

Instructions for a Laboratory Report

The laboratory report must be structured so that it is manageable and easy to read. Laboratory reports must follow the IMR&D structure (introduction, methodology, results, discussion, and conclusion) with some additional elements.

You should ask your course manager about the expected length of each section as this likely differs between courses.

Structure for laboratory reports:

1. Title
2. Abstract
3. Introduction
4. Methodology
5. Results
6. Discussion
7. Conclusion
8. Author contributions
9. Reference list
10. Appendices

1. Title

- Title of lab report
- Course name
- Date of submission
- Team no. and the names of the authors

2. Abstract

The abstract gives the reader a short “preview” of what they can expect to read in the project. Abstracts should be one paragraph, of about 250 words. No references, subheadings, or abbreviations in an abstract. An abstract should contain:

- Why is the topic of interest?
- Research problem(s) you investigated.
- The basic design of the study.
- The major results.
- A brief summary of your final conclusions.

3. Introduction.

The introduction should contain the following:

State the experimental problem and briefly state the theory behind the problem.

Describe your experimental approach.

State your hypothesis

State how you will test your hypothesis.

4. Methodology

Describe how you obtained your results in a way that others could replicate them. It should include a step-by-step protocol and a figure describing the experimental approach. The methods should also include:

- Source of material.
- Analytical methods, including brand and model for the analytical equipment.
- Reference to previous studies and standard procedures (if any) and modifications.

5. Results

This is where you present the results of your experiments. Before you include any figures or tables, you need to introduce your results section with a paragraph.

- Describe all the results in a short form in the text. All tables and figures must be described and referenced in the text.
- Include subheadings in your results
- The results section is not a diary of all the data you have collected during the whole semester – only show results that are important to answering your hypotheses.
- It is important that you do not discuss the results or speculate as to why something happened; this is what makes up the Discussion section.
- Make tables and figures of interesting results, and decide what messages to communicate. Only the edited results should be included.

- Raw data (if desired) and results not interesting enough for the main text can be placed in an Appendix at the end of the report. The amount of raw data determines whether it is useful to present in the Results section or the Appendix. All relevant data must be shown in the results section in some format *e.g.* data from 100 points can be summarized in a plot.
- When data is processed, provide examples of the calculations. Don't show the calculations for all data points, rather show the calculations for a single representative data point.
- Format of figures
 - Make figures clear and easy to read and keep always the same format
 - Remember to add the axis legend
 - Don't repeat the same information in different figures or in tables
 - Remember to number the figures and tables
 - Figures captions are place under the figure
 - The figure caption should include a description of the figure and explanation of what is being presented
- Format of tables
 - Tables need to be clear and easy to read and always have the same format
 - Tables need a table number, a table title, and the units of the data need to be clearly specified
 - Use footnotes for further explanation.
 - Be accurate with numbers. (significant figures)
 - Tables caption are place above the figure.

6. Discussion

This where you discuss your results:

- Highlight the most significant results, but don't just repeat what you've written in the Results section. *Remember to refer to your figures with their figure numbers.
- How do these results relate to the original question?
- Do the data support your hypothesis?
- Is there another way to interpret your results?
- How does your experimental value compare to theoretical or literature values? Try to explain any discrepancies.

7. Conclusion

A brief description of the main findings and perspectives from the study.

8. Author contributions

Here you should briefly state which author did what in the article; just refer to the authors by their initials.

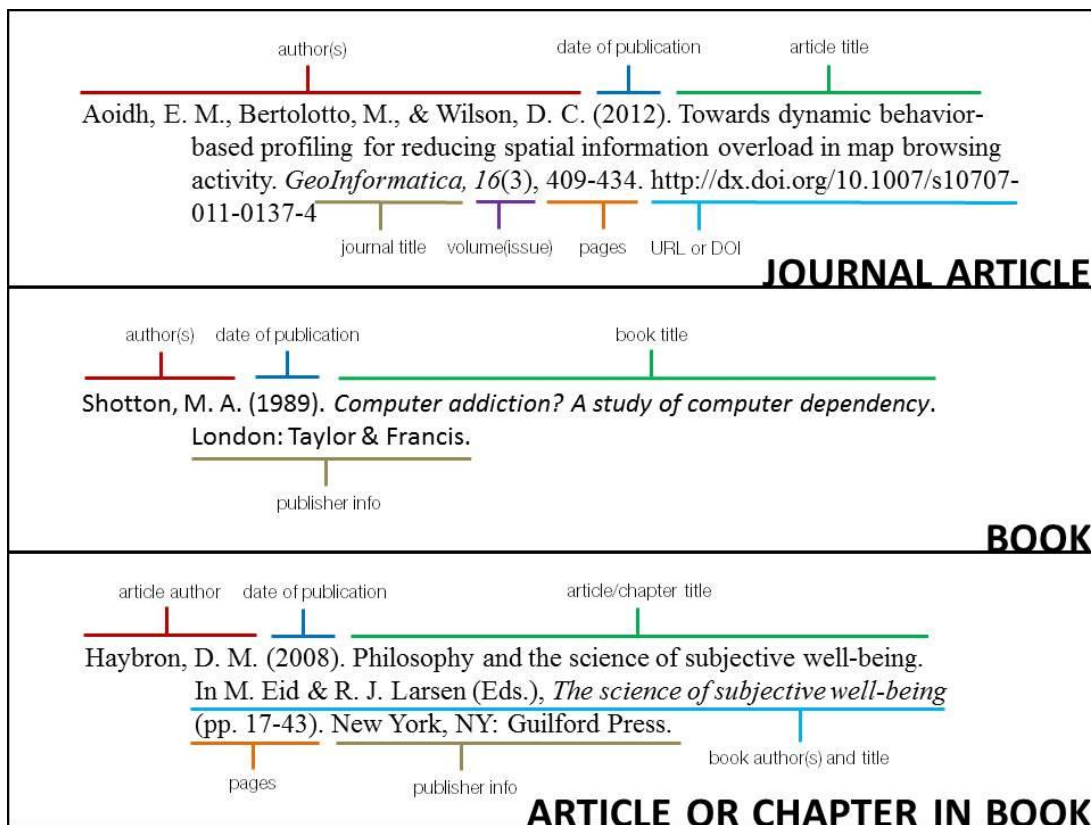
e.g. All experiments were designed by S.M.W, C.M.P, and E.J.E. S.M.W carried out assays, C.M.P performed statistical analyses, E.J.E undertook modelling, all authors wrote and reviewed the final manuscript.

9. Reference list

Different reference styles can be chosen. However it is important to be consistent during the whole document. All references must be included in the text. (As numbers or author last name and year).

It is recommend to use a reference management software such as Mendeley.

At the end of the document, a reference list is included and all the reference information must be added



10. Appendix

In appendices you include methods and results which did not make it into the main text.

- Your appendices should be as clear and easy to read as the main figures and tables of your text

- Your appendices should be numbered
- Refer to your appendices in the main text using their numbers e.g. Unprocessed data for Figure 1 is shown in Appendix 1.
- Appendices could include:
 - untreated raw data can be inserted,
 - program scripts e.g. python
 - special protocol used