

Normal Lab Reports

For the first and second labs, you have the option of making one report per group. If you'd rather do it individually, follow the below guidelines, which will be the "normal" policy

For details on below sections, refer to weblink *How to write a Lab Report*

- 1) Abstract
 - 2) Introduction
 - 3) Theoretical Bkg
 - **4) Experimental Design/Procedure**
 - **5) Analysis**
 - 6) Conclusions
 - 7) *Questions (I may ask some specific individual extra questions related to broader applications, involving material covered on the slides from the first few weeks' Intro)
 - 8) Bibliography
- These 2 can/should be done in common with the other members of your group
- All sections other than 4 & 5 should be done individually, and combined with copies of 4 & 5, resulting in one lab report document per student
 - Authors: First author : student (you), then other members of the group
 - REMEMBER TO MAKE IT CLEAR WHOSE REPORT IT IS
 - Title: You may choose your own individual title if you like
 - refer to the web document for subsections that should be in each of these (other than 7)

371 First Lab Report

- For the first report please keep the length of the subsections to a minimum.
 - Instead concentrate on the Analysis Section
 - Specifically:
 - The usual “target” calculation(s) e.g. R_{Hall} , $d...$, ie the point of the lab...
 - As always, this should be quoted **with uncertainty** and some explanation of how those are derived.
 - **Linear fit:** More importantly, include at least one ChiSq (χ^2) linear fit, in which you clearly indicate the ChiSq value, the reduced ChiSq, explanation, based on those values, of how good the the fit is (don't stress about this answer too much *this time*), some estimation/explanation of what the error bars are on the fit parameters (although it's one way, you don't need to go as far as using the formulae given in the book/manual, instead you could do something more ad hoc).
 - Code: Include any code written for the analysis, including Excel formula's, printout of relevant sections of the spreadsheets—if you used Excel, also send me the spreadsheet file itself via email.

371 Second Lab Report

- For the first report please keep the length of the subsections to a minimum.
 - Again concentrate on the Analysis Section as before (see previous slide), but here is some more specific info:
 - **Don't forget the reduced ChiSq**, and explanation/interpretation, based on those values, of how good the the fit is: explain in words what the actual value of ChiSq means, is the probability of getting that Chi2 given that # of d.o.f. 's (See "Chi2 Probability" section of Chapter 6 in text book, you may want to also refer to Ch 4.4, which I think will be more understandable now to most people). Finally include some estimation/explanation of what the error bars are on the fit parameters and perform the following test: pick a random, reasonably small amount of a deviation (consistent with the guesstimate of what the uncertainty of the parameter should be) and recalculate what the ChiSq/Reduced ChiSq is for the best fit parameter plus and minus that value.
 - Code: Include any code written for the analysis, including Excel formula's, printout of relevant sections of the spreadsheets—if you used Excel, also send me the spreadsheet file itself via email.
 - Discussion: Include one paragraph in the conclusion discussing what aspects of the nature of the electron (charge, mass, etc...) the experiment explored, and how that differed from the answer to the same question for the first experiment you performed.

Things to point out for Report in Lab 3

- Abstract: include main result(s) a number +/- error.
- No need to pay attention to sig fig's (overly, but to some reasonable degree) . Units are important
- Figure captions!!!!
- Include details of the setups (settings of devices!)
 - PS: LAB NOTEBOOK CHECKS for Lab 4 Tues!!!! (won't look at 3— but you may need this for reports)
- Include References/Citations: You must include a Bibliography
- Include Chi2/Reduced Chi2 type calc's from previous labs (Chi2 “exercises” from Lab 2 not necessary, but some discussions).
- Remember take a look at Grade Sheet Page 9 lab manual