CONTENTS

SECTIONS

1. GENERAL REQUIREMENTS OF A THESIS
   1.1 Introduction
   1.2 Language
   1.3 Technical Specifications
      1.3.1 Thesis Text
      1.3.2 Page Layout
      1.3.3 Type of Paper
      1.3.4 Typeface and Font Size
      1.3.5 Margins
      1.3.6 Spacing
      1.3.7 Pagination
      1.3.8 Binding
   1.4 Submission of Thesis

2. THESIS FORMAT
   2.1 Title Page
   2.2 Abstract
   2.3 Acknowledgements
   2.4 Approval Sheets
   2.5 Declaration of Thesis
   2.6 Table of Contents
   2.7 List of Tables
   2.8 List of Figures
   2.9 List of Abbreviations / Notations / Glossary of Terms
   2.10 Body of the Thesis
      2.10.1 Chapter Layout
      2.10.2 Tables
      2.10.3 Figures
      2.10.4 Equations
      2.10.5 Citations
      2.10.6 Header and Footer
      2.10.7 Footnotes
   2.11 References / Bibliography
   2.12 Appendices
   2.13 Biodata of the Student
   2.14 List of Publications
APPENDICES

A-1 Spine and Front Cover of Thesis 14
A-2 Example of the Spine and Front Cover of Thesis 15
B-1 Title Page 16
B-2 Example of Title Page 17
C-1 Format of Abstract 18
C-2 Format Abstrak 19
D-1 Example of Approval Sheet 20
D-2 Example of Approval Sheet 21
E Declaration of Thesis 22
F Example Table of Contents 23
G Example Layout of Chapter 25
H Example of Tables 26
I Example of a Figure 27
J Example of Commonly Used Citation Format 28
K Example of Commonly Used Reference Format 33
CHAPTER 1

GENERAL REQUIREMENTS OF A THESIS

1.1 Introduction

This guide is to assist students of Universiti Pertahanan Nasional Malaysia (henceforth shall be referred to as the University) prepare their thesis in terms of format and writing convention. Students are advised to refer closely to this guide and to seek clarification with the Centre for Graduate Studies (CGS) on specific matters relating to the preparation of their thesis.

1.2 Language

The thesis may be written in English or Bahasa Melayu. There should be consistency in the use of language, especially the spelling style (American or British), throughout the thesis. Roman alphabets should be used unless otherwise required by the discipline. Where the thesis is written in English it is mandatory that the draft thesis be proofread before submission.

1.3 Technical Specifications

Printing should be done on a letter-quality or laser printer. Only the original word-processed copy of a thesis or its good and clean photocopy will be accepted. The submitted copy should be free of materials used to correct mistakes such as correcting fluid.

1.3.1 Thesis Text

The number of pages and word count in a thesis is subject to the study programme and should not exceed - 40,000 words (or 200 pages) for a Master thesis, and 80,000 words (or 300 pages) for a PhD thesis, including tables and figures, but excluding references, footnotes and appendices.

Written permission from the CGS must be sought before a thesis longer than the prescribed length can be submitted for evaluation. The student should provide strong justifications to support his/her request.

1.3.2 Page Layout

The text is to be presented in portrait layout. Landscape layout may be used for figures and tables that are unable to fit into the portrait layout.
1.3.3 Type of Paper

White A4 sized (210 mm x 297 mm) paper (80 gsm) or paper of equivalent quality should be used. The student should include an extra blank sheet at the front and back of the thesis. Photocopies of the thesis must also be on similar quality paper.

1.3.4 Typeface and Font Size

The entire text of the thesis, including headings and page numbers, must be formatted using the Times New Roman typeface. The font size should be a 12-point and should not be scripted or italicised except for scientific names and terms in a different language. Bold print may be used for headings. Text in the tables should not be less than 8-point or more than 11-point.

1.3.5 Margins

The left margin should be at least 40 mm and the right, top and bottom margins at least 25 mm. Margin specifications are meant to facilitate binding and trimming. All information (text headings, footnotes and figures), including page numbers, must be within the text area as demarcated. All text shall be fully justified between the left and right margins.

1.3.6 Spacing

The general text of the thesis must be typed with double spacing. The following, however, should use single spacing.
   i. Quotations of three lines or more, indented and set in a block;
   ii. References or bibliography (except between entries);
   iii. Multi-line captions (tables, figures);
   iv. Appendices, such as questionnaires, letters; and
   v. Headings or subheadings.

The following guidelines should be observed:
   i. The spacing between top margin and the chapter number should be 2 × double line spacing;
   ii. The spacing between a chapter number and the title, and between the title and the first line of the text should be 2 × double line spacing;
   iii. The spacing between the title of a sub-section and the first line of a text should be 1 x double line spacing;
   iv. The spacing between the last line of a text with the title of a sub-section should be 1 x double line spacing;
   v. The spacing between paragraphs should be 1 x double line spacing;
   vi. The number and the title of a sub-section should be aligned with the left margin;
   vii. The first line of a paragraph should be indented by 1.27 cm;
viii. A new paragraph should not begin on the last line of a page;

1.3.7 Pagination

All pages should be numbered consecutively throughout the thesis, including pages containing tables, figures and appendices, centrally at the bottom margin. Page numbers should appear by themselves and should not be placed in brackets, hyphenated or accompanied by decorative images.

