

TABLE OF CONTENT

ABSTRACT	i
APPROVAL SHEET	ii
INTELLECTUAL PROPERTY STATEMENT FORM	iii
PREFACE	v
TABLE OF CONTENT	vii
LIST OF FIGURES	x
LIST OF TABLES	xii
GLOSSARY	xiv
LIST OF APPENDIX	xv
CHAPTER 1 INTRODUCTION	1
I.1 Background	1
I.2 Problem Definition	5
I.3 Research Purpose.....	5
I.4 Research Benefit.....	5
I.5 Research Limitation	5
I.6 Writing Systematic	5
CHAPTER II LITERATURE REVIEW	7
II. 1 Product Design	7
II.1.1. French Design Process Product Design	7
II.1.2. Reason for Choosing the Method.....	8
II. 2 Material Selection.....	10
II. 3 Computer Aided Design (CAD).....	11
II. 4 Finite Element Method/ Finite Element Analysis (FEM/FEA).....	12
II. 5 Ergonomic	13
II.5. 1 Anthropometry	13

II.5. 2	RULA (<i>Rapid Upper Limb Assesment</i>).....	14
II. 6	<i>Simple Additive Weighting Method</i> (SAW).....	15
CHAPTER III PROBLEM SOLVING METHOD.....		17
III.1	Conceptual Model	17
III.2	Problem-solving Systematics	18
III.2. 1	Data Collection and Problem Definition Stage	20
III.2. 2	Product Design Phase	21
III.2. 3	Conclusion and Suggestion Phase	22
CHAPTER IV INTEGRATED SYSTEM DESIGN.....		23
IV.1	Data Collection.....	23
IV.1. 1	Problem Analysis	23
IV.1. 2	Anthropometric Data	24
IV.1. 3	Existing Product Data Dimension	26
IV.2	Product Design Phase.....	28
IV.2. 1	Task Planning	28
IV.2. 2	Conceptual Model Creation.....	30
IV.2. 3	Embodiment of Schemes.....	33
IV.2. 4	Detailing Phase	45
IV.2. 5	Final Design Specification	47
IV.3	RULA Score Calculation.....	48
IV.3. 1	RULA Score of Opening Front Screen Posture	49
IV.3. 2	RULA Score of Reaching and Grabbing IV Liquid Posture.....	51
IV.3. 3	RULA Score of Delivery Position on Bed Posture	53
IV.4	Integrated System Design.....	56
CHAPTER V ANALYSIS AND EVALUATION OF DESIGN RESULTS..		57
V.1	Task Clarification Analysis	57
V.2	Solution Principle Analysis	59
V.3	Qualitative Evaluation Analysis	60

V.4	Quantitative Evaluation Analysis	63
V.5	Detailing Phase Analysis	65
V.6	RULA Calculation Analysis.....	66
CHAPTER VI CONCLUSION AND SUGGESTION		69
VI. 1	Conclusion.....	69
VI. 2	Suggestion	70
REFERENCES.....		71