

# PROTOTYPE DESIGN COLLECTION

## SERIES 1



**Copyright © 2022 Prototype Design Collection Series 1.**

All right reserved. No part of this digital book may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission from the Head of Department, School of Mechanical Engineering (Pusat Pengajian Kejuruteraan Mekanikal), Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus.

**e-ISBN: 978-967-0033-07-5**

First published, 30 September 2022

**EDITORS:**

Ahmad Najmie Rusli

Nurul Nadiah Rasdi

**PUBLISHED BY:**

Pusat Pengajian Kejuruteraan Mekanikal,  
Universiti Teknologi MARA Cawangan Johor,  
Kampus Pasir Gudang,  
Jalan Purnama, Bandar Seri Alam,  
81750 Masai,  
Johor Darul Ta'zim.  
Tel: +60 7-381 8493

## Table of Contents

<b>CHAPTER 1 .....</b>	<b>1</b>
<b>Fabrication of Mini Hydroelectric Generator .....</b>	<b>1</b>
Muhammad Firdaus Bin Rashidy and Zeno Michael.....	1
<b>CHAPTER 2 .....</b>	<b>3</b>
<b>Design, Analysis and Fabrication of Semi-automated Potato Peeler Machine .....</b>	<b>3</b>
Muhammad Arif Syahmi Mohd Sohaimi and Mohd Fadzli Ismail.....	3
<b>CHAPTER 3 .....</b>	<b>5</b>
<b>Design &amp; Fabrication of Multipurpose Household Drying Cloth and Canopy.....</b>	<b>5</b>
Muhammad Danial Zikri Bin Abdul Jami and Zeno Michael .....	5
<b>CHAPTER 4 .....</b>	<b>7</b>
<b>Full-Body Sanitizing Machine.....</b>	<b>7</b>
Abdul Rashid Bin Nasir and Hazriel Faizal Pahraraji .....	7
<b>CHAPTER 5 .....</b>	<b>9</b>
<b>Motorized Clothes Hanger .....</b>	<b>9</b>
Mohamad Mustaqim Bin Musthafah and Nur Aini Sabrin Binti Manssor .....	9
<b>CHAPTER 6 .....</b>	<b>11</b>
<b>Fabrication Prototype of Agricultural Bar Sprayer .....</b>	<b>11</b>
Ferdinand Dana Anak Alexander and Nur Aini Sabrin Binti Manssor .....	11
<b>CHAPTER 7 .....</b>	<b>13</b>
<b>Design, Analysis and Fabrication of Automatic Feeder for Cows.....</b>	<b>13</b>
Jennifer Jenih Anak Engkamat and Norhisyam Jenal.....	13
<b>CHAPTER 8 .....</b>	<b>15</b>
<b>To Design and Fabricate of An Innovative Multipurpose Hand Truck.....</b>	<b>15</b>
Muhammad Danish Bin Dzulhelmy and Zeno Michael.....	15
<b>CHAPTER 9 .....</b>	<b>18</b>
<b>Design and Fabricate Waste Collector Prototype .....</b>	<b>18</b>
Muhammad Faiszam Bin Isnin and Zeno Michael .....	18
<b>CHAPTER 10 .....</b>	<b>21</b>
<b>Multifunctional Pickup Tool.....</b>	<b>21</b>
Nurul Izzatul Binti Azian and Azizul Hakim Bin Samsudin .....	21
<b>CHAPTER 11 .....</b>	<b>23</b>
<b>Food Cover .....</b>	<b>23</b>
Wan Zahra' Mardiah Binti Amran and Azizul Hakim Bin Samsudin .....	23