Text, tables and figures should be printed on one side of each sheet only.

Preliminary pages preceding Chapter 1 must be numbered in lowercase Roman numerals (i, ii, iii, etc). The first page (Title Page) is considered as page “i” but the page number is not typed in. The first page of the Introduction (Chapter 1) is considered as page “1” but the page number is not typed in. The same applies to the first page of all the following Chapters, where the page number is not typed in even though the page is counted.

1.3.8 Binding

Before making the required number of copies and binding the thesis, ensure that all University requirements for thesis submission have been met and the necessary signatures have been obtained. Check that all pages are in their correct order. The thesis should be bound with hard covers in the colour shown on Table 1.1.

<table>
<thead>
<tr>
<th>Level</th>
<th>Binding Colour</th>
<th>Colour Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters</td>
<td>Red</td>
<td>530</td>
</tr>
<tr>
<td>PhD</td>
<td>Black</td>
<td>585</td>
</tr>
</tbody>
</table>

Table 1.1. Binding Colour for Thesis Hard Cover

The binding should be cloth spine binding. The following requirements for the front cover shall be adhered to.

i. **Thesis spine** (Please refer to Appendix A-1 and A-2 for details)

The spine should be lettered in gold from the head to the foot of the thesis spine, using a maximum 18-point (to fit the length of name and title) and shall contain the following particulars.

- Name of student;
- Name of degree;
- UPNM and Year of submission.
ii. **Front cover** (Please refer to Appendix A-1 and A-2 for details)

The front cover should be lettered in gold using an 18-point gold block font (similar to text) and contain the particulars listed below:

- Title of thesis;
- Full name of student;
- Full name of degree;
- Name of the university; and
- Year of submission.

### 1.4 Submission of Thesis

UPNM views **plagiarism** as a serious academic offence. All work, information or data that is derived from the work of persons other than the student must be acknowledged appropriately in the thesis. Any student plagiarising the work of others will be subject to appropriately disciplinary action by the university.

UPNM seeks to ensure that all students develop good academic practice, including the correct citation of material within assignments. UPNM primary focus in using originality checking software (currently Turnitin) is to provide a means whereby students may enhance their knowledge and understanding of good academic practice in order to reference material correctly, thereby minimising the risk of submitting plagiarised work in summative assessments. The plagiarism check is a mandatory part of student’s final examination and needs to be done before handing in the thesis.

A student intending to submit his/her thesis shall comply with the following procedures:

i. Submit to CGS the prescribed ‘Thesis Submission Notice’ (Notice of intention to submit a thesis for examination) form at least three months before date of submission.

ii. Submit six (6) soft-bound copies of the thesis to CGS for examination together with ‘Thesis Submission for Examination’ form that has been filled and signed.

iii. Submit to CGS within the time prescribed by examining board after the successful defence of his/her thesis, one loose copy of the corrected thesis and the certified corrections made.

The student should then submit the following to CGS after they are notified of the acceptance of their thesis by CGS.

- Six (6) hardcover bound copies of the thesis.
- Six (6) CDs containing the complete thesis.
CHAPTER 2

THESIS FORMAT

The following describes what is generally known as the conventional format for a thesis. A thesis consists of three main parts: preliminary pages; text or main body, usually divided into chapters and sections; and supporting pages containing references/bibliography, appendices and biodata of the student. If applicable, a list of publications produced during the period of candidature, and where the student is the first or principal author should be inserted after the student’s biodata page. The preliminary part should include the title page, dedication, abstracts in English and Bahasa Melayu, acknowledgements, approval sheets, declaration of thesis, table of contents, and lists of tables, figures and abbreviations.

A typical layout of how the various parts of a thesis are arranged is shown in Table 2.1. The entire thesis should be bound in a single volume. However, in rare cases when appendices are particularly long, the thesis may be bound in two volumes. In such cases, the second volume should contain the appendices only and begin with page 1. It should have a List of Appendices immediately before the appendices are inserted. References, the student’s biodata and List of Publications should stay within the first volume in the sequence shown earlier.

2.1 Title Page

This page should include the following information.

i. Full title of thesis;
ii. Full name of student;
iii. Submission status;
iv. Year of submission.

Appendix B-1 and B-2 shows the layout of this page.

The title should describe the content of the thesis accurately and concisely, normally omitting words such as “An Investigation…”, “An Analysis…”, or “A Study…” which are redundant. All of these are investigations, analyses or studies of one kind or another. Full title length preferably should not exceed 15 words or 3 lines.
Table 2.1 A Typical Layout of a Thesis

