**Laboratory Notebooks**
The maintenance of the laboratory notebook remains an essential skill for a practicing scientist and the ability to write a concise account of what has been achieved is often necessary. Your lab notebook should be kept in an accepted style so that if necessary another scientist could continue your work. Here is a guide to illustrate how these aims can be achieved.

**Maintenance of a Laboratory Notebook**
A laboratory book should always be a hardback book, clearly labelled on the outside and inside of the front cover with your name and contact details i.e. e-mail address, mobile phone number etc. At the front of the book there should be a clearly labelled contents page showing the date on which an activity was undertaken, its title and the page number within the book where it can be found. You can keep other notes on lab briefings, etc, at the back of the book.

Your lab book should have rough notes, calculations or sketches on the left-hand side page and your neat tables of results, analysis, error estimates and other comments on the right-hand side of the page. Under no circumstances should you be writing on bits of paper or scrap, and the demonstrators are instructed to tell you not to do this (use the back of the book if necessary, always date it and forward refer to your neat record at the front). Laboratory notebooks should be neat and well organised and should be a contemporaneous record of what you have done. Your record (in one lab notebook) should enable you or another scientist to reproduce the analysis taken. As the laboratory script also forms part of your laboratory record, there is no information in the script that you need copy out into your notebook unless you deem it essential to follow your analysis.

***Introduction***
After examining the script, it is often worthwhile summarising your objectives. Given the scripts a long and detailed it is worth dividing the work in to sections. An effective method is to write a brief introduction in the form of a numbered or a bullet style list, where each item consists of typically 2 lines and never more than 3 and limiting the list to 6 points. One of your bullets should identify the key outcomes of your analysis.

***Method***
The next section in your account will obviously be your notes on your data analysis method. Most of the basics are covered in the script; however, you need to keep a record of the choices made during the laboratory. In short, this section should detail (in bullet points) your chosen parameters (e.g. which images uses, where cross-sections are made, width of cross-sections and so forth).

***Results***
The results and analysis section will require some thought (and experience). For example, it might be appropriate to record unsuccessful approaches, comment on the problems uncovered and then address them by modifying the method (see discussion). You may wish to organise this section with subheadings.

***Discussion***
It is then necessary to have some discussion of the results you have obtained, what they mean, and conclusions that may be drawn. However, be aware conclusions must be cast in the framework of known errors and an estimate of these errors. It is useful to identify how the analysis may be improved, how the errors could be reduced further and any other difficulties.

***Errors***
Before making conclusions, it is essential to consider and were possible assess errors in the measurements we are always concerned with the accuracy of our measurements.
When calculating errors, you may refer to the Departments standard set of notes.