



GUIDELINES FOR WRITING a PhD or a Master THESIS

When writing your thesis, you will normally be using the past tense, with the final goal of constructing a thesis that is as clear and concise as possible. You should follow the standard format, in which the thesis is divided into a number of separate chapters, the contents of which are discussed below. Each chapter is usually started on a new page and divided into sections for the convenience of the reader.

Ideally, your PhD thesis should be in the range of **150-200** pages. It is the quality of the thesis rather than the number of pages that matters. Generally, a thesis with short, simple phrases and words is often better than a thesis with long ones.

Generally, the chapters in a thesis are presented in the following order: Introduction; Methods; Results; Discussion; Conclusions.

Of course, there are variations to the above basic structure. For example, when a thesis includes several correlated experiments, it is often more suitable to have a series of self-contained chapters, each has its own Introduction, Results and Discussion sections. In this case, the last chapter of the thesis will include the General conclusions and discussion, where the results of the different chapters are discussed into a broader context and the implications of the findings are highlighted.

• **ACKNOWLEDGEMENT**

Your thesis **MUST** represent your own work. If some of your experiments have been conducted as a part of co-operative projects, you should indicate the extent of your own contribution.

Whenever needed, you can refer to e thoughts, views or results of other people, but in all these cases, you **MUST** acknowledge the source appropriately. You can quote sections direct from published work, but only within quotation marks and you must tell where you found that information by citing the source. Failure to do so is termed 'plagiarism', which can be defined as "the substantial use of other people's work and the submission of it as though it were one's own work". Plagiarism is classified and punishable within the University as a serious academic offence.

- **ABSTRACT**

The abstract represents the overall summary of the thesis, where the purpose and nature of the project, the experiments carried out, and the important results, are all described in brief detail. Ideally, the abstract should not exceed **300** words.

- **GENERAL INTRODUCTION**

The main aims of the General Introduction chapter are: (1) to introduce the reader to the main part of the thesis; (2) to justify why this particular project topic has been chosen; (3) to give a background to the work undertaken; (4) to present the problem that is being studied and its context; (5) to highlight the research hypothesis; and (6) to explain the aims of the project.

Usually, the introduction includes a review of the existing information (the Literature Review) and an account of relevant theory and methods of investigation. This section should be written with focus on the problem being studied, and it must not contain irrelevant statements. Also, repetition of the Literature Review in the discussion section should be avoided.

- **MATERIALS AND METHODS**

The section provides a brief, concise description of the materials being used and the techniques being utilized in different levels of the study (such as data collection, data sampling, and data analysis). This section should provide description that is sufficient to reproduce the work highlighted in the study. Full details should be provided when your experiments involve new techniques or modifications made to an existing method, otherwise you can refer to standard techniques. This section should also provide a detailed description of the type of statistical analyses performed in the study.

Sometimes it may be suitable to have a General Materials and Methods chapter containing materials relevant to the entire thesis, with details of approaches unique to specific experiments being reserved for the appropriate chapters. Generally speaking, the Materials and Methods section is written in the simple past tense.

- **RESULTS**

This section includes the experimental findings of your study, which are usually represented as figures and tables, but the same data should not be presented in both ways, unless this is necessary to make a particular point. Also it is not necessary to include 'raw' data in the results unless they are relevant. Figures and tables should be numbered; Table captions are placed above the tables, while figure captions are

placed underneath the figures. Both captions should be detailed enough to enable the reader to understand the figure/ table without referring to the text. Standard errors or standard deviations should be included in Figures and Tables where appropriate.

Each result chapter in your thesis should usually contain a concise Discussion section that highlights the importance of the results presented in relation to previous knowledge. In some cases it may be more suitable to have only a single Discussion chapter at the end of the thesis.

- **GENERAL DISCUSSION**

In this section, the results presented in the various Results sections or Chapters are drawn together, evaluated, and discussed against the background of the relevant literature. This section should also highlight the possible theoretical or practical significance of the results obtained and suggest possible areas for future research. The strengths and weaknesses of the data should also be discussed, together with explanations for unexpected results. One thing that is important to keep in mind while writing the General Discussion section is to avoid lengthy repetitions of the data that has been presented previously in the results chapters.