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blank Page</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Title Page</td>
<td>Not to be paginated but counted as i.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Please see Section 2.1</td>
</tr>
<tr>
<td>3</td>
<td>Dedications (if any)</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Abstract</td>
<td>Please see Section 2.2</td>
</tr>
<tr>
<td>5</td>
<td>Abstrak</td>
<td>Please see Section 2.2</td>
</tr>
<tr>
<td>6</td>
<td>Acknowledgement/s</td>
<td>Please see Section 2.3</td>
</tr>
<tr>
<td>7</td>
<td>Approval Sheets</td>
<td>Please see Section 2.4</td>
</tr>
<tr>
<td>8</td>
<td>Declaration of Thesis</td>
<td>Please see Section 2.5</td>
</tr>
<tr>
<td>9</td>
<td>Table of Contents</td>
<td>Please see Section 2.6</td>
</tr>
<tr>
<td>10</td>
<td>List of Tables</td>
<td>Please see Section 2.7</td>
</tr>
<tr>
<td>11</td>
<td>List of Figures</td>
<td>Please see Section 2.8</td>
</tr>
<tr>
<td>12</td>
<td>List of Abbreviations/Notations/Glossary of Terms</td>
<td>Please see Section 2.9</td>
</tr>
<tr>
<td>13</td>
<td>Body of the Thesis</td>
<td>Please see Section 2.10</td>
</tr>
<tr>
<td>14</td>
<td>References/Bibliography</td>
<td>Please see Section 2.11</td>
</tr>
<tr>
<td>15</td>
<td>Appendices</td>
<td>Please see Section 2.12</td>
</tr>
<tr>
<td>16</td>
<td>Biodata of the Student</td>
<td>Please see Section 2.13</td>
</tr>
<tr>
<td>17</td>
<td>List of Publications</td>
<td>Please see Section 2.14</td>
</tr>
<tr>
<td>18</td>
<td>Blank Page</td>
<td>-</td>
</tr>
</tbody>
</table>

2.2 Abstract

The abstract is a digest of the entire thesis and should be given the same careful attention as the main text. It should not include any references. Abbreviations or acronyms must be preceded by the full terms at the first use.

An abstract shall not be more than 350 words in length (max 2 page). It includes a brief statement of the problem and/or objectives of the study, a concise description of the research method and design, a summary of the major findings including their significance, and conclusions.

The abstract shall be written in both English and Bahasa Melayu. The version to appear first should be of the same language used in the thesis body. The format of abstract heading is shown in Appendices C-1 and C-2.
Even though a thesis may have been written in English, the abstract in Bahasa Melayu must also reach an acceptable scholarly standard of writing and shall be a translation of the abstract in English and *vice versa*. Common pitfalls such as spelling errors, incorrect usage of prepositions and prefixes (e.g. “di”, “ke”) should be avoided. Scientific terms must be used accurately and consistently.

2.3 Acknowledgements

Acknowledgements usually contain written expressions of appreciation for guidance and assistance received from individuals and institutions.

2.4 Approval Sheets

Two approval sheet are required to be inserted into the bound thesis. Please refer to Appendices D-1 and D-2 for details.

2.5 Declaration of Thesis

The declaration form should be written as shown in Appendix E.

2.6 Table of Contents

The Table of Contents lists in sequence all relevant subdivisions of the thesis with their corresponding page numbers (see Appendix F).

2.7 List of Tables

The list shows the *exact titles or captions* of all tables in the text and appendices, together with the starting page number of each table, and must be listed in sequence. If the whole thesis contains only one or two tables, then a List of Tables may not be necessary.

2.8 List of Figures

Figures include graphs, maps, charts, engineering drawings, photographs (plates), sketches, printed images, and any other forms of illustration that is not a table. The *exact titles or captions* and their corresponding page numbers must be listed in sequence. Figures, including any in the appendices, should be numbered consecutively throughout the thesis. If the whole thesis contains only one or two figures, then, as with tables, the list may be omitted.
2.9 List of Abbreviations/Notations/Glossary of Terms

If abbreviations and acronyms (e.g. UPNM, MINDEF, STRIDE) are used in the thesis, they should be explained in the List of Abbreviations, even though the full names are given when the terms are first mentioned in the text. This list should be the last item in the preliminary section. It serves as a ready reference to readers not familiar with the abbreviations used in the thesis. Universally recognised scientific symbols (such as CO$_2$, cm, mm, kg) need not be listed.

2.10 Body of the Thesis

2.10.1 Chapter Layout (See Appendix G)

All chapters and their sub-sections must be labelled and numbered. The chapters are numbered using Arabic numeric, i.e. Chapter 1, Chapter 2, Chapter 3, and so on. The sub-sections should not be indented but arranged in a structured manner not more than four levels as follows:

2 First level (Title of the chapter)
2.1 Second level (Title of the sub-section)
2.1.1 Third level (Title of the sub-sub-section)
2.1.1.1 Fourth level (Title of the sub-sub-sub-section)

Sub-sections beyond level four must be numbered using alphabets; (a), (b), (c) etc. Sub-sections until the third level only are allowed to appear in the table of contents.

Introduction: The introductory chapter introduces the subject matter and problem(s) under study, and indicates its importance and validity. It sets out the hypotheses to be tested and research objectives to be attained. In some theses, usually those in mathematics, this section may be combined with the literature review. It is important to remember that the research objectives stated in the thesis should match the findings of the study. Failing which would result in a verdict of ‘Resubmission of Thesis’ by the Thesis Examination Committee, and a recommendation to conduct additional studies so that the stated objectives are met.

