

Senior Sophister Project Reports in Physics, and Physics and Astrophysics, 2016-2017

Guidelines for writing final project reports

Your project final report should contain the following sections:

- Title page
- Abstract
- Acknowledgements
- Contents
- Introduction
- Theory/Background
- Experimental/Computational Method
- Results and discussion
- Conclusions
- Bibliography/References
- Appendices

At the beginning there should be a **Title page** (no specific format), with next a page containing a short **Abstract** (around 100 words) summarising the whole work. After this you must acknowledge the support you received from the project supervisor, postgraduate students, etc in a paragraph entitled '**Acknowledgements**': examples of what is required may be found in the Appendix below. For students who have been working over the summer in the laboratory where they will be pursuing their project, the project must be distinct from the summer work and a statement confirming this is required in this paragraph. Then there is a **Contents** page - so make sure that the report is paginated. The pages for the sections from Title page to Contents are numbered i, ii, iii, iv, v etc; from Introduction onwards page 1, 2, 3... is used.

In the **Introduction** you should describe concisely the area of physics in which you are working, perhaps beginning at a non-specialist level and ending at a senior undergraduate level. You should clearly outline the problem that you have been set, and introduce the experimental methods (where appropriate) and methods of analysis that you are going to use in later sections. You may wish to include a description of physical theories relevant to your work and these could be included in the **Introduction** or in a separate **Theory** or **Background** section, as appropriate.

The section entitled '**Experimental Method**' (or '**Computational Method**') should give an adequate, but not overly detailed, description of the experimental methods you actually used and/or the method of analysis. Include figures as appropriate.

In the section entitled '**Results and Discussion**', the results should be presented in a suitable form, e.g. tables and graphs. If there are many results then the less important ones may be relegated to an Appendix or even omitted. Do not include tables or graphs without reference to them in the text. Remember to include error analyses of your results. All figures (including graphs) and tables must be numbered and captioned, and referred to in the text. By convention, figure captions go below the figure, table captions go above the table. In discussing the results, you should address whether you achieved the goals set for the project, the significance of particular results, how you might have improved the experiment, suggestions for further work, etc. Use your common sense and imagination when writing this part.

Any formal article has a section at the end for a **bibliography** (list of related works, usually books) and references to books and journal articles actually cited in the text. Use a standard format when citing books and articles. Recommended formats are, for a book,

H.D. Young and R.A. Freedman, *University Physics* (9th edn, 1996) pp 1193-94, Addison-Wesley and for an article,

J. Bloggs, *Phys. Rev. Lett.* **76** (1998) 1234 (volume, year, page number).

References in the text to a book or article are cited using either

- a consecutive numbering system (e.g [1], [2], ...) with the references in the bibliography arranged in numerical order, or
- the surname of the first author of the article enclosed in parentheses (eg [Bloggs]). In this case the references in the bibliography are arranged in alphabetical order.

The main body of the final report (“Introduction” to “Conclusions”) **must not exceed 30 pages**. The title page, abstract, acknowledgements, contents and appendices are in addition to this, and the report should have a soft back binding.

The report should be produced using a word processor (remember to make adequate backups!). **A 12 point font size must be used, with 2.5 cm margins. The text must have a line spacing of 1.5.**

Prof Jonathan Coleman
Incoming Senior Sophister Year Coordinator

April 2016

Appendix

“Acknowledgements” are necessary to clarify your role in the project and the help you received. Two examples are given below.

Physics

I was shown how to prepare samples by research student AB. It was necessary to adapt the sample holder, which I did with the advice of workshop technician CD. I made a range of samples and characterized them myself using a number of different experimental techniques, to which I was introduced by postdoc EF. I was shown how to use the analysis software by research student GH. It was necessary to modify the software for my samples, which I did with the advice of postdoc IJ. I analysed the results and interpreted them myself. My supervisor commented on an outline of the project report. I am grateful for the advice and encouragement given by all members of the research group.

Astrophysics

I retrieved the uncalibrated astrophysical data from the ABC archive and, using the recommended software, I calibrated the spectra. Postdoc DE gave me his FGH spectral extraction software which I then modified for my project. The atmospheric model was provided to me by collaborator IJ. The spectral line measurements and interpretation are my own. My supervisor and IJ commented on a draft of the project report. Advice was given by all and gratefully accepted.