

National Taipei University of Technology

Department of Mechanical Engineering

Master's Dissertation

No. 104820123

Development of Computer Aided Design of Mechanical Element (Split long head title into two lines if necessary)

Master's Candidate: ○○○

**National Taipei University of Technology**  
Department of Mechanical Engineering  
Master's Dissertation

Development of Computer Aided Design of  
Mechanical Element

Master's Candidate 

Advisor: Professor Yao Leeh-ter Ph.D.

Date: June 2015

**National Taipei University of Technology**  
**Graduate School **Doctoral** Degree Dissertation**  
**Oral Defense Committee Verification Letter**

This Committee hereby verifies the dissertation submitted by Mr./Ms. \_\_\_\_\_, student of the Institute of \_\_\_\_\_, has qualified for the doctoral degree.

Degree Examination Committee

Member: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Advisor: \_\_\_\_\_

Chairman of Institute: \_\_\_\_\_

Date: [MM] [DD], 2015

**National Taipei University of Technology**  
**Graduate School **Master's** Degree Dissertation**  
**Oral Defense Committee Verification Letter**

This Committee hereby verifies the dissertation submitted by Mr./Ms. \_\_\_\_\_, student of the Institute of \_\_\_\_\_, has qualified for the master's degree.

Degree Examination Committee

Member: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Advisor: \_\_\_\_\_

Chairman of Institute: \_\_\_\_\_

Date: [MM] [DD], 2015

# Abstract

Title: **Development of Computer Aided Design of Mechanical Element**

Pages: **50 pages**

School and Institute: Department of **Mechanical Engineering**, National Taipei University of Technology

Time: **First** semester of Academic Year **2012**

Degree: Master's degree

Researcher: \*\*\*

Advisor: Professor **Li-De Yao**, Ph.D.

Keyword: **Computer Aided Design, Mechanical Element**

The abstract is the summary of the dissertation or report. The purpose is to allow the readers to obtain an overall understanding about this report by reading this brief statement. An abstract usually include the description of questions and outcomes within 500 words or one page, and does not contain any reference or cite any figures. If the dissertation is written in Chinese, the abstract shall be prepared in both Chinese and English version. The title shall be DFKai-SB Bold 20pt, one blank line above and below (**1.5x spacing, 12pt**), followed by the abstract. The abstract page shall be numbered (**in lowercase Roman numerals**).



# Acknowledgement

The author may express the gratitude to any person or institution that provides assistance in the research. The title shall be DFKai-SB Bold 20pt, one blank line above and below (1.5x spacing, 12pt), followed by the abstract. The abstract page shall be numbered (in lowercase Roman numerals).

# Table of Content

Chinese Abstract.....	i
English Abstract.....	ii
Acknowledgement.....	iii
Table of Content.....	iv
Table of Tables.....	v
Table of Figures.....	vi
Chapter 1 Chapter Title.....	1
1.1 Level 1 Subtitle.....	3
1.2 Level 2 Subtitle.....	7
Chapter 2 Chapter Title.....	11
2.1 Level 1 Subtitle.....	17
2.2 Level 1 Subtitle.....	21
2.2.1 Level 2 Subtitle.....	27
2.2.2 Level 2 Subtitle.....	35
2.3 Level 1 Subtitle.....	42
References.....	55
Appendix	
A Name of the first appendix.....	57
B Name of the second appendix.....	58
C Name of the third appendix.....	59
List of Symbols.....	60



# Table of Tables

Table 1.1 Characteristics of machine tools.....	7
Table 2.1 Gear useful life time.....	11
Table 2.2 Factors affecting the growth of grains.....	12
Table 2.3 Results of 20-day inspection.....	22
Table 3.1 Typical copper base alloy casting.....	30

# Table of Figures

Figure 1.1 Theory of mold sand testing.....	5
Figure 2.1 Devices for operation of foundries.....	7
Figure 3.1 Types of core sands.....	23
Figure 3.2 Process of continuous mold casting.....	24
Figure 4.1 The Jominy End Quench Test for testing the hardenability.....	36
Figure 5.1 Similar compressibility of steel powder.....	45
Figure 5.2 Transfer of model processing transfer.....	46

# **Chapter 1 Chapter Title**

## **1.1 Level 1 Subtitle**

Subtitle of each level shall be left-aligned without a blank line left below.

### **1.1.1 Level 2 Subtitle**

Content under the level 2 subtitle.

The title of a table shall be centered above the table, 6pt line spacing, aligned with the table. The title of a figure shall be centered below the figure, 6pt spacing, aligned with the figure. If the title is more than one row, Inverted Pyramid Style shall be used. When editing in Microsoft Word, the space between the title and the corresponding figure or table can be changed in “Paragraph Spacing” under “Paragraph” of “Format”.

#### **1.1.1.1 Level 3 Subtitle**

Content under the level 3 subtitle.

# References

1. 蕭寶森譯，論文寫作規範，臺北：書林出版公司，1994，第 50-52 頁。
2. G. A. Seber and C. J. Wild, *Nonlinear Regression*, New York: John Wiley & Sons, 1989, pp.79-82.
3. 王京明，「臺灣電力代輸施行辦法與管制體系之探討」，能源季刊，第二十八卷，第一期，1998，第 18-34 頁。
4. J. R. Donaldson and R. B. Schnabel, "Computational experience with confidence regions and confidence intervals for nonlinear least squares," *Technometrics*, vol. 29, no. 1, 1987, pp. 67-82.
5. 林冠宏、楊德良，「含自由液圓筒流之渦漩迸裂」，第七屆水利工程研討會論文集，基隆，1994，第 B275-282 頁。
6. R. C. Luo, S. Suresh and D. Grande, "Sensor for cleaning casting with robot and plasma-arc," *Proceedings of the 3rd International Conference on Robot Vision and Sensory Control*, Cambridge, Massachusetts, 1983, pp.102-104.
7. 李尚銘，機械元件設計之電腦輔助程式之發展，碩士論文，國立臺北科技大學機電整合研究所，臺北，1998。
8. A. Pillard, *Flow in Tee Junction*, Ph.D. Thesis, University of London, London, U. K., 1978.

## Note:

1. Author, Book title, City: Publisher, Year published, Page.
2. Author, "Article title", Journal title (in italics) Volume, Issue number, Year of publication, page.
3. Author, "Article title", Conference or editorial title (in italics) , Location, Conference date, Page.
4. Author, Degree dissertation title, Degree, School, City, Year of graduation.
5. Each advisor may specify the format of references according to the specific field of study.

## References

- Seber, G. A. and Wild, C. J.,1989,*Nonlinear Regression*, New York: John Wiley & Sons,pp.79-82.
- Donaldson, J. R. and Schnabel, R. B.,1987,"Computational experience with confidence regions and confidence intervals for nonlinear least squares," *Technometrics*, vol. 29, no. 1, pp. 67-82.
- Luo, R. C., Suresh, S. and Grande,D.,1983,"Sensor for cleaning casting with robot and plasma-arc," *Proceedings of the 3rd International Conference on Robot Vision and Sensory Control*, Cambridge, Massachusetts,pp.102-104.
- Pillard, A., 1978, *Flow in Junction*, Ph.D. Thesis, University of London, London, U. K.
- 蕭寶森譯，1994，論文寫作規範，臺北：書林出版公司，第 50-52 頁。
- 王京明，1998，「臺灣電力代輸施行辦法與管制體系之探討」，能源季刊，第二十八卷，第一期，第 18-34 頁。
- 林冠宏、楊德良，1994，「含自由液圓筒流之渦漩迸裂」，第七屆水利工程研討會論文集，基隆，第 B275-282 頁。
- 李尚銘，1998，機械元件設計之電腦輔助程式之發展，碩士論文，國立臺北科技大學機電整合研究所，臺北。

# Appendix

Content of appendix

# List of Symbols

<b>Symbol</b>	<b>Meaning</b>
$\Theta$	Debye's constant or characteristic temperature
$\Omega$	efficiency; number of molecules
$\Psi$	availability of a closed system
$\Delta$	internal energy (change) of reaction
$\Phi$	availability of a closed system
$\iota$	specific irreversibility
$\lambda$	critical state
$\mu$	Joule-Thomson coefficient
$\nu$	stoichiometric coefficient (number of moles in chemical equation)
$\zeta$	cutoff ratio