Instructions for Writing Reports

This is a rather long section with a lot of detail in it. This is because the department (and employers) regard the acquisition of communication skills as very valuable. I hope that these notes will help you to develop those skills and that you will take pride and pleasure in that development. You will find that you will not absorb all this information at a single reading. You should refer to these notes whenever you are doing a significant piece of writing and especially when you are writing your Project Report.

These instructions have been prepared to indicate to both staff and students the expected standard of report writing and they apply to all reports and the Senior Sophister Project. These notes are designed to help students to avoid common faults and to improve the presentation of work. While directed towards the writing-up of a major project report, almost all the advice can be applied to short reports and essays which form the bulk of the in-course assessments during the Sophister years.

Reports should be divided into the following standard sections:

Title
Summary
Acknowledgements
Introduction
Methods
Results
Discussion
References
Appendix

Very occasionally the nature of the material may require a different format. **Students should consult supervisors before deviating from the standard arrangement.**

**Title**
This should be informative without being too long. Abbreviations should be avoided.

**Summary**
This should be in the same form as Abstracts submitted to the *Journal of Physiology*. That is, it should not exceed 300 words or one A4 page, and should include an outline of the experimental approach, the main results (with relevant statistics) and conclusions, but no Figures or Tables.

**Acknowledgements**
The acknowledgements "... should as the minimum, consistent with courtesy." *(J. Physiol.) Notice to Contributors. 522 (1), v. [q.v.]*. The Acknowledgements should be placed at the end of the text (before the references) except in the Project Report, when they should immediately follow the Title and Summary.

As a matter of courtesy the all staff mentioned should be given a title (Prof., Dr, Mr, Ms) and both forename and surname.

Work contributed by others to your project must be acknowledged. Such a situation would arise if, for example, stored samples generated by another researcher were used in the project or if the nature of specific experiments to be included in the project dictated that they must be carried out by an experienced researcher. The titles and names of such contributors and the precise nature of their contribution must be included in this section in a clear statement of acknowledgement. **An omission of such an acknowledgement where required is plagiarism, which, as outlined elsewhere on the Department website and in the College Calendar, is regarded by College as a serious offence, and the student concerned will be penalised.**
All the foregoing are ‘preliminaries’ and should not be numbered with the main body of the text. Instead, give preliminaries Roman numerals (i, ii etc.). The pages of the main text should be numbered using Arabic numerals (1, 2, etc).

**Introduction**

On the whole short introductions are preferred. A long summary of the literature is not necessary and is better placed in the relevant sections of the Discussion. A clear statement of the problem and the immediate background as well as the aims of the project and its relevance should be given.

**Methods**

A clear account of all the animals, materials, methods (including statistical analyses) and experimental designs used must be given so that others can repeat the experiments. (The anonymity of human subjects must be preserved, by using code numbers or letters.) In particular, it should always be clear to the reader exactly what is being measured, and how many measurements (or animals or subjects) there are in each value. Failure to do this will result in loss of marks. It may be useful to clarify here the contribution of others to the practical work (see Acknowledgements).

**Results**

This is usually the most badly-presented section of reports and yet it is the most important. The reader must be led carefully through the results step by step. The main observations must be brought out; it is NOT sufficient to present figures or tables and then leave the reader to work out the conclusions (see later sections: Figures and Tables). It is essential to include at least one original record (oscilloscope trace, photograph, thermogram or whatever) so that the reader can form an opinion about the clarity and reliability of the observations.

**Second-order variables.** If you are using some transformation (e.g. percentages) of the raw data, you should explain why you are doing so and, if possible, what, if any, difference the transformation makes.

**Presentation of Statistics.** This requires particular attention and is a skill which must be acquired. Always state clearly what measure (mean, etc.) and what measure of variation (SD, SE, etc.) is being used. The number of observations (n) must be clearly stated and specifically given if SEs are used. Do not give excessive numbers of decimal places; measures of variation should have one more significant figure than the mean. It is undesirable to list values of t (etc.). It is much more important to state clearly the direction and magnitude of change. Do this first and then give the result of any tests of significance.

