

APPENDIX P

Laboratory Report Format

Below is a basic outline that can be used for lab reports in the SC111-112 General Chemistry course.

Cover Page: Experiment Title, Course-Section, and Name(s) of Midshipmen

Purpose: State the *chemical* purpose of the experiment. The chemical purpose is the actual goal of the experiment or analysis. Examples of a chemical purpose might include: determining the percent-by-mass of acetic acid in vinegar, determining the composition of a sample of brass, or determining which ions are present in an unknown solution. Note that this is very different from the learning objectives of an experiment. Avoid statement like “to gain a better understanding of stoichiometry, “to learn to use a spectrophotometer”, etc. These are important learning objectives, but, in the lab report, limit your description of the purpose to the chemical goals of the experiment.

Procedure: Include here a very brief description of the approach used to achieve the chemical purpose. This should not be a step-by-step account of everything that took place in the lab. Instead, provide a synopsis of the methodology used. For example: A sodium hydroxide solution was standardized by titration against potassium hydrogen phthalate. This standard solution was then used in the titration of a sample of vinegar. The results of this titration were used to calculate the percent-by-mass of acetic acid in the vinegar.

Results: Summarize the results of the experiment. Often, the best way to present this is in the form of a table (be sure to include labels and units). Note the difference between results and data. The data are recorded on to the lab pages while the experiment is taking place. The results are the product of the analysis that you carry out on the data. These results should include whatever was stated in the chemical purpose. Examples include: the percent-by-mass of acetic acid in vinegar, the percent composition of the brass that was analyzed, or, the identity of the ions that were found in an unknown sample. In other words, this is your output. The data are the input.

Conclusion: State if the chemical purpose was achieved and give an analysis of the errors. Don't say there was “human error”. There is always human error in anything done by humans; you can assume the reader recognizes that. The errors that should be discussed in a conclusion are systematic errors, or, limitations that are unavoidable because of the equipment, the experimental design, or any underlying assumptions, etc. For example, does the analysis depend on a reaction going to completion, or on temperature remaining constant, or other assumptions? If so, you should point that out in your conclusion. Also, state any errors that are due to mishaps that you actually observed during the experiment. For example, if you believe that you overtitrated a sample, comment on how that will affect your overall results (will the final result of the analysis be too high or too low?).

Attachments: Attach at the end of the report, the lab pages containing your data with the questions answered, any spreadsheets, plots, etc.