

UNIVERSITI TEKNOLOGI MARA

**DESIGN & FABRICATE
3D PRINTER PENCIL CASE/BOX
FOR STUDENT USAGE**

MOHAMAD KHAIRUNNAIM BIN JUKEPELY

Dissertation submitted in partial fulfillment
of the requirements for the degree of
Diploma
(Mechanical Engineering)

College of Engineering

October - March 2022

ACKNOWLEDGEMENT

Firstly, I wish to thank God for giving me the opportunity to embark on my diploma and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Madam Ros Atikah Binti Abdul Kadir @ Che Ismail. Finally, this dissertation is dedicated to my father and mother for the vision and determination to educate me. Also dedicated to my fellow friends. This piece of victory is dedicated to both of all.

ABSTRACT

The project given design and fabricated 3D pencil case/box. The problem is how to know the most suitable design and more portable for student purpose especially for engineering student. Based on this project, I studied and designed 3D pencil case/box for student purpose. I also fabricate pencil case/box with suitable and portable design with 3D printer. So, the first step sketched 2 actual design and choose the most suitable design with multipurpose storage. I got the advice from supervisor related with my design. Then next step is going for modelling with “Solidworks” software with the actual dimension. Before generating to workpiece with 3D Printer, file should convert to Gcode and send to SD Card with CURA software. In CURA can setting the adjustment of the material, infill etc. Finally, the product was generated within 19 hours and 3 minutes using ENDER 3.

TABLE OF CONTENT

	Page
CONFIRMATION BY SUPERVISOR	i
AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENT	v
LIST OF FIGURES	vii
LIST OF TABLES	ix
CHAPTER ONE : INTRODUCTION	10
1.1 Background of Study	10
1.2 Problem Statement	11
1.3 Objective	12
1.4 Scope of Project	12
1.5 Scope of Work	13
1.6 Expected Result	15
CHAPTER TWO : LITERATURE REVIEW	16
2.1 Introduction	16
2.2 History of Pencil Case/Box	16
2.3 3D Printer	20
2.4 3D Printing Materials	25
2.5 3D Printer Application	31
CHAPTER THREE : METHODOLOGY	33
3.1 Introduction	33
3.2 Current Design	33
3.3 Final Design Progress in Solidwork	36

3.4	Material Comparison and Selection	38
3.5	Flow Chart	39
CHAPTER FOUR : RESULT AND DISCUSSION		43
4.1	Introduction	43
4.2	Project Final Result	43
4.3	Application of Product	44
CHAPTER FIVE : CONLUSSION AND RECOMMENDATIONS		46
5.1	Conclusion	46
5.2	Recommendation	46
REFERENCES		47
APPENDICES		48