*Example:* ‘With a 20% load, the pace length increased 30% from 1.2 ± 0.25 m to 1.6 ± 0.28 m (P <0.05).’

**Significance Testing.** Express significant differences by probability values or conventional symbols: 
* = P <0.05, ** = P < 0.01, *** = P < 0.001.

Over-interpretation of results is a serious error. You must demonstrate that you understand the significance of statistical testing. If a difference (or other statistical result, e.g. correlation) is not statistically significant, you should not treat it as if it is. If you want to discuss a non-significant ‘trend’ in your results, make it clear that you know the difference. (You should also have a sound physiological or biological reason for doing so.)

**Discussion**

This section often presents the most problems. In particular, it is often difficult to decide what should go in the Discussion and what should go in the Results (see Preparation of a Synopsis, below). A good guideline is ‘When in doubt, put it in the Discussion’, and leave the presentation of results as uncluttered as possible.
The Discussion will include the following.

a) A critical discussion of possible sources of error in the results. Critical means not only listing the sources of error but also saying how important they are likely to be.

b) A comparison of the results (not forgetting the control values) with those in the literature.

c) A discussion of the relevant literature.

This list is by no means exhaustive and the categories will often overlap, but it should be helpful at the planning stage.

References

Note that all references cited in the text must appear in the list of references — and only those references. General reading such as textbooks should not be cited, unless you are using a figure or referring to a very specific point. Please also bear in mind College’s regulations on plagiarism when citing others’ work.

In the text…

• When you make a scientific statement of fact, you must reference an original article with data to support this fact (Smith et al., 1999).

• If there is only one author, quote the name only followed by the year the paper was published (Jones, 2000).

• If there are two authors, use both names followed by the year the paper was published (Murphy & Quinn, 2001).

• If there are more than two authors, use et al. (always in italics with a full stop afterwards), which is the Latin term for ‘and others’ (Smith et al., 1999).

• If you want to reinforce the point and use several articles, they should be listed from the earliest to latest, and separated by a semicolon (Smith et al., 1999; Jones, 2000; Murphy & Quinn, 2001).

• If you are quoting two articles by the same person in the same year, denote one as ‘a’ and one as ‘b’. This is done alphabetically according to the second author on the paper (Smith et al., 1999a; Smith et al., 1999b).

• When including the reference in the text, follow the following formats. ‘Smith et al. (1999) have shown that…’, ‘It was shown by Smith et al. (1999) that…’.

Style of References

The style used in the Department is that of the Journal of Physiology. Note that you should put journal titles in full and not attempt to abbreviate them.

There are different styles for journal articles and books, as illustrated below.

Paper


Book

Chapter in a book


Appendix

This should contain essential raw data and details of any other methods (e.g. staining techniques *or other routine procedures*). Note that all entries in the Appendix must be properly described in suitable legends. It is not inappropriate to repeat relevant statistical summaries in the Appendix. All Tables in the Appendix must have fully descriptive titles so that they can be understood without reference to the main text.

Figures and Tables

These are a great deal of trouble to prepare and it is a pity to waste them for the sake of a little attention to detail. All Figures and Tables must be numbered and have a descriptive legend, so that each can be understood without reference to the text. Legends precede Tables and follow Figures. It may be desirable to include the important observation or conclusion in the legend, especially in histological figures. All units of measurement and statistical parameters must be identified. Axes on graphs and columns in tables must be labelled so that it is clear what each point or value represents. Try to keep graphs uncluttered — three lines is plenty. Use the conventional symbols of open and filled squares, triangles or circles. Shading will aid clarity in histograms. Tables should be as simple as possible. Try not to put all your results in one huge Table because the effect is too daunting for the reader.

The commonest fault is the failure to integrate Figures and Tables with the text. It is no use saying: 'The results of this experiment are summarised in Table 3.' and then proceeding to the next item. The reader must be guided and the main points clearly brought out — even at the cost of some repetition of material between legend and text. If Figures or Tables are large it may not be possible to include the legend on the same page. In such cases, put the legend on the facing page. If Figures, Tables or Plates (mounted groups of photographs) are brought together, rather than being interspersed with the text, say so and tell the reader where they are. Note that if it is necessary to put a figure or table sideways in the text, it should be arranged so that is viewed from the right.