Literature Review: This section encompasses a critical and comprehensive review of the literature and previous work related to the topic of thesis. It is meant to act as a basis for the experimental and analytical sections of the thesis. Literature selected must be up to date, analysed and synthesised logically. It is not a mere summary of works of different authors. The review should give the gist of each book or pertinent findings of a journal article, explain how it relates to the topic and should – and this is important - show why it is not enough to answer your research questions. For example, the study being reviewed used a Japanese sample, while you are examining the situation in Malaysia. Textbook materials on basic principles or theories should be kept to a minimum.
Methodology/Materials and Methods: This section varies from thesis to thesis depending on the discipline of study, and may be absent in a theoretical thesis. It contains a description and justification of the materials, theoretical approaches, experimental designs and methods (including statistical analysis) used to achieve the stated objectives of the study undertaken. In social and management sciences, a conceptual framework may need to be included. In engineering and in pure and applied sciences, this may include, but is not limited to, description of the methodology, theoretical development, fundamental philosophical foundation, experimental design and standard procedure description.

The materials and methods used in the study should be described in detail such that it would be possible for the reader to replicate the experiment that was conducted solely using the information contained within this section. References must be cited for published protocols or methods.

Results or Findings: This section of the thesis may also be combined with the Discussion section, as is often done, because their contents tend to be interrelated. This section may be further broken down into subsections.

This section presents a complete account of the results obtained in the study in the form of text, figures, or tables so that the key information is highlighted. The same set of results or data should not be presented in more than one format (e.g. either as a table or figure, but not both). Tabulated data, if necessary, could be included in the appendices. When results are placed in one chapter, subheadings may be used to demarcate the different aspects of the study.

Discussion: This part bridges the data presented or described in the preceding section and contains the analyses or interpretations of the results obtained, and the conclusions eventually drawn. The student should discuss these results in relation to the hypotheses or objectives set out in ‘Introduction’, and how they fit into the existing or current body of knowledge. The significance and implications of the main findings should be made clear.

Summary/Conclusion and Recommendations for Future Research: This chapter is important since it gives the overall significance of the study, i.e. the research contributions to knowledge, and stresses the findings upon which a conclusion or conclusions are drawn in line with the objectives set, acknowledges the limitations, and suggests further research which may be usefully carried out on the topic.

2.10.2 Tables (See Appendix H)

Do ensure that each table shown in the thesis, including those in appendices, are referred to in the text. Tables should be numbered with Arabic numerals throughout the thesis (including both text and appendices). There are two possible numbering schemes: either (a) number the tables consecutively throughout the thesis e.g. 1, 2, 3 and so on, or (b) number them by chapter, e.g. Table 1.1, Table 1.2 and
Table 1.3 to indicate they belong to Chapter 1, Table 2.1, Table 2.2 and Table 2.3 to Chapter 2, and so on.

A table should be on the same page following the first reference to it, or if this is not possible, as soon as possible in the following pages. When a large table is placed in a landscape orientation, the top of the printed page should be at the thesis binding edge.

The table number, title and caption are typed single-spaced and placed above the table. The style used must be consistent throughout the thesis. Table sources and notes should be referred using (Authors Last Name, Year), or commonly acceptable format, at the end of the title. If a table has a source, but has been adapted, indicate by using ‘Adapted from ...’ instead of ‘Source: ...’ and should be placed directly below the table.

2.10.3 Figures (See Appendix I)

As with tables, ensure that each figure in the thesis is referred to in the text. Figures include maps, charts, graphs, diagrams, photographs (or plates), engineering drawings and printed images. They are numbered consecutively or according to the chapter throughout the thesis, including those in appendices. The figure number, title and caption should be typed single-spaced and placed below the figure using Arabic numeral and lowercase, except for proper nouns and the first letters of principal words. Figures should be inserted as soon as possible after their first mention in the text. As with tables, the style used must be consistent throughout the thesis.

If a figure occupies an entire page, the caption may be typed on the left-hand page (reverse side blank) facing the figure. It is counted but not paginated. A figure drawn in the landscape format should have the top of the figure at the binding edge. The figure number, title and caption should be typed parallel to the orientation of the figure. Figures should conform to the standard margin requirements. Engineering drawings should follow the appropriate standards, with any large size drawings placed as appendices.

Any coloured figures shall be reproduced in colour for all copies of the thesis submitted for examination or binding. Where possible such coloured figures shall be colour laser printed onto the same paper used for the text printing of the thesis. Otherwise any coloured figures shall be differentiated by the use of different textures signifying different colours and a suitable legend shall be included.

If a figure is taken from a particular source, the source must be stated at the end of the caption. Photographs used as illustrations must be affixed in the text using high quality glue or better techniques. Where possible digital reproductions of photographs shall be used as illustrations and colour laser printed. High quality photocopied versions of the actual newspaper or other media clipping shall be used. Alternatively high quality, legible digital scans of the clipping may be used.
2.10.4 Equations

All equations, whether mathematical or chemical, are considered text and numbered according to the chapter. If detailed derivation is needed, it is to be placed in an appendix.

Students may use either the Microsoft Equation Editor or the MathType commercial add-on for MS Word for all math objects (Insert | Equation or MathType Equation). "Float over text" should not be selected. To make your equations more compact, you may use the solidus ( / ), the exp function, or appropriate exponents. Italicised Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Use parentheses to avoid ambiguities in denominators.