- **CONCLUSIONS AND FUTURE WORK**

This section, which may be either a separate chapter or more usually a concluding section of a Final Discussion, should summarize the main findings, in addition to highlighting the study conclusions and possible directions for further research. However, while covering the above points you should avoid repeating the thesis Abstract or materials already presented in the Final Discussion.

- **BIBLIOGRAPHY**

All references cited should be presented in the Bibliography in alphabetical order of the first author, and where necessary by the second and subsequent authors, again using the Harvard system of author and date citation.

References to journal papers should include the following:

1. Name(s) of author(s) in capitals followed by initials.
2. Year of publication in parentheses.
3. Title of papers (without capitalization).
4. The full title of the journal in italics (or underlined if italics are not available).
5. Volume number and page numbers.

The correct style of punctuation to use can be seen in the example set out below. Unlike the rest of the thesis (which should be double-spaced throughout) the Bibliography should be in single-line spacing within entries and double-spaced between references, as shown. The second and subsequent lines of each reference should be indented, as indicated

DASCH, J.M. (1987) Measurement of dry deposition to surfaces in deciduous and pine canopies. *Environmental Pollution*, 44, 261 - 277

References to booklets and bulletins are laid out in a similar manner to journal papers. However, it is the title of the booklet or bulletin that should be in italics. Where no author's name is given for such publications, the reference in both the text and the Bibliography should be to the adopting organization (eg MAFF, FAO, WHO,...).

Therefore, only in exceptional circumstances you may need to include anonymous references in the thesis; an example of which is illustrated below:

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD (1975) Energy allowances and feeding systems for ruminants. *Technical Bulletin* 33. HMSO, London

References to books can be of two types, references to a whole book and references to parts of a book. Both should give the name(s) of author(s), date of publication, title of book (in italics), name and location of publisher. References to parts of books should also include the title of the chapter with its pagination, but without capitalization as indicated below

FRITSHEN, L.J. and GAY, L.W. (1979) *Environmental Instrumentation*. Springer, New York

O'CONNOR, M. and WOODFORD, F.P. (1975) How to cite references. In: *Writing Scientific Papers and Theses*, pp. 79-86. Heinemann, London

HOLMES, C.W. and CLOSE, W.H. (1977). The influence of climatic variables on energy metabolism and associated aspects of productivity in the pig. In: *Nutrition and the Climatic Environment*, pp. 51-73 (Eds. W. Haresign, H. Swan and D. Lewis) Butterworths, London

• APPENDICES

Appendices are the section at the end of your thesis that gives additional or supplementary materials that are not strictly necessary for the presentation and interpretation of the data, but may be useful to other researchers in duplicating the study. This section is the place where 'raw' materials are stored and full statistical analyses are included.

INSTRUCTIONS FOR THE PRESENTATION OF YOUR THESIS

The current University regulations for theses presentation are as follows: Theses should be in double-spaced typescript on single-sided A4 paper. There should be a margin of at least 1.5 inches, preferably 2 inches (5cm), on the left side of the page, both for typescript and for diagrams, to allow for binding. Other margins should be of at least 1 inch (2.5 cm). The text should preferably be in a proportional font at a point size of 12.

Students are advised to check current instructions before printing.

HEADINGS AND TITLES

The title of the thesis should be typed on the first page in capitals (not underlined), followed by the name of the Author, year and degree sought. The components of the thesis should follow a logical system of numbering, for example:

1. CHAPTER TITLE Chapter titles should be in bold upper case letters. They should NOT be underlined or punctuated, and should give the chapter number and its title (eg INTRODUCTION or RESULTS etc). The chapter headings may be printed in a slightly larger point size (14) than the rest of the thesis. The chapter title should be left justified and the first line of text should start immediately with a new paragraph.

1.1. (etc.) MAIN SECTION HEADINGS Main section headings should be in capital letters as above. They should NOT be underlined, indented or punctuated. They should be followed by a new paragraph. The number attached to each main section heading should give the chapter and section numbers, followed by the main section heading.