If you have copied a figure from somewhere else, or modified it only a little, the original figure must be acknowledged (with reference in the legend and in the list) (see Plagiarism).

Grades of Heading

The Journal of Physiology sets out the grades of heading which should be used. Careful attention should be given to this point at the planning stage. Examples of the usual grades of heading are given below with a short description of each in brackets). Use bold or italic type as shown.

RESULTS

[capitals, centred, no underline or stop]

Walking speed 1.0 m/s
[Upper and lower case, centred, italic, no stop]

Control (no load)
[Italic, full out, no stop, text full out on next line]

Walking parameters. [Indented, italic, stop, text same line]

If further subheadings are required, use further indentation and numbers or letters.
Word Processing

There are some conventions which should be followed. Paragraphs should be created by leaving a blank line and not by indenting. Do not put spaces before a punctuation mark because it might then be carried over to the beginning of a new line.

All punctuation marks should have only a single space after them, never before. Word-processors allow you to cut and paste graphs and figures into the text rather than putting them on separate pages with legends on the facing page. This should be done wherever possible.

Use the spelling checker, but ensure that it is set to ‘English (UK)’ and not ‘English (US)’ by using the ‘Language’ option on the Tools menu. Remember that you will still need to proof-read the final draft; the spelling checker will not find all errors. Pay special attention to names and technical terms.

Spelling. Here is a list of the correct forms of words that are commonly mis-spelled.

<table>
<thead>
<tr>
<th>Correct Form</th>
<th>Incorrect Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>accommodate</td>
<td>dependent (adj.)</td>
</tr>
<tr>
<td>occurred</td>
<td>separate</td>
</tr>
<tr>
<td>loose (i.e. not tight)</td>
<td>lose (i.e. mislay)</td>
</tr>
<tr>
<td>principal (i.e. main)</td>
<td>principle (i.e. underlying tenet)</td>
</tr>
</tbody>
</table>

Note that all words ending in-ant or-ent should be carefully checked. The ending ‘-atley’ does not occur in English; ‘-ately’ is correct.

‘UK English’ rather than ‘US English’ forms should be used: e.g. fibre not fiber.
Student’s t test should have a capital and apostrophe; the t should be italicised.
“It’s” should never be written in formal prose; always use ‘it is’. The possessive is “its”.

Numbers less than eleven should be spelt in full unless they refer to specific units, e.g. ‘6 days’, but ‘six subjects.’

Note that ‘s’, ‘h’, ‘min’ [no stop] and ‘d’ are the abbreviations for seconds, hours, minutes and days, respectively. The multiplier ‘k’ as in km (kilometre) is always lower case. The abbreviations for units never take an ‘s-plural’.

Headers and Footers are provided in word processors: a Header can be used to insert space and/or a running title at the top of each page; a Footer does the same at the bottom of the pages.

Pagination should be checked as the last stage in preparing a manuscript. It is usual to adjust the text so that odd lines or parts of lines do not appear at the beginning or end of a page. The adjustment may be done by inserting blank lines in appropriate places or by using the Insert Page Break command. Word has a ‘Control widows and orphans’ option (see Format menu, Paragraph, Line & Page breaks tab). Remember to set the page style (Page Setup) and printer type (via Chooser) before doing this and work from the beginning of the text.

Font. Choose your font with care. Some fonts take up a lot of space and others may not be suitable for laser-printing. Underlining does not look very attractive in laser-printing and you may prefer to use italics for emphasis.

Special characters. There are many special characters which will be useful to you, such as the degree symbol (° — alt+k) and acute accents or fada (alt+e, followed by the letter you wish to accent) and grave accents (alt+-, followed by the letter). Greek characters are available in the font Symbol.

Alan Tuffery, 2002, Revised by Áine Kelly, 2008