KTH ROYAL INSTITUTE
OF TECHNOLOGY

Degree Project in Industrial Engineering and Management

Second cycle, 30 credits

KTH Master Thesis Template

Subtitle

AUTHOR 1
AUTHOR 2 (IF NEEDED)

Stockholm, Sweden 20XX

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This is a LaTeX version of the Word master thesis template[1] at the Department of Engineering Design with KTH uniform degree project covers[2]. If there is any inconsistency, please refer to the original Word template and Handbook for Masters Thesis Projects at the Department of Engineering Design (2020-21)[1]. If you have any suggestions about this template, please get in touch with xta@kth.se.
(Delete this text or replace it with an illustration picture.)

Master of Science Thesis TRITA-ITM-EX 20XX:XXX
KTH Industrial Engineering and Management
Machine Design
SE-100 44 STOCKHOLM

KTH Industriell teknik och management

Examensarbete TRITA-ITM-EX 20XX:XXX

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Godkänt 20XX-month-day	Examinator	Handledare
	Uppdragsgivare	Kontaktperson

Sammanfattning

Examensarbetet skrivs på svenska eller engelska och har alltid både en svensk och en engelsk sammanfattningssida. Ett arbete om skrivs på svenska har ett svenskt *Omslag* och en svensk *Titelsida*. Denna skrivmall, som inte har "bookmarks" eller några avancerade "features", definierar layouten för ett examensarbete i maskinkonstruktion (MF206X) men är även tillämpbar för andra examensarbeten på institutionen för maskinkonstruktion. Den kapitelstruktur, som presenteras här, är inte obligatorisk utan skall enbart ses som ett exempel på en sådan.

I detta kapitel sammanfattas examensarbetet. Sammanfattningens omfattning är högst en sida. Typsnittet är Times New Roman 12 pt, med 6 pt före med raka vänster- och högerkanter. Sammanfattningen åtföljs av en blank sida. Den föregående titelsidan, som lämpligen också innehåller en illustrativ bild, följs också av en blank sida. Alla kapitel börjar längst upp på en högersida, dvs på ett udda sidonummer.

KTH Industrial Engineering and Management

Master of Science Thesis TRITA-ITM-EX 20XX:XXX

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	Commissioner	Contact person

Abstract

The thesis is written in Swedish or English and it has both a Swedish and an English *Abstract* page. An English thesis has English *Cover* and *Title* pages. A Swedish thesis has Swedish *Cover* and *Title* pages. This template, which has no bookmarks or other automation features, defines the layout of a masters thesis in machine design (MF206X), but it also applies to other masters theses at the department of machine design. The chapter structure that is presented here is not mandatory, it is just an example.

The abstract is maximum one page long and it is written in Times New Roman 12 pt, with 6 pt before, justified alignment. The abstract page is followed by a blank page. The preceding title page, which preferably contains an illustrative picture, is also followed by a blank page. All chapters start at the top of a right hand page, i.e. a page with an odd number.

FORWARD

Use 12 pt Times New Roman, Italic and 6 pt before and 12 pt after, to describe the content of this chapter in two or three justified rows.

Here is the right place to acknowledge help, assistance, cooperation and inspiration important for the presented project provided by others. This section, which is optional, should be written in Times New Roman, 12 pt and 6 pt before, with justified alignment. Please, leave two empty rows before the body text.

The foreword chapter should be ended with the two rows Name(s), and Place and month written in Times New Roman 12 pt, and right adjusted. *Name(s)* should be 36 pt before and *Place, month and year* should be 12 pt before.

Name(s)

Place, month and year

NOMENCLATURE

Use 12 pt Times New Roman, Italic and 6 pt before and 12 pt after, to describe the content of this chapter in two or three justified rows, e.g. Here are the Notations and Abbreviations that are used in this Master thesis. (Only include the lists that are applicable). The lists are written in 12 pt Times New Roman, 6 pt before.

Notations

Symbol	Description
E	Young's modulus (Pa)
r	Radius (m)
t	Thickness (m)
…	…

Abbreviations

CAD	Computer Aided Design
CAE	Computer Aided Engineering
PLM	Product Lifecycle Management
…	…

TABLE OF CONTENTS

1 INTRODUCTION

Use 12 pt Times New Roman, Italic and 6 pt before and 12 pt after, to describe the content of this chapter in two or three justified rows, e.g. this chapter describes the background, the purpose, the limitations and the method(s) used in the presented project.

Define the background of your project, the purpose of the report, specific descriptions of problems, your research questions, any limitations to the scope of your investigation, and (briefly) your chosen methodology.

1.1 Background

The main heading is numbered and typed Right aligned in Bold Arial. The main heading font size is 18 pt, with 12 pt before and 12 pt after. Second level headings, e.g. "*1.1 Background*" are left aligned and typed in 16 pt Bold Italic Arial, with 24 pt before and 6 pt after.

The body text is typed in Times New Roman, 12 pt, 6 pt before, and justified.

1.2 Purpose

Figures in the thesis should be centered on the page with 12 pt space before. The figure legends should be in 10 pt regular Times New Roman, centered with a 12 pt space before and 6 pt after. The figures should be numbered Figure 1, Figure 2, etc.

Figure 1. The ITM logo, from ITM (2011)[3].

The table headers should be in 10 pt regular Times New Roman, centred with a 12 pt space before and a 12 pt space after. The tables should be numbered Table 1, Table 2, etc. Text in tables should be in 12 pt regular Times New Roman,centred, 0 pt before and after. An example of a table with a heading is shown below.

Table 1. Table header

Row 1, column 1	Row 1, column 2
Row 2, column 1	Row 2, column 2
…	…
Row n, column 1	Row n, column 2

- Unnumbered lists should preferably use a dot as a bullet, and should be in 12 pt Times

New Roman, justified, 6 pt before, with 1 cm hanging indent and 1 cm tabs.

1. Numbered lists should be numbered 1,2,3 etc., and should be in 12 pt Times New Roman, justified, 6 pt before, with 1 cm hanging indent and 1 cm tabs.

Equations should be centered, 12 pt before. Each equation should be numbered consecutively throughout the paper using Arabic numbers in parenthesis: (1), (2), etc. The equation number should be right shifted and enclosed within parenthesis.

$$U = R \cdot I \tag{1}$$

1.3 Delimitations

It is good practice to define and describe limitations of the project/task in the introductory chapter.

1.4 Method

The method(s) used to address the problem defined above may either be defined in the introductory chapter or elaborated on more in detail in a following chapter.

2 THEORETICAL BACKGROUND

It is necessary to describe the relevant, scientific background knowledge concerning the area in which you will perform your thesis work. One goal of this section is to analyse the literature reviewed and thus specify the direction of your project work. The main goal is for you to build on and expand your existing knowledge to assist you in dealing with the task at hand. This section is ideally structured as describing related work (scientific papers that perform variants of the same investigation as you do), as a theoretical background (scientific papers that deal with the same problem area as you do), or as a theoretical framework (scientific papers that you use to create a theoretical model for explaining your results).

3 METHODOLOGY

Describe the scientific methodology that you have used in your investigation, using an appropriate scientific textbook as a reference. You have been introduced to case studies and experiments in the research methodology course, but you can use other methodologies if you can motivate it. For a case study this section includes a detailed description if your chosen case(s). An experimental study can provide hypotheses here, or in Section B (whichever is most easily read). This section also includes a description of the choices you have made to support the internal validity, external validity and reliability of your investigation.

Note that methodologies can be described as being quantitative or qualitative, but these two words do not describe any specific methodology by themselves.

4 RESULTS/ANALYSIS

Present the results from your study. If appropriate for readability, this section can succinctly compare your empirical results with existing theory in the field and/or your hypotheses. This interpretation/analysis should then be directly related to the papers described in Section 1.

5 DISCUSSION

In this section you discuss your findings. This discussion should answer your research questions in relation to the papers described in Section 1, and possibly other relevant papers. In other words, this section should put your results into perspective considering the results from other studies, the wider discussion in your problem area and/or considering the theoretical models you have used.

Note that this can include an evaluation of your results to highlight e.g., performance improvements of a solution you have investigated, but that this is not enough on its own all improvements must be put into perspective considering relevant aspects of the discussion in associated papers.

This section can also include a limitations subsection, which describes limitations to your findings - such as when it is not appropriate to trust them.

This section should also include a discussion of your results and investigation in relation to ethical, social or sustainability issues.

6 CONCLUSION AND FUTURE WORK

Describe the conclusions of your work and give recommendations on how to proceed with the work.

7 REFERENCES

[1] "Master's thesis – forms and guides", KTH. (2024), [Online]. Available: https://www.kth.se/mmk/education/ma/master-s-thesis-forms-and-guides-1.974725.

[2] "Create a cover for your degree project", KTH. (2024), [Online]. Available: https://www.kth.se/en/student/studier/examensarbete/avhandlingarochexamensarbeten/skapa-ett-omslag-till-ditt-exjobb-1.479838.

[3] "School of industrial engineering and management", KTH. (2024), [Online]. Available: https://www.kth.se/en/itm/skolan-for-industriell-teknik-och-management-1.812446.

APPENDIX A: SUPPLEMENTARY INFORMATION

Important, but complementary material/results can be placed in appendices. This includes details of any implementation (practical work stages, etc.), large data sets, etc.