

*Guidelines for the Formal Lab Report

Electronic: Lab reports consist of a single pdf document, include your first or last name in the file name and are emailed. **Lack of the first two requirements will result in a grade penalty of 2/24 points.** Inclusion of entire Excel worksheets, large (>2 Mb) files and excessive typed equations/calculations is discouraged. Instead, excerpts of Excel worksheets, small image files and handwritten, scanned or photographed calculations will more effectively communicate calculations and error analysis. Email by 11:59 on the due date to gelabertm@winthrop.edu

Paper: And...there's always paper, which is entirely welcome. Submit by 4:50 on the due date.

Email acknowledgment will be sent as soon as possible, but no later than 48 hours after submission. You are responsible for contacting me if you did not receive an acknowledgment. Graded out of 24 points, the penalty for late reports is 1 point per day, or one subletter letter grade per day. Written in past tense, passive voice, the report includes the following elements, each of which is described:

Abstract: A **brief summary** of the entire experiment, including the final (numerical) result and comparison with accepted value; propagated error as appropriate. (few sentences)

Experimental: A **synopsis of experimental** technique. What instruments or supplies were used? Concentrations? Was standardization performed? What data were taken? Include any data not included in *Data Presentation*. Anything unusual occur? (one-two paragraphs)

Data Presentation: **Raw data** and **calculations** leading to final result, including graphs and worksheets imbedded into text file. One sample calculation for each formula or step.

Error Analysis: One sample calculation of **propagation of error**.

Sources of Error: A synopsis of **systematic and random errors**. **How would these change results?** Be specific.

Literature Comparison: Compare to the **accepted value - does the difference match within the propagated error?** If error is beyond propagated error, explain why in *Sources of Error*. Does the "direction" of error (low or high) make sense?

Cited References: Use **citation-sequence system** in accordance with the ACS Style Guide: <http://library.williams.edu/citing/styles/acs.php>. Cite all sources used besides the lab handout, paraphrase appropriately and avoid plagiarism. **Do not** cite a reference you don't use and do not use a reference you don't cite.

Lab Report Grading Rubric

Form/Writing (3)

Is the report organized, with no typos, spelling errors or obvious formatting issues with lines/pages? Are chemical substances correctly named? Is the writing in past tense, passive voice, third person, such that "this was done"?

Abstract (3)

Does the abstract briefly describe the lab purpose and experimental technique? Does it communicate (at least) the final values, errors, and comparison with accepted values?

Experimental (3)

Does this section describe in detail what was accomplished in the lab? Are instruments properly introduced with name and model numbers?

Data (3)

Is the raw data presented clearly, perhaps in a table as appropriate with units? Are tables from Excel imbedded into the report so these are easy to follow?

Calculations (3)

For each calculation type, is (at least) one sample calculation shown along with complete carry-through of significant figures and units?

Error analysis (3)

For each calculation type, is (at least) one sample calculation shown?

Discussion (Sources of Error) (3)

Are systematic errors reasonable and specific? Is there discussion about how an error affects the final value? Are any experimental errors (mistakes) included along with how those affect the final value or were corrected for?

Discussion (Literature comparison) (3)

Does the accepted value fall between the calculated value +/- propagated error? Is there a reputable source named and cited?