

Guidelines for Graduate Theses and Reports

Department of Mechanical Engineering

This document gives a guide for the format of MASc and PhD theses and M.Eng reports (the word “thesis” is to be understood to include M.Eng reports throughout). Most of its provisions are intended as recommendations rather than rigid prescriptions: it is recognized that some flexibility in thesis format may be necessary. Additional example material on data treatment, graphs and references may be found in the Engineering Report Guidelines also posted on this web site.

1. General Requirements

The thesis is to be typed on one side of standard 8 ½ x 11" paper using an easily legible 12 point serif font (Roman or similar). Lines must be 1 ½ or double spaced. Page margins must be 1" (25 mm) on the top, bottom and right hand side and 1 ½" (33 mm) on the left to allow for binding (FGPS regulations). Titles should be in larger fonts and bold for emphasis.

The thesis may be in English or French. As a rough guide to length, recent MASc theses in the Department have ranged from 50 to 150 pages, with an average length of 90 pages, and PhD theses have ranged from 100 - 300 pages with an average of 160, in all cases excluding appendices. The thesis should include sufficient detail to allow other researchers to repeat the work, but should not unnecessarily repeat information which is readily available elsewhere.

2. Organization

The thesis should be organized as follows, with the different items appearing in the order given. It is recommended that chapters and sections be numbered: for example, **1.** would denote a chapter, **1.1** a major section within a chapter, and **1.1.1** a subsection within the section.

Title Page - sample attached. The Ottawa-Carleton Institute name must appear.

Abstract - a concise summary of the thesis, limited to 150 words for an MASc or M.Eng and 350 words for a PhD (FGPS regulations). You are encouraged to include a short abstract (maximum 150 words) in the other official language (French or English).

Acknowledgements - remember to thank your funding source(s), lab technicians, etc.

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Nomenclature - the symbols used should be listed in the following order: Latin letters, Greek letters (both in alphabetical order), other symbols, then subscripts and superscripts, again in alphabetical order. The Nomenclature should include all frequently used symbols, but need not include symbols which are used in one or two paragraphs only as long as they are defined in the text when they are introduced. Units should be given for all dimensional variables; these units should be SI. If you use acronyms or specialized terms, you should provide a **Glossary** to define them as well.

Main Body of Thesis - this will comprise several major chapters, normally starting with a short Introduction and a Literature Survey and ending with a Results and Discussion chapter.

Conclusions and Recommendations - these should list the main conclusions from the work only. They should not summarize the other parts of the thesis - that is what the abstract is for. Conclusions should be carefully worded: they must be clearly justified by the data presented, and should not overstate the significance of the work. All conclusions should have already been presented in the main body of the thesis.

References - more details given below. The purpose of references is to allow the reader to identify the original source of all important information in the thesis. You must give a reference for anything which is not your own original work, including equations, mathematical models, data, observations from experiment or theory, and of course direct quotations from other peoples' work. Using excerpts or results from the work of others without giving references for them is considered plagiarism. All works listed in the List of References must have actually been cited in the thesis.

Appendices - are used for information which is not important enough to include in the main body of the thesis, but is necessary for a researcher following up on the details of your work. Examples are detailed derivations of equations or numerical methods, detailed error analyses, tabulations of data, or computer programs. Computer programs and data listings should be reformatted to save space: unlike the main body of the thesis, they may be single spaced and the font size may be as small as 10 point. Each appendix should be given a letter (A, B, etc.) and a title. Appendix titles should appear in the Table of Contents. If desired, each Appendix may have a table of contents of its own, but such tables should not appear in the main Table of Contents. Appendices should be referred to in the main body of the thesis.

Pages should be numbered in Arabic numerals, with page 1 being the first page of the main body of the thesis. All pages before the main body must be numbered in lower case Roman numerals (eg vi), starting with the Abstract as page i.

3. Graphs and Diagrams

All figures must be clearly legible. Lettering should be equivalent to at least 10 points in size, and line widths must be sufficient to reproduce well. A line width of 0.020" (0.5 mm) is recommended. Experimental data points should be represented as individual points if possible: continuous lines are normally reserved for the results of calculations or fitting. If it is found necessary to use lines to join data

points or to show curves fitted through the data points, the method and reason for joining points should be clearly explained in the figure caption and/or text. (Spreadsheets automatically join points by lines; these should be deleted if the points are experimental data.) Each figure should have a caption which gives enough information that the figure can be understood without referring to the main text. Figures must be cited in the body of the text. Figures may be placed in the text of the thesis, generally after the paragraph where they are cited or on the following page. Alternatively, they may be grouped together at the end of a chapter or section.

In the case where figures are grey-scale rather than black and white, and would therefore not reproduce well, original printed pages rather than photocopies should be used in all copies submitted.

Before reproducing illustrations or other material from other works, the candidate should consult the copyright rules. Note that the thesis submission form which the supervisor has to sign off certifies that permission has been obtained to reproduce all copyrighted material in the thesis.

4. References

There are two accepted systems for giving references to published material:

- **the author/date system:** the work is cited in the text as Smith and Jones (1975), or, if there are more than two authors, as Smith *et al.* (1975). The works cited are listed in alphabetical order by first author in the list of references.

- **the number system:** the work is cited in the text with a number in square brackets [4]. The numbers are assigned in the order in which the works are first cited, and the works are listed in numerical order in the list of references. If a work is cited more than once, the same number is used for each citation. Citations take up less space in the text with this system, but the disadvantage is that if you revise the manuscript and add more references, any following new references will have to be re-numbered.

Footnotes are not usually considered an acceptable format for citations in engineering (although they are the standard in the humanities).

In the list of references, each work must be cited with the names of all authors, the title, and the year published. For journal papers, the journal name, volume number, and page numbers must appear; for conference papers, the name and location of the conference and the page numbers in the proceedings; for books and reports, the publisher and city. *It is essential that you give enough information that the reader could easily find the work in the library.* There are a number of different formats used for references, and it is recommended that you use the format given in the Guidelines for Authors in a reputable journal in your field (for example, the ASME series of journals).

Sample Title Page

INCINERATION OF THESIS WASTES

Sam McGee

A thesis submitted to the Faculty of Graduate and Postdoctoral Studies
in partial fulfillment of the requirements for the degree of

MASTER OF APPLIED SCIENCE

in Mechanical Engineering

Ottawa-Carleton Institute for Mechanical and Aerospace Engineering
University of Ottawa
Ottawa, Canada

April 2001

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