Number equations consecutively with equation numbers in parentheses flush with the right margin, as in (1) (or (2.1) for the first equation in Chapter 2 of a thesis). Be sure that the symbols in your equation have been defined before the equation appears or immediately following.

\[ I_F = - I_B = \frac{A^2 I_{A1} + A I_{A2} + I_{A0} - J \sqrt{3} E_A}{Z_1 + Z_2} \]  \hspace{1cm} (i)

\[ I_F = - I_B = \frac{A^2 I_{A1} + A I_{A2} + I_{A0} - J \sqrt{3} E_A}{Z_1 + Z_2} \]  \hspace{1cm} (2.1)

Where,

- \( I_F \) is the fault current.
- \( I_B \) is the ........

Use "(1)," not "Eq. (1)" or "equation (1)," except at the beginning of a sentence: "Equation (1) is ...."

2.10.5 Citations

The student is responsible for choosing a style of citation that is appropriate to the field and using that style correctly and consistently. The student should consult his/her supervisors for guidelines. Samples of commonly used citations are given in Appendix J.

At the end of the thesis, the student must supply a list of references in alphabetical order by authors, with consistent punctuation.

2.10.6 Header and Footer

The use of Header and Footer is not allowed.
2.10.7 Footnotes

Footnotes may be used but only sparingly to clarify certain terms, state conversion factors or elaborate certain facts. The footnote is not to be used to cite authority for specific statements or research findings. Citations shall be made in the text as is outlined in Section 2.11 below. Extensive footnotes will distract the reader from the main text. When used, footnotes shall not occupy more than one quarter of the page contents and shall use 9 point-size. Footnote indicators, if used, shall be sequential within the chapter and will restart at one (1) in the new chapter. The use of asterisk (*) as the footnote indicator may be allowed subject to the approval of the supervisory committee. All footnote indicators shall be superscript. Footnotes shall be at the foot of the page and separated from the main text by a line extending the width of the page.

2.11 References/Bibliography

The References or Bibliography section contains a list of works cited in the thesis. The student should not cite articles that were published from the studies that he/she conducted during his/her candidature as references.

References should be listed in alphabetical order (APA style) or listed consecutively numbered in square bracket (IEEE style), regardless of types of reference.

A thesis has to have one consistent style. Samples of commonly used reference styles are given in Appendix K.

2.12 Appendices

Information or data that are too detailed for inclusion in the main body of the thesis may be included as appendices, and these are placed after the reference list. Appendices include original data, summary, slide-line or preliminary tests, tabulations, tables that contain data of lesser importance, very lengthy quotations, supporting decisions, forms and documents, computer printouts, detailed engineering drawings and other pertinent documents. Appendix materials should be grouped by type, e.g. Appendix A: Questionnaire; Appendix B: Original data; Appendix C: Tables of results.

Appendices shall be preceded with a unnumbered face sheet entitled ‘APPENDIX or APPENDICES’ in the centre of the page. Appendices must be paginated consecutively with the main text. If there are three or less appendices, their details such as numbers and titles should be listed as items in the Table of Contents. If there are more than three, then the Table of Contents should include a List of Appendices with its page number. The list itself should come immediately after the List of Figures.
2.13   Biodata of the Student

This section is compulsory. It gives the student’s biographical information: name, educational background, the degree that is being sought, professional work experience (if any), and any other similar matters that may interest the reader.

2.14   List of Publications

All publications (in journal and proceedings) that result from the study undertaken during a student’s candidature, and for which the student is the first, second or principal author, should be listed clearly and accurately. Do not use these publications as references in the literature review.

Should there be any other requirements other than those mentioned above; written permission should be obtained from the Dean of CGS.
<table>
<thead>
<tr>
<th>NAME OF STUDENT</th>
<th>60 mm</th>
<th>TITLE OF THESIS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(Uppercase, centred, bold, 18-point gold-coloured font)</td>
</tr>
<tr>
<td>FULL NAME OF STUDENT</td>
<td></td>
<td>(Uppercase, centred, bold, 18-point gold-coloured font)</td>
</tr>
<tr>
<td>FULL NAME OF DEGREE</td>
<td></td>
<td>(e.g. MASTER OF SCIENCE)</td>
</tr>
<tr>
<td>UNIVERSITI PERTAHANAN NASIONAL MALAYSIA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td></td>
<td>(Uppercase, centred, bold, 18-point gold-coloured font)</td>
</tr>
<tr>
<td></td>
<td>60 mm</td>
<td></td>
</tr>
</tbody>
</table>

APPENDIX A-1
SPINE AND FRONT COVER OF THESIS
APPENDIX A-2
EXAMPLE OF THE SPINE AND FRONT COVER OF THESIS

MUHAMMAD SYAFIQ BIN MD. AKHIR

CARBON FIBRE REINFORCED POLYMER (CFRP) FOR RETROFITTING STRUCTURE AGAINST BLAST LOADING

MUHAMMAD SYAFIQ BIN MD. AKHIR

MASTER OF SCIENCE (CIVIL ENGINEERING)

