

Lab Notebook Guidelines

Lab notebooks will follow the format described on the Truman ChemLab website at http://chemlab.truman.edu/Notebook_Files/LabNotebook.asp. The following modifications and points of emphasis supplement the format described there.

The notebook should be arranged in the following order:

1. **Title:** A brief, descriptive title for the experiment.
2. **Statement of Purpose:** One or two sentences describing the analytical goal(s) for the experiment.
3. **Background:** At a minimum, this section must contain the following:
 - a. A complete reference(s) to the procedure that you are using (website, book, article) following the American Chemical Society formatting guidelines. Examples are below, more examples can be found online:
Journal Article:
Author, A. A.; Author, B. B.; Author, C. C. Title of Article. *Journal Abbreviation (italics)* **Year (boldface)**, *Volume (italics)*, Pages.
Book:
Author, A. A.; Author, B. B. *Book Title (italics)*, Edition (if any); Publisher: Place of Publication, Year; Pages.
Website:
Author, A. A. (if any). Title of Site. Complete URL (accessed date), other identifying information.
 - b. Balanced chemical equations for any chemical reactions.
 - c. Any hazardous properties (flammability, toxicity, etc.) of the substances that you will encounter in the exercise or any potential procedural hazards.
4. **Procedural Outline:** Be sure to leave the right 1/5th of the page for procedural modifications. **You do not record your results on the right-hand side!** Results are recorded in the *Results* section.
5. **Data/Results:** Aside from experimental results, this section should include the following:
 - a. The first item in this section **must** be a table providing identifying information for all reagents and instruments used in the lab. It is not necessary to document glassware (pipets, flasks...). For a chemical, include the name of its manufacturer, its purity, catalog number and the lot number, if available. For an instrument (including a balance), include serial number or Truman tag number, model, and manufacturer.
 - b. All filenames for data collected and stored electronically must be recorded.
6. **Calculations:** An example of each calculation performed to reach the final reported answers should be shown with the units clearly shown at each step. Also, a propagation of error calculation must be done to provide an estimate of the precision expected for your experiment. Include the output from any programs used to perform these calculations, and the filename under which the data were saved.
7. **Discussion of Conclusions and Error Analysis:** The key purpose for the discussion section is to present your results and discuss their quality. Are your data reliable? How do you know? What aspects of the experiment contribute to uncertainty in your results? How could you improve your confidence in your data? The discussion should be written in third-person, passive voice with no personal pronouns. This section must be typed and properly affixed to your notebook pages.
8. **Summary of Results:** Your summary table must contain the same information that is included on the unknown report form.

Other important considerations:

- **Record everything directly in your lab notebook, not on other paper! Students writing on something other than their lab notebook will lose lab discretionary points and may be penalized on their lab notebook grade!!**
- Don't copy directly from the lab manual, the procedure should be an outline.
- Avoid blank space. Cross out and initial any large blank spaces.
- Write your name and a running title for the experiment on the top of each page. Sign and date the bottom of each page as it is completed.
- Document your calculations in Excel in the event that you or I need to reproduce them.
- Affix printouts to notebook pages with glue or tape (not staples). Adjust print settings and/or trim printouts so that they fit within the constraints of a single page.
 - ***Paper should not hang out over the notebook page!***
- Excel knows nothing about sig figs! Be sure the number of digits displayed in your Excel files is a reasonable reflection of the number of significant digits in the number. You may have to do this manually.

Example Lab Notebook Grading Rubric

Notebooks will be graded based on the guide below. Point breakdown will vary, but in all cases, at least 1/3 of the possible points will be allocated to the "Discussion of Conclusions and Error Analysis" section.

Deficiencies are either marked below or noted under the General Comments at the bottom of the page. Additional comments may also appear on the notebook pages.	Possible Points	Earned points
Submitted on Time, Legible and Complete.		
<p><u>General Format and Content</u></p> <p>Title:</p> <p>Statement of Purpose:</p> <ul style="list-style-type: none"> -Clearly and concisely described the purpose of the experiment. -Used complete sentences. <p>Background:</p> <ul style="list-style-type: none"> -Included balanced chemical reactions. -Included hazard information for reagents and procedure. -Included reference(s) to the source for the experimental procedure. <p>Procedural Outline:</p> <ul style="list-style-type: none"> -Included working OUTLINE of the procedure for the experiment. -Written in your own words. -Left room for modifications. <p>Data:</p> <ul style="list-style-type: none"> -All pertinent data recorded, tables used when appropriate. -Section is separate from Procedural Outline. -Documents instruments, reagents, etc. <p>Calculations:</p> <ul style="list-style-type: none"> -An example of each calculation performed is shown. -A propagation of error analysis is shown. -Appropriate units are used. All graphs are annotated appropriately. -Spreadsheet calculations are documented, including filenames. -All printouts affixed to notebook pages. 		
<p>Discussion of Conclusions and Error Analysis:</p> <ul style="list-style-type: none"> -Discusses numerical results, including confidence limits. -Presents an analysis of results and discussion of error sources. -Compares experimentally determined uncertainty to expected propagated error. -Suggests specific sources of error, and potential solutions. -Written well, uses complete sentences, minimal spelling and grammar errors. -Includes Summary Table. 		
Total		

General Comments