1.1.1. (etc.) Sub-section titles Divisions of main sections should be preceded by their chapter numbers, their main section number and their own section number, as shown. Again, these headings should NOT be punctuated or underlined. The first letter of each word in the subsection title should be in capitals; the remainder should be in lower case. The whole heading should be in bold typeface. Each subsection of a main section should be followed by a new paragraph

1.1.1.1. (etc.) Further sub-divisions (sub-subsection titles) If it is necessary to break down the divisions of main sections any further, then sub-section titles should be used. Ideally these should be in italics, but if this is not possible, they should be in lower case and underlined. They should be numbered with the chapter number, the main section number, the sub-section number and their own sub-subsection number, and the text should start as a new paragraph. Further levels of sub-division should be avoided if at all possible

CITATION OF REFERENCES IN THE TEXT

The Harvard system of author and date citation of references should be used. This may be done in two ways, i.e. "Brown, Smith and Jones (1980) and Green (1981) confirmed these conclusions" or "These results were confirmed by subsequent experiments (Brown, Smith and Jones, 1980; Green, 1981)." Note, particularly, the different types of punctuation and use of parentheses for these two styles of citation. If there are three or fewer names, all surnames should be given the first time that the reference is used. If there are more than three authors references should be quoted as "Brown et al. (1980)" This form of citation should also be used for all subsequent citations of references where there are three or more authors. Where more than one reference is used for the same author(s) in the same year, letters of the alphabet should be used to distinguish between them, e.g. "Brown et al. (1980 a, b)". When quoting the unpublished data of other people this should be included as a personal communication. In such cases the full initials of the author should be given in the text, and the appropriate citation is "(Brown, J.C. personal communication)". No citation of such personal communications should be included in the Bibliography. The same rules apply when citing your own unpublished data

GENERAL POINTS

In addition to the above specifications, there are a number of other general consistencies in style that must be adhered to in a thesis.

The use of italics - Italics should be used in two circumstances. Firstly, they are used for sub-section headings, journal names and book titles, as already described. Secondly, they are used for foreign phrases and species names (e.g. *per se*, *E. coli*, *Vicia faba*). If an italic font is not available, then all of these should be underlined in both the text and Bibliography. Italics or bold font may also be used for emphasis, for example where an entity is first defined.

Abbreviations and Symbols - should conform to either BS 1991 Pt. 1 (1967) Letter Symbols, Signs and Abbreviations, or to the current Royal Society recommendations. Units should be expressed using the Metric SI (System International) system. Where original data were published in imperial units, these should be converted to metric equivalents before inclusion. Some of the more common points are covered below, with examples

1. Unit abbreviations: These are the same in both the singular and plural (e.g. 1 ml and 10 ml) and are not followed by a full stop

2. Derived units: These should use superscript numerals (eg cm s^{-1}) rather than the solidus (cm/sec)

3. Numbers: All whole numbers up to ten should be written in words, except for dates, sums of money or units of measurement (eg length, weight); all others should be written in figures. No sentence should ever start with figures.

The abbreviation % should always be used in Tables and Figures. In the text the words 'per cent' should always be used in conjunction with numbers written in words, and the abbreviation % used in conjunction with numbers written in figures. Dates should be written as 21 June or 15 March and NOT 21st June or 15th March.

4. Common abbreviations: Below, is a list that includes some of the commonly used abbreviations:

metre	m	minute	min
centimetre	cm	hour	h
millimetre	mm	day	d
litre	l	year	a
millilitre	ml	tonne	t
gram	g	hectare	ha
kilogram	kg	square metre	m ²
milligram	mg	joule	J
second	s	megajoule	MJ

TABLES AND FIGURES

It is normally advisable to prepare each Table or Figure on a separate page, although small Tables may be incorporated in the text and small figures may be grouped. Both should be numbered in sequence within each chapter, prefixed by the chapter number (eg Table 5.1, Figure 6.4). Every Table or Figure should have a caption that should provide a concise description of the material presented. The caption should be brief, but should contain sufficient information to make the Table or Figure self-explanatory without reference to the text. The units used should always be clearly stated. Graphs and histograms should be drawn with high quality graph-plotting packages. The accompanying text must refer to the Figure or Table, and draw the attention of the reader to the main features of the information presented without repeating that information. Computer-drawn graphs do not always reach thesis quality, and should be checked carefully for anomalies and errors, which can still be introduced by standard programmes.