UNIVERSITI PERTAHANAN NASIONAL MALAYSIA

2011
TITLE OF THESIS
(Uppercase, centred, bold, 12-point font)

NAME OF STUDENT
(Uppercase, centred, bold, 12-point font)

Thesis submitted to Centre for Graduate Studies, Universiti Pertahanan Nasional Malaysia, in fulfillment of the requirements for the Degree of <insert the name of degree>

Year of submission

16
CARBON FIBRE REINFORCED POLYMER (CFRP) FOR RETROFITTING STRUCTURE AGAINST BLAST LOADING

MUHAMMAD SYAFIQ BIN MD. AKHIR

Thesis submitted to Centre for Graduate Studies, Universiti Pertahanan Nasional Malaysia, in fulfillment of the requirements for the Degree of Master of Science (Civil Engineering)

2011
The abstract is a digest of the entire thesis and should be given the same careful attention as the main text. It does not normally include any reference to the literature. Abbreviations or acronyms must be preceded by the full term at the first use.

An abstract shall not be more than 350 words in length. It includes a brief statement of the problem, a concise description of the research method and design, a summary of major findings, including their significance or lack of it, and conclusions.
Abstrak merupakan ringkasan keseluruhan tesis dan wajib diberi perhatian rapi seperti mana bahagian tesis yang lain. Abstrak tidak mengandungi bahan rujukan. Nama singkatan atau akronim mesti didahului dengan terminologi penuh pertama kali ia digunakan.

Abstrak hendaklah tidak melebihi 350 patah perkataan. Ia merangkumi pernyataan permasalahan, penerangan ringkas dan tepat tentang reka bentuk dan perkaedahan penyelidikan, rumusan penemuan utama dan kesimpulan.
The Examination Committee has met on 12th September 2011 to conduct the final examination of Muhammad Syafiq bin Md. Akhir on his degree thesis entitled ‘Carbon Fibre Reinforced Polymer (CFRP) For Retrofitting Structure Against Blast Loading’

The committee recommends that the student be awarded the Master of Science (Civil Engineering)

Members of the Examination Committee were as follows.

Name of Chairperson
Name of Faculty
Universiti Pertahanan Nasional Malaysia
(Chairman)

Name of Examiner 1
Name of Faculty
Universiti Pertahanan Nasional Malaysia
(Internal Examiner)

Name of Examiner 2
Name of Faculty
Name of University
(External Examiner)
APPENDIX D-2
EXAMPLE APPROVAL SHEET – SUPERVISORY COMMITTEE

APPROVAL

This thesis was submitted to the Senate of Universiti Pertahanan Nasional Malaysia and has been accepted as fulfilment of the requirements for the degree of Master of Science (Civil Engineering). The members of the Supervisory Committee were as follows.

Name of Main Supervisor
Name of Faculty
Universiti Pertahanan Nasional Malaysia
(Main Supervisor)

Name of Co-Supervisor
Name of Faculty
Universiti Pertahanan Nasional Malaysia
(Co-Supervisor)
APPENDIX E
DECLARATION OF THESIS

UNIVERSITI PERTAHANAN NASIONAL MALAYSIA

DECLARATION OF THESIS

Student’s full name : __________________________________________________________
Date of birth : ______________________________________________________________
Title : ________________________________________________________________________
Academic Session : __________________________________________________________

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

I further declare that this thesis is classified as:

☐ CONFIDENTIAL (Contains confidential information under the Official Secret Act 1972)*
☐ RESTRICTED (Contains restricted information as specified by the organisation where research was done)*
☐ OPEN ACCESS I agree that my thesis to be published as online open access (full text)

I acknowledge that Universiti Pertahanan Nasional Malaysia reserves the right as follows.

1. The thesis is the property of Universiti Pertahanan Nasional Malaysia.
2. The library of Universiti Pertahanan Nasional Malaysia has the right to make copies for the purpose of research only.
3. The library has the right to make copies of the thesis for academic exchange.

_________________________  ____________________________
Signature  **Signature of Supervisor/ Dean of CGS/
                      Chief Librarian

_________________________  ____________________________
IC/Passport No.  **Name of of Supervisor/ Dean of CGS/
                    Chief Librarian

Date: ______________________  Date: ______________________

Note: * If the thesis is CONFIDENTIAL OR RESTRICTED, please attach the letter from the organisation stating the period and reasons for confidentiality and restriction.
** Witness
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td>iv</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>v</td>
</tr>
<tr>
<td>APPROVAL</td>
<td>vi</td>
</tr>
<tr>
<td>DECLARATION</td>
<td>vii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xiii</td>
</tr>
</tbody>
</table>

CHAPTER

1 INTRODUCTION

1.1 Background 1
1.2 Problem Statement 1
1.3 Objectives 2
1.4 Research Scope 2
1.5 Significant or Research 3
1.6 Thesis Outline 4

2 LITERATURE REVIEW

2.1 Main Heading 1 5
2.1.1 Subheading 1 7
2.1.2 Subheading 2 10
2.2 Main Heading 2 15
2.3 Main Heading 3 21
2.3.1 Subheading 1 22
2.3.2 Subheading 2 25
2.4 Main Heading 4 33

