**Keeping A Good Laboratory Record Book**

As part of first year laboratory course you are required to keep a lab book. The keeping of detailed records of your work is essential both as a student and as a professional scientist. More generally, recording what you did, what you found, who you spoke to, how much money you spent etc are critical aspects of good business practice outside the field of scientific research. The aim of this document is to highlight why lab books are important and how you should go about keeping them.

1. **Why keep a lab book?**

Some of the most important of these are: Experiments may take months or years to complete, and analysing data and writing up your results is impossible without decent records. You will never remember all the critical details without a written record. Indeed, you often don’t find out what the critical points are until well after an experiment has been finished. On occasion, very significant amounts of prestige or money can be involved in who did what and when. For this reason, lab books are legal documents of record and in industry it is very common for lab books to be counter signed by your supervisor every week to set up a well-defined paper trail. Both industrial and academic research projects are often carried out in large teams. People leave projects, go on holiday, have accidents, equipment fails etc. For this reason, a permanent record of work done, experimental details, operating procedures etc need to be available, and, most critically, be understandable to other people. Lastly, on a more personal level, your demonstrators will mark your lab book and your degree results will to some extent depend on how well your lab book is kept.

1. **What should a lab book be?**

A lab book should be a real-time record of what you do in the lab as it happens. It has to be:

* **Complete**: The lab book should contain everything, including the mistakes. If something is wrong, cross it out in a way that still lets you read it.
* **Tough**: No loose papers, graphs etc. Securely glue or staple things in. In a real lab environment expect to have your lab booked dropped, kicked, used to prop up equipment, stained with coffee and so on.
* **Clear:** The lab book doesn’t have to be pretty, but it must be legible and contain sufficient detail (headings, figure captions, table titles, units etc) to make the contents understandable years later.
* **True:** The lab book is a record of what you see and do. Don’t embellish it, don’t draw plots of raw data the way you think they should look, draw them the way they are. Don’t throw away “bad” points and things which don’t appear to agree with theory at the time. 1

1. **What should your lab book include?**

A lab book does not have to be carefully structured and presented to the same degree as a formal lab report. However, there are a number of key thinks that need to be included. A complete record of an experiment or project will probably contain the following points:

**Index**

Number the pages in your lab book and keep the first two pages free to record which experiments are written on which page. Indexes can be useful for referring to previous experiments.

**Heading/title**

A suitably descriptive title for the work.

**Date and time of start** (and additional dates for each day you work on it).

**Aim**

What is it that you want to do? Background References to lab scripts, text books, manuals etc

**Description of set up**

Best accomplished with the aid of simple figures. What apparatus did you use, how was it put together, what was it supposed to do? For materials list, often the page number of the STAWA book will suffice unless there have been changes made

**Procedure**

Again reference to page can be made unless changes have been made

**Results and data**

Clear, well labelled table with units completed with pencil and ruler. Errors on individual readings

**Summary/Conclusion**

What was the final result, what worked well, what didn’t, what could be improved in the future? This part is particularly critical for the “short” lab experiments

**Discussion questions**

Written clearly in full sentence answers and in your own words. Research may need to be conducted for some questions. The teacher will allocate which questions you need to complete for each experiment