

## TABLE OF CONTENTS

|  |       |
|--|-------|
| ABSTRACT .....   | ii    |
| VALIDITY SHEET .....                                   | v     |
| ORIGINALITY STATEMENT SHEET .....                      | vi    |
| PREFACE .....  | vii   |
| TABLE OF CONTENTS .....                                | viii  |
| LIST OF TABLES.....                                    | xi    |
| LIST OF FIGURES.....                                   | xiii  |
| LIST OF ABBREVIATIONS.....                             | xx    |
| LIST OF TERMS .....                                    | xxi   |
| LIST OF APPENDIX.....                                  | xxiii |
| CHAPTER I INTRODUCTION .....                           | 1     |
| I.1 Background .....                                   | 1     |
| I.2 Formulation of the Problem .....                   | 5     |
| I.3 Goal of the Final Project .....                    | 5     |
| I.4 Benefits of the Final Project.....                 | 6     |
| I.5 Outline of Chapters .....                          | 6     |
| CHAPTER II THEORITICAL BASIS .....                     | 9     |
| II.1 Literature .....                                  | 9     |
| II.1.1 Management Information System .....             | 9     |
| II.1.2 Asset Management .....                          | 9     |
| II.1.3 Computerized Maintenance Management System..... | 10    |
| II.1.4 Unified Modelling Language .....                | 11    |
| II.1.5 SDLC .....                                      | 13    |
| II.2 Selection of Theory/Model/Design Framework.....   | 17    |
| II.2.1 Reasons for Method Selection .....              | 17    |

|             |   |     |
|-------------|---|-----|
| II.2.2      | Previous Research .....   | 20  |
| CHAPTER III | SYSTEMATIC PROBLEM SOLVING .....                                  | 21  |
| III.1       | Problem Solving Systematic Design .....                           | 21  |
| III.1.1     | Preliminary Stage .....   | 26  |
| III.1.2     | Data Collecting Stage.....  | 26  |
| III.1.3     | System Designing Stage.....                                       | 27  |
| III.1.4     | Testing Stage .....   | 27  |
| III.1.5     | Validation Stage .....  | 28  |
| III.1.6     | Analysis and Evaluation Stage.....                                | 28  |
| III.1.7     | Closing Stage .....   | 29  |
| III.2       | Identification of Integrated System.....                          | 29  |
| III.3       | Limitation and Assumption .....                                   | 29  |
| CHAPTER IV  | INTEGRATED SYSTEM DESIGNING .....                                 | 31  |
| IV.1        | Data Collection.....  | 31  |
| IV.1.1      | Primary Data .....  | 31  |
| IV.1.2      | Secondary Data .....  | 32  |
| IV.1.3      | Stakeholders Identification.....                                  | 32  |
| IV.1.4      | Business Process Identification.....                              | 33  |
| IV.1.5      | Assets in Faculty of Industrial Engineering Indentification ..... | 35  |
| IV.2        | Data Processing.....  | 39  |
| IV.2.1      | User Requirements Identification .....                            | 39  |
| IV.3        | Unified Modelling Language .....                                  | 43  |
| IV.3.1      | Class Diagram .....   | 44  |
| IV.3.2      | Use Case Diagram.....   | 45  |
| IV.3.3      | Activity Diagram.....   | 53  |
| IV.3.4      | Sequence Diagram .....  | 119 |

|            |   |     |
|------------|---|-----|
| IV.3.5     | Mockup Design .....                       | 154 |
| IV.4       | Scrum .....                               | 168 |
| IV.4.1     | Product Backlog .....                     | 168 |
| IV.4.2     | Sprint Planning .....                     | 172 |
| IV.4.3     | Sprint Backlog .....                      | 172 |
| IV.4.4     | Sprint Execution .....                    | 174 |
| IV.4.5     | Sprint Review .....                       | 179 |
| IV.4.6     | Sprint Retrospective .....                | 183 |
| CHAPTER V  | ANALYSIS AND DESIGN RESULTS .....         | 185 |
| V.1        | Verification and Validation .....         | 185 |
| V.1.1      | Verification .....                        | 185 |
| V.1.2      | Validation .....                          | 197 |
| V.2        | Result Analysis .....                     | 206 |
| V.2.1      | System Condition .....                    | 206 |
| V.2.2      | System Advantages and Disadvantages ..... | 207 |
| V.2.3      | Implementation Plan .....                 | 208 |
| CHAPTER VI | CONCLUSION AND RECOMMENDATIONS .....      | 213 |
| VI.1       | Conclusion .....                          | 213 |
| VI.2       | Suggestion and recommendations .....      | 214 |
| REFERENCES | .....                                     | 215 |