3 METHODOLOGY/MATERIALS AND METHODS 38
3.1 Main Heading 1 (e.g. Materials) 38
3.2 Main Heading 2 (Method 1) 42
3.3 Main Heading 3 (Method 2) 45
3.4 Main Heading 4 (Method 3) 47
3.4.1 Subheading 1 48
3.4.2 Subheading 2 50
3.5 Main Heading 5 (Method 4) 55
3.6 Main Heading 6 58

4 RESULTS AND DISCUSSION 66
4.1 Main Heading 1 66
4.2 Main Heading 2 75
   4.2.1 Subheading 1 76
   4.2.2 Subheading 2 81
   4.2.3 Subheading 3 88
4.3 Main Heading 3 94
4.4 Main Heading 4 105

5 SUMMARY, CONCLUSION AND RECOMMENDATIONS 111
5.1 Summary 111
5.2 Conclusion 113
5.3 Main Contributions 115
5.4 Recommendations and Future Work 117

REFERENCES/BIBLIOGRAPHY 118

APPENDICES 124
   A. Design Calculation of … 124
   B. Data Collected on … 127

BIODATA OF STUDENT 133

LIST OF PUBLICATIONS 135
(Publications that arise from the study) - if applicable
APPENDIX G
EXAMPLE LAYOUT OF CHAPTER

(2 x double spacing)

CHAPTER 3

(2 x double spacing)

TITLE OF CHAPTER

(2 x double spacing)

There may be a preamble at the beginning of a chapter. The purpose may be to introduce the themes of the chapter and main headings.

(2 x double spacing)

3.1 Title of the sub-section (Second Level)

(1 x double spacing)

The spacing between the title of a sub-section and the first line of a text should be 1 x double line spacing.

(1 x double spacing)

The spacing between paragraphs should be 1 x double line spacing.

(1 x double spacing)

3.1.1 Title of the sub-sub-section (Third Level)

The title of the sub-section…..

3.1.1.1 Title of the sub-sub-sub-section (Fourth Level)
APPENDIX H
EXAMPLE OF TABLES

**Table 2.1** Mechanical Properties of Carbon Fibre*

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>AS4</th>
<th>T-300</th>
<th>IM7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>Kg/m³</td>
<td>1810</td>
<td>1760</td>
<td>1800</td>
</tr>
<tr>
<td>Longitudinal Modulus, $E_1$</td>
<td>GPa</td>
<td>235</td>
<td>230</td>
<td>290</td>
</tr>
<tr>
<td>Transverse Modulus, $E_2$</td>
<td>GPa</td>
<td>15</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>Axial Shear Modulus, $G_{12}$</td>
<td>GPa</td>
<td>27</td>
<td>27</td>
<td>14</td>
</tr>
<tr>
<td>Transverse Shear Modulus, $G_{23}$</td>
<td>GPa</td>
<td>7</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Poisson’s Ratio, $v_{12}$</td>
<td>-</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Longitudinal Tensile Strength, $F_1$</td>
<td>MPa</td>
<td>3700</td>
<td>3100</td>
<td>5170</td>
</tr>
</tbody>
</table>

*Adapted from Daniel and Ishai (2006)

**Table 3.2** Number of Visitors According to Participation in Different Activities. (Zalina, 1999)

<table>
<thead>
<tr>
<th>Activity</th>
<th>No. of Participants (N=96)</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildlife sighting</td>
<td>-</td>
<td>96</td>
</tr>
<tr>
<td>Fishing</td>
<td>-</td>
<td>96</td>
</tr>
<tr>
<td>Photography</td>
<td>92 (95.8)</td>
<td>4</td>
</tr>
<tr>
<td>Camping</td>
<td>-</td>
<td>96</td>
</tr>
<tr>
<td>Picnicking</td>
<td>47 (49.0)</td>
<td>49</td>
</tr>
<tr>
<td>Visiting waterfall</td>
<td>96 (100)</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Figures in parentheses indicate percentage of N.
NA : Not applicable.
Figure 2.1 Aluminum honeycomb with hexagonal cell shapes

(Hexcel Composite, 2000)
IN-TEXT CITATION

APA style favors the use of the author’s name, followed by the publication date, as part of your sentence, like this:

Strunk (1979) determined latent ..... 

The other common choice is to put both the author’s last name and the year of publication in parentheses at the end of the sentence, like this:

...latent adipose deposits also may be a cause of the problem (Strunk, 1979).

Whichever style you choose, remember that the following information is required for a complete citation:

1. Author’s last name
2. Year of publication (separated from the author’s name by a comma).
3. Page number is optional for summary or paraphrase, but required when you use a direct quotation:

According to Gray (1996), his study results “were ridiculous” (p.2).

WORKS CITED

The works list appears on a separate page at the end of your paper and is organized as follows:

1. Alphabetically by author’s last name. If no author, alphabetical by first word in title (not “A” or “The”).
2. Double-spaced between entries.
3. First line of each entry even with margin; subsequent lines indented five spaces.

EXEMPLARY

BOOK, no author: Title. (Year). Place of publication: Publisher.

in-text citation: Grades are not the best measure of student learning (College Bound Series, 1979).

BOOK, single author:  
Author. (Year). Title: Place of publication: Publisher.

in-text citation:  
Thomas (1994) suggests the species do not run off the cliffs …

Reference example:  

BOOK, two or more authors:  
Authors (in order listed on title page; last name first for each author). (Year). Title. Place of publication: Publisher. (For first citations, list all authors. For future citations, use “et al.”)

in-text citation:  
Shoe, Dore, and Roe (1995) suggest currents are a factor in navigation. Shoe et al. (1995) support this view.

Reference example:  

ANTHOLOGIZED WORK:  
Author of piece you are citing (e.g. article, essay, report). (Year). Title of piece you are citing. In editor’s name (Ed.), Book title with only first letter of first word capitalized (Inclusive pages of piece you are citing). Place of publication. Publisher.

in-text citation:  
German (1981) suggests family therapy may be successful.

Reference example:  

SCHOLARLY JOURNAL :  

in-text citation:  
Pinker (1980) found the third dimension more difficult for subjects than the first.

Reference example:  

MAGAZINE:  

in-text citation:  
Smith (1994) discusses the need for teaching history in elementary school.

Reference example:  
| NEWSPAPER: | Author, if any. **Headline. (Year, month and date). Paper, Page number.** |
| in-text citation: | Popular periodicals document the rise of chlorine residue (Took, 1994). |
| GOVERNMENT DOCUMENT: | Name of government agency or institute. (Year). **Title.** (Publication No.). City name: Country of government office. |
| in-text citation: | For first citation, spell out agency name and state acronym in square bracket, for second citation, use acronym only: Snail darter populations continue to decline (Environmental Protection Agency [EPA], 1988). |
| in-text citation: | Syrdk (1993) says Bulgarian and Russian students have problems with articles. |
| E-MAIL: | **USE IN-TEXT CITATION ONLY FOR PERSONAL CORRESPONDANCE**  
(personal e-mail is not a legitimate reference by APA standards, though e-mail journals may be cited in the References list): give name, indicate source type, and give date. |
| in-text citation: | T. Murphy (e-mail, June 28, 1995) suggests infant formula is a poor alternative. |
ON-LINE JOURNAL: Author. (date). Title of article. Name of periodical [On-line], Volume number. Available at: specify path. Date retrieved.


DATABASE: Authors/contributors. (Year). Title of database [identify medium]. (YEAR HERE IF NO AUTHOR). Place of production or publication: Producer, Distributor, and/or Publisher [specify role]

in-text citation: ... over 40% of the population (National Psychological Survey, 1995).


in-text citation: Meyer and Back (1992) remove all doubt about research interests.


INTERVIEW/CLASS LECTURE: Do not cite in References list. Use in-text only: Give name, indicate source type and give date.

in-text citation: J. Reiss indicated that “anthropologists are still debating the reasons for the Neanderthals’ disappearance” (class lecture, May 3, 1990).

PRESENTATION: Name of speaker. (Year and month). Title of paper. Occasion and Location.

in-text citation: Brener (1979) demonstrated the relationship between heart rate and stress.


FILM: Name(s) of primary contributors and (Function of contributors). (Year). Title. [medium]. (Available from Name of distributor, Location of distributor).
in-text citation: Maas and Gluck (1979) present a 1970s view of hypnosis.


**INDIRECT SOURCES:** Author of material you read. (Year). Title of material you read. *Title of source, Volume number*, inclusive pages of material you read.

in-text citation: Johnson, in contrast, had positive results (as cited in Beatty, 1962)


**Citation and Referencing according IEEE Format**

As an option the IEEE Format can also be used, but needs to be consisitant throughout the thesis. Number reference citations arranged consecutively in square brackets [1]. The sentence punctuation follows the brackets [2]. Multiple references [2], [3] are each numbered with separate brackets [1][3]. Refer simply to the reference number, as in [3]. Do not use "Ref. [3]" or "reference [3]" except at the beginning of a sentence: "Reference [3] shows...."
APPENDIX K
EXAMPLE OF COMMONLY USED REFERENCE FORMAT

APA STYLE FORMAT

References should be listed in alphabetical order, regardless of types of reference.

1. **Book**

2. **Book Chapter**

3. **Book: Edition other than first**

4. **Article in Journal**


5. **Newspaper and Non-Scientific Magazine Article**

6. **Letter to the Editor**

7. **Encyclopedia**

8. **Government_Institutional Documents**


9. **Conference paper given but not published in proceedings**

10. **Conference paper published in proceedings**

*(Unpublished conference paper)*

11. **Thesis / Dissertation**

*Dissertation / Thesis are not placed online and are referred to using the original text (in the form of a thesis submitted), is unpublished dissertation / thesis*

*Dissertation / Thesis placed online is published dissertation / thesis*
12. **Articles from internet**


13. **Articles from a database**

IEEE STYLE FORMAT

References should be listed in square brackets numbered consecutively, in accordance with the appearance of the reference in the thesis, regardless of type of reference.

1. Periodicals:


2. Books:


3. Technical Reports:


4. Papers Presented at Conferences (Unpublished):


5. Papers from Conference Proceedings (Published):

6. Dissertations:


7. Standards:


8. Patents:


Other internationally recognized standard formats are also accepted provided it is used consistently throughout the thesis.