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## HOW TO WRITE A LABORATORY REPORT

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The laboratory report is designed to inform the reader about the background of the experiment, the work which was performed, the results which were obtained, and their implications.

The report **must be** typed/word processed. ALL pages of the report, including RAW DATA, should be submitted as a SINGLE FILE. VERIFY that the entire report has been uploaded (if you cannot see it, NEITHER can the TA!). If any pages are missing, we will NOT be responsible for them.

Proper spelling, grammar, punctuation and organization are expected in a report and marks will be deducted if obvious errors are found.

The report must follow a logical format and normally contains the following sections:

**TITLE:** The title of the experiment may be the same as that given in the lab manual or you may choose to make an innovative title that describes in some way what was done in the experiment.

**INTRODUCTION:** The introduction should provide the reader with background about the experiment. Any equations (pertaining to chemistry, that is!) used in the experiment must be explained. The theory and any limitations in the theory that is the basis for the experiment should be outlined. For instance, the ideal gas law is called the ideal gas law because in real life, gases do not behave ideally. However, for the sake of simplicity, we assume that our gases behave as ideal gases. So, the theory section could describe the qualities of an ideal gas and in what ways real gases do not satisfy the criteria for ideal gases. In this section, you will be expected to refer to AT LEAST ONE PEER-REVIEWED SOURCE OTHER THAN YOUR LAB MANUAL OR TEXT. Provide references at the end of the introduction section or at the end of the report using the following format or any other that is acceptable for publication:

Author(s), "Title of Text", Chapter Number (if applicable),  
Publishing Company, Page(s) (Year of latest Publication).

Author(s), *Journal*, **Volume**(Issue) (Year) Page.

Web: Site URL, Author(s), Site Name (if any)

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**Remember: Summarize, don't recopy!**

**PROCEDURE:** You do not need to REWRITE an experimental procedure that has been given to you. Simply write, "As described in the lab manual (Ref)". Only if you make any changes do you need to describe a procedure for the changed portion. (Ref) should be the reference to the lab manual, including the title of the manual, the author, the year of publication, the experiment number and the page. **If you are determining or designing the experimental protocol/procedure YOURSELF (in your group), you MUST provide the procedure as briefly and simply as possible.**

**DATA and  
OBSERVATIONS/  
RESULTS:**

This section should contain any observations you make (ie. colour changes, smells, sounds, etc.) **as well as the raw data you obtain, signed by your TA.** *Your original RAW DATA must be written in PEN in your hard-cover laboratory notebook and signed by your demonstrator. A copy of all pages of the data must be attached to the end of your report (either a scan of the original or a photograph). If ANY of the above conditions is not met, you will receive a grade of ZERO!!* You should **recopy** your raw data and present it neatly in the form of a table. Any data which can be graphed should be graphed and all graphs should be included in this section. The next appendix describes how to make graphs.

**CALCULATIONS:**

Provide ONLY ONE sample of EACH different type of calculation performed in order to arrive at the final results. This is to YOUR benefit...if you make a mistake, you will get part marks for showing calculations (this way, we can figure out where you went wrong!!). If you do multiple trials, do not show the calculations for all trials. Choose one trial and show ALL the calculations for that trial (**remember: if it is not data or known values, it is a calculation!**). Calculated results for ALL trials must be summarized in a table of results. All tables should have a title indicating what is contained in the table and should clearly indicate the units for all numbers in the table. Marks will be taken off if units are not indicated!! Wherever possible, compare your results to **a known value**, and calculate a **percentage error**. Make sure you check your significant figures!!! REMEMBER: ANY literature value(s) used MUST be referenced!

**DISCUSSION:** The discussion section should relate to the introduction. It should be a section where you explain whether the theory on which you based

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the experiment proved to be valid for your results. Ideally, the introduction explains what you THOUGHT would happen before you did the lab. The data/observations explains what you GOT in the lab. The discussion should compare the two. Did you get what you expected? If so, what does that tell you. If not, what does THAT tell you? How do your predictions and your results compare? Do your results make sense? You may discuss valid errors (not “my partner screwed up!”). Provide explanations, not excuses. You should answer any questions asked in the report in this section.

**CONCLUSION:** The conclusion should be a 3 - 4 line summary of your results in sentence form, with an idea of the validity of your results (ie. The cell potential was found to have a value of 0.705 V with a percent error of -35.7%).

**DEADLINES:** Reports are due by 1:00 p.m. (morning lab), 5:30 p.m. (afternoon lab) OR 9:30 p.m. (night lab) one week after the performance of the experiment and should be submitted ONLINE as a SINGLE FILE in PDF format. If a report is handed in **LATE (up to 24 hrs after deadline) it MUST BE accompanied by a document validating the late submission or a late pass!** Any report submitted more than 24 hrs after the deadline receives a zero unless accompanied by valid documentation.

If documentation for a late lab is available, please attach it to the FRONT of your lab report. Ensure that YOUR name as well as your TA's name, your lab day and your lab week are clearly marked on the documentation.

Any sign of independent thinking or extra work will be considered for bonus points. Refer to the section called Lab Expectations just before the first experiment for more details on types of reports. Please note that NEATNESS and CLARITY will be rewarded and SLOPPY and CARELESS work will be penalized.