, articles, etc. here and be sure to cite anything you include.

**For Each Unit**

  Somewhere in each general unit of your book (Energy, Air & Water, Earth), you need to have the following additional sections:

- Others’ experiments:
  Visit other lab groups' experiments (perhaps while you're waiting to start another) and find out what it's about, how they're addressing the issue/questions and how their experiment is applicable or relevant to the real world.

- Essay development/draft notes:
  Record which topic you chose and your outlines, ideas, sources used, and anything else relevant.