Writing a lab report is a central component of higher education. Scientific and technical advances are conveyed through written documents. These can be research papers, technical reports and newspaper articles. The ability to write effectively is essential for the scientist or the engineer. Research and project work at university is an excellent opportunity to produce simple, clear and readable reports for a specific audience. You need to learn this skill for study and for future work, and the more you practise the better you will become.

The hallmark of good technical writing is clarity. If you are able to present your ideas clearly, you are also training yourself to think clearly. This guide will help you to master the process of writing - which is difficult for all of us - and to identify the contents of each section of a report.

The lab notebook

As an engineering or science student you will be carrying out work in the laboratory. Any good professional scientist or engineer is expected to keep information logged in the lab notebook. You should complete your lab log during your lab session so you can record observations and any key data as it occurs. Make sure you come to a conclusion at the end of every experiment. Your lab log should be a hard-backed book that will serve as a diary for all your lab sessions. Remember to record all observations accurately.

<table>
<thead>
<tr>
<th><strong>Title in lab notebook</strong></th>
<th><strong>Brief description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Table of contents</td>
<td>List experiments and investigations, with page numbers.</td>
</tr>
<tr>
<td>2. Description of your work</td>
<td>Briefly state what you did in a few sentences.</td>
</tr>
<tr>
<td>3. Experiment</td>
<td>Give it a title, write down the question you are trying to answer and your hypothesis.</td>
</tr>
<tr>
<td>4. Materials and equipment</td>
<td>List of everything you need, to carry out this experiment.</td>
</tr>
<tr>
<td>5. Methodology</td>
<td>Say how you carried out experiment and add diagrams.</td>
</tr>
<tr>
<td>6. Data</td>
<td>Prepare data tables beforehand and explain what the data represents.</td>
</tr>
</tbody>
</table>
7. Results
Identify key data that relates to your hypothesis, analyse and summarise the data and present it in clear graphs or tables.

8. Brief discussion
Consider whether your results support your hypothesis, state what you have learnt and discuss how you could improve the experiment.

9. Date
Don’t forget this!

**Checklist for lab notebooks:**
- Write with a **pen** not a pencil.
- Give your lab session a date and title.
- Write simply and clearly so that someone else could repeat your experiment from your notes.
- Prepare data tables beforehand and complete them during the experiment.
- Put a line through mistakes and make clear corrections, explain what changed and why.
- Make drawings where necessary.
- Record your results carefully, make conclusions, offer suggestions and evaluate any errors.

**Before writing your lab report, check:**
- Who this report is for (the reader)
- What is the structure of the report (your tutor may have the template for you to use)
- Is all the necessary information available (see your lab notebook)
- Are there relevant references to place this work in an established area of scientific research (check with your tutor if this is necessary for your report)

You will probably assume that your reader will be a tutor. However, since your tutor knows this topic, you may feel you do not have to ‘spell everything out’. So, it may be better to write for a friend who is interested in this topic but does not know too much about it. This way, you need to make everything clear. Having a reader in mind is very important; it determines how you write.