

FINAL YEAR PROJECT REPORT
ADVANCED DIPLOMA IN MECHANICAL ENGINEERING
SCHOOL OF ENGINEERING
MARA INSTITUTE OF TECHNOLOGY

COMPUTER AIDED-DESIGN OF A GEARBOX/GEARTRAINS

BY :
KHAIRIL ANUAR BIN HASHIM
ROSLAN BIN ABD. MUTALIB

MAY 1990

CONTENT

ABSTRACT	i
ACKNOWLEDGEMENTS	ii
LIST OF TABLES	iii
LIST OF FIGURES	iv
CHART	v

CHAPTER 1

1.1 Introduction	1
1.2 Arrangement Of The Content Of The Report	2

CHAPTER 2

2.1 Introduction	5
2.2 Subroutine RELI	10
2.3 Subroutine MODULE	11
2.4 Subroutine TEMP	12
2.5 Subroutine LAJU	12
2.6 Subroutine OCF	13
2.7 Subroutine BENDING	14
2.8 Subroutine LDF	15
2.9 Subroutine RATIO	15
2.10 Subroutine ALLSAME	16
2.11 Subroutine A1	16
2.12 Subroutine A2	18

CHAPTER 3

3.1	Introduction	20
3.2	Input Data	21
3.3	Characteristic Of Gear Tooth	21
3.4	Calculations To Determined The Number Of Teeth For Each Gear	22
3.4.1	First Speed	22
3.4.2	Second Speed	23
3.4.3	Third Speed	24
3.5	Calculations To Determine The Safety Factor Of Fatigue Strength	25
3.6	Calculations To Determine The Wear Load	28
3.7	Contact Ratio	30
3.7.1	For Pinion	30
3.7.2	For Gear	31
3.8	Tooth Dimensions	32
3.8.1	For Pinion	32
3.8.2	For Gear	33

ABSTRACT

This report describes an interactive computer program that can be used in the design of the gearbox using spur gears. The program considers gear design parameter as recommended by American Gear Manufacturers (AGMA) which are described in the text by Shigley.

Subroutines were used extensively to produced a modular and thus a portable program. The coding of the program was done in FORTRAN.

ACKNOWLEDGEMENT

We would like to express our gratitude to all who have helped in the production of this work. We are particularly indebted to En. Rosdi Meor Endut, our project advisor for sparing his valuable time to discuss with us on every stages of the project development, imparting his knowledge and experience for which we are grateful.

Particular mention is due to the Computer Laboratory, Mara Institute of Technology for allowing us the use of their minicomputer and personnel computers.

We gratefully acknowledges the assistance of the Technical Staff of the Department of Engineering.

Thanks are also due to En. Ahmad Fakri Shaari for his invaluable advice and constructive criticism.

Lastly but certainly not the least, our deepest thanks and unforgettable gratitude are due to our friends who have unselfishly shared long working hours with us, in the duration of the project.