<b>CHAPTER 12 .....</b>	<b>25</b>
<b>Mechanical Rice Washer .....</b>	<b>25</b>
Schufee Amani Bin Suhaime and Azizul Hakim Bin Samsudin .....	25
<b>CHAPTER 13 .....</b>	<b>27</b>
<b>Design, Analysis and Fabrication of Shoe Dryer.....</b>	<b>27</b>
Muhammad Akmal Hazim Abdul Halim and Mohd Fadzli Ismail.....	27
<b>CHAPTER 14 .....</b>	<b>29</b>
<b>Mini Plastic Injection Moulding .....</b>	<b>29</b>
Muhammad Arsyad Bin Nashrol Azam and Mohd Fadzli Ismail .....	29
<b>CHAPTER 15 .....</b>	<b>31</b>
<b>Design and Fabrication of Spring Roll Maker .....</b>	<b>31</b>
Afiq Rahman Bin Mohammad and Ahmad Najmie Rusli .....	31
<b>CHAPTER 16 .....</b>	<b>33</b>
<b>Design, Analysis and Fabrication of Mini Curry Puff Machine.....</b>	<b>33</b>
Aliah Maisarah Binti Nordin and Ahmad Najmie Rusli .....	33
<b>CHAPTER 17 .....</b>	<b>35</b>
<b>Design, Analysis and Fabrication of Dish Drying Rack .....</b>	<b>35</b>
Nur Amalia Binti Zahid and Mohd Noor Halmy Ab Latif .....	35
<b>CHAPTER 18 .....</b>	<b>37</b>
<b>Design, Analysis and Fabrication of Mini Car Automated Road and Floor Dust Cleaning Machine.....</b>	<b>37</b>
Hedzry Shafry B. Redzuan Shafry and Suhadiyana Hanapi .....	37
<b>CHAPTER 19 .....</b>	<b>39</b>
<b>Design, Analysis and Fabrication of Multipurpose Kitchen Utensils.....</b>	<b>39</b>
Iman Qistina Abdul Razak and Suhadiyana Hanapi .....	39
<b>CHAPTER 20 .....</b>	<b>41</b>
<b>Design, Analysis and Fabrication of Manual Dust Cleaner for .....</b>	<b>41</b>
<b>Floor .....</b>	<b>41</b>
Mohamad Syafiq Bin Mokhzaine and Nurrul Amilin Binti Zainal Abidin .....	41
<b>CHAPTER 21 .....</b>	<b>43</b>
<b>Design, Analysis and Fabrication of Can Crusher.....</b>	<b>43</b>
Muhammad Danish Bin Izrin Kheirany and Norjasween Binti Abdul Malik.....	43
<b>CHAPTER 22 .....</b>	<b>45</b>
<b>Design, Analysis and Fabrication of Portable Dish Washer .....</b>	<b>45</b>
Muhammad Fakhrurazi Bin Abdul Razak and Norjasween Binti Abdul Malik .....	45

<b>CHAPTER 23</b> .....	<b>47</b>
<b>Design, Analysis and Fabrication Simplified Drain Wastage Cleaner Device</b> .....	<b>47</b>
Muhammad Ikram Hafiz Bin Zaidi Farouk and Abdul Hadi Abdul Rahim @ Ibrahim .....	47
<b>CHAPTER 24</b> .....	<b>49</b>
<b>Design, Analysis and Fabrication of Portable Table Saw</b> .....	<b>49</b>
Dzafran Amani Bin Munir and Ahmad Faizal Khodori.....	49
<b>CHAPTER 25</b> .....	<b>51</b>
<b>Design, Analysis and Fabrication of Tin Can Crusher</b> .....	<b>51</b>
Muhammad Alif Hilmi Bin Osman and Nurrul Amilin Binti Zainal Abidin .....	51
<b>CHAPTER 26</b> .....	<b>53</b>
<b>Design, Analysis and Fabrication of Staircase Climbing Trolley</b> .....	<b>53</b>
Muhammad Ashraf Bin Saiful Adli and Nurrul Amilin Binti Zainal Abidin.....	53
<b>CHAPTER 27</b> .....	<b>55</b>
<b>Motorized Adjustable Television Wall Mount</b> .....	<b>55</b>
Aiman Hakim Amir James and Noor Hafiz Noordin .....	55
<b>CHAPTER 27</b> .....	<b>57</b>
<b>Design, Analysis and Fabrication of Mini Clothes Dryer</b> .....	<b>57</b>
Muhammad Shazmil Izzat Bin Mohd Sohaimi and Nurulnatisya Ahmad .....	57
<b>CHAPTER 28</b> .....	<b>59</b>
<b>Design, Analysis and Fabrication of Automatic Knife Sharpener</b> .....	<b>59</b>
Mohamad Faliq Bin Fadzil and Mohd Noor Halmy Ab Latif.....	59
<b>CHAPTER 29</b> .....	<b>61</b>
<b>Secured Bicycle Parking Rack for UiTM Pasir Gudang</b> .....	<b>61</b>
Nurul Nurfaizzah Binti Abdullah and Hazim Bin Sharudin .....	61
<b>CHAPTER 30</b> .....	<b>63</b>
<b>Design and Fabrication of Glass Bottle Cutter</b> .....	<b>63</b>
Nurul Alya Amanina Binti Mohd Ishak and Ab Aziz Bin Mohd Yusof .....	63
<b>CHAPTER 31</b> .....	<b>65</b>
<b>Design, Analysis and Fabrication of Automatic Lawnmower</b> .....	<b>65</b>
Nur Amirah Binti Mazlan and Haszeme Bin Abu Kasim .....	65
<b>CHAPTER 32</b> .....	<b>67</b>
<b>Design, Analysis and Fabrication of Carpet Cleaner</b> .....	<b>67</b>
Nur Miesya Maisara Binti Nor Yazid and Haszeme Bin Abu Kasim.....	67
<b>CHAPTER 33</b> .....	<b>69</b>

<b>Cement Apply Helper .....</b>	<b>69</b>
Mohamad Fakhri Bin Mohammad Sukri and Nurrul Amilin Binti Zainal Abidin .....	69
<b>CHAPTER 34 .....</b>	<b>71</b>
<b>Design, Analysis and Fabrication of Portable Grill Machine .....</b>	<b>71</b>
Muhammad Harith Bin Zainul Asri and Nur Kamarliah Kamardin .....	71
<b>CHAPTER 35 .....</b>	<b>73</b>
<b>Design, Analysis, and Fabrication of Iron Clothes.....</b>	<b>73</b>
Izzah Atirah Binti Ahmad Sirfan and Mohd Noor Halmy Ab Latif .....	73
<b>CHAPTER 36 .....</b>	<b>75</b>
<b>Design, Analysis, and Fabrication of Automatic Portable Hammering Machine.....</b>	<b>75</b>
Fareez Bin Ahmad Taupiq Nasri and Ahmad Faidzal Khodori.....	75
<b>CHAPTER 37 .....</b>	<b>77</b>
<b>Design, Analysis, and Fabrication of Street Sweeper Machine .....</b>	<b>77</b>
Awangku Muhammad Dzul Hisyam Bin Awang Basuandi and Ahmad Faidzal Khodori .....	77
<b>CHAPTER 38 .....</b>	<b>79</b>
<b>Design, Analysis, and Fabrication of Portable Washing Machine .....</b>	<b>79</b>
Nur Syafiah Binti Abu Bakar and Nurulsaidatulsyida Binti Sulong.....	79
<b>CHAPTER 39 .....</b>	<b>81</b>
<b>Design, Analysis, and Fabrication of Pet Food Refill .....</b>	<b>81</b>
Raja Nuryasmin Balqis Bt Raja Zainud and Nurulsaidatulsyida Binti Sulong .....	81
<b>CHAPTER 40 .....</b>	<b>83</b>
<b>Indoor Smart Vase Self-Watering Plant.....</b>	<b>83</b>
Muhammad Nur Amni Khariman and Najibah Ab Latif .....	83
<b>CHAPTER 41 .....</b>	<b>85</b>
<b>Design of Solar Powered Light for Remote Country with Poor Lighting.....</b>	<b>85</b>
Muhammad Imran Roslan and Najibah Ab Latif.....	85
<b>CHAPTER 42 .....</b>	<b>87</b>
<b>Design, Analysis and Fabrication of Semi-Auto Cup Rinser .....</b>	<b>87</b>
Muhammad Amar Zakwan Bin Anuar and Raja Muhammad Aslam Raja Arif.....	87
<b>CHAPTER 43 .....</b>	<b>89</b>
<b>Design, Analysis and Fabrication of Manual Food Slicer Machine .....</b>	<b>89</b>
Muhammad Fareed Johari and Raja Muhammad Aslam Raja Arif .....	89
<b>CHAPTER 44 .....</b>	<b>91</b>
<b>Automatic Laptop Stand .....</b>	<b>91</b>
Amirul Haziq Roselin and Noor Hafiz Noordin.....	91

<b>CHAPTER 45</b> .....	<b>93</b>
<b>Automatic Postbox Opener for Parcel</b> .....	<b>93</b>
Afiq Syafi Mohd Suhaimi and Noor Hafiz Noordin .....	93
<b>CHAPTER 46</b> .....	<b>95</b>
<b>Design, Analysis and Fabrication of Automated Shirt Folder</b> .....	<b>95</b>
Muhammad Hafiz Kamal Bin Mohamad Kamal and Syidatul Akma Sulaiman .....	95
<b>CHAPTER 47</b> .....	<b>97</b>
<b>Development of a Prototype Fingerprint Safety Padlock Using Arduino for Motorcycle</b> .....	<b>97</b>
Muhammad Nur Eidham Bin Norizan and Wan Muhammad Syahmi Wan Fauzi .....	97
<b>CHAPTER 48</b> .....	<b>99</b>
<b>Development of a Beach Cleaning Machine</b> .....	<b>99</b>
Muhammad Syahir Bin Mohamad Tazri and Wan Muhammad Syahmi Wan Fauzi .....	99
<b>CHAPTER 49</b> .....	<b>101</b>
<b>Development of a Floatation Platform for a Water Trash Collector</b> .....	<b>101</b>
Muhammad Aidil Irfan Bin Mat Nawati and Norhisyam Jenal .....	101
<b>CHAPTER 50</b> .....	<b>103</b>
<b>Design and Fabrication of Ergonomic Gaming Mouse</b> .....	<b>103</b>
Muhammad Faris Azri Bin Shamsulasri and Zeno Michael .....	103
<b>CHAPTER 51</b> .....	<b>105</b>
<b>Design and Fabrication of An Innovative 360o Degree Standing