

Writing Lab Reports in CHEM 3590

- ❖ **All pre-lab answers and lab reports must be typewritten** using word processing software. The graphs and charts must be plotted using any graphical software (Microsoft Excel, Origin, Sigma Plot, etc.). The lab report should be organized properly; it must be easy to follow and explanations have to be clear. Write in the third person, past tense, do not say I did this or that, instead say this or that was done. Read a **research publication** to get the writing style expected. Grammar is important so check your writing.
- ❖ **Plagiarism** is a serious academic offence and all students must be familiar with the regulations pertaining to it. You **cannot copy passages** from a textbook or a journal article *verbatim* without giving a proper reference. Moreover, you must explain things in your own words (with a proper reference for your source) to demonstrate your understanding of the idea/subject. **Do not copy the explanation in the lab handout.** Any diagrams, schemes, or drawings not created by you must also be referenced. You can work on your lab reports as a team, provided that each member contributed equally, however this is limited to your discussions only. Writing of the lab report must be done individually. Each group member must submit their own report and any obvious signs of copying will result in a penalty.
- ❖ The purpose of the **pre-lab is for you** to get a better understanding of your equipment and experiments before coming to the lab. It gives you a chance to pre-calculate dilutions, weights, etc. and save time in the lab. It is worth 2% of the total marks of each lab session. Writing of pre-lab answers during regular lab hours is not acceptable. A pre-lab is required before each of the five assigned experiments and answers must be handed in prior to the beginning of the first lab of a new lab experiment.
- ❖ The lab manual should be copied from the web page before your experiment. Changes can occur during the year so all write-ups should not be copied at the beginning of the term. Check before you come to the lab that the write-up has not been modified. Modification will occur to improve the experiments over the term.
- ❖ A hard covered – bound lab book must be used to keep all of your data. The lab book will be checked and marks for the lab could be deducted if the lab book is not used to record all methods, data, dilutions, observations, etc. Changes from the lab manual should be recorded so the proper, updated procedures are written up in your report.
- ❖ If you disagree with a grade received for a particular report, you must first see the TA who marked the report. If there is still disagreement, the TA will consult with the lab instructor about the problem, and they will attempt to resolve the dispute. If you don't agree with their decision, you may then see the course instructors. It is important for us to maintain this ladder of structure.

Your reports must include the following sections (in this order):

Cover Page

The cover page of your lab report must contain the following 6 items of information:

Your pre-lab report should contain the first 4 items:

- 1) Title of the experiment
- 2) Your name
- 3) Student number
- 4) Group number (T1 to T5 and Thur 1 to Thur 5)
- 5) Unknown sample number (If any)
- 6) Date of completion of the experiment

Introduction

Introduce your experiment and give background on the material you are analyzing. Include importance of doing this work. Explain the advantage of the technique to analyse your material and limitations of the techniques you are using. Provide the reader with enough information to make it clear what your report is about: what you investigating (objectives) and why, and how is it important. Typically, a page is sufficient.

Materials and Methods

Explain the experimental methods with enough detail that they could be repeated by someone reading your report. List the instruments (including the model and manufacturer) used in your experiment, giving **all relevant** conditions and settings, which you should note at the time of your experiment. **Do not repeat the descriptive detail in the lab manual** which is given since you are not familiar with the instrument. You have to presume the person reading your method knows how to run the instrumentation.

List any reagents (including manufacturer and grade) used in the experiment. Include concentrations, solvents, etc. The material and methods should be in paragraph format or in tables. If table are used they have to be referred to and explained. They must have divisions and headings.

Results

The results should indicate your findings. You must explain your results, write about highlights, explain what the graphs or table show. Each graph or table should have at least a paragraph of explanation. Do not make graphs of table data, do one or the other. Tables or graphs should have headings and the axes should be named. They should **not** be direct copies of the instrument. The graphs and tables should be self explanatory with headings, units, names of axis and material analysed. Explanation and table/graph number should be below each table or graph. You can show chromatograms if they are relevant but they must be referred to and explained and they should be in the text of results not stapled to the back of the report. They should be reduced in size and be part of the report. Tables and/or graphs have to be cited in the text when they are used in an explanation of results. If drawings are used they should be drawn using software, not drawn by hand. The drawings should be representative of your experiment not some similar material. Show all data used in your calculations and make it obvious for the reader how you've

arrived at your answer. You normally need only a sample calculation and not all the calculations if they are the same. If a calculation is intricate to the experiment it must be shown step by step.

Discussion

In the discussion, you further discuss your results/observations as they came up in the course of the experiment. You must justify and explain your results. You compare your results to literature findings of similar experiments. If you did not get the answer you expected explain why. Determine where errors could have occurred and why. Do not blame the equipment unless you can explain or demonstrate your conclusion from another source.

If you are trying to explain a result based on an article, you have read, refer to the article and cite it in the references. You should have a number of references besides the textbook. Be precise in your write up.

Answers to closing questions:

Address the closing questions given at the end of each lab sessions. Refer to you experiment.

Conclusions

The conclusion should be related to the objectives of the experiments. Outline the conclusions **drawn** from the discussion and highlight any final results. Make suggestions how you could improve the experimental results.

References

Give proper references (using a format from a chemical journal) when you take key ideas or information from the text book, journals or any other resources. Give the web address if it is from a standard website. Limit open resources like Wikipedia. You should have a number of references apart from what you are given. Do not cite the lab manual.

Submission of lab reports

You will be submitting one lab report for each experiment for a total of five experiments.

The lab reports are due **the following week** after the final week of the experiment at the beginning of regular laboratory times. Students must give a notice of at least one day in case they are unable to attend a scheduled experiment or to submit a report on time. Late lab reports, without prior permission will lose marks.

Lab Report – General Marking Scheme

Pre lab = 2 marks

Introduction = 2.5 marks

Methods and materials = 2.5 marks

Results (5) and discussion (5) = 10 marks

Conclusions = 1 mark

Closing Questions = 2 marks

TOTAL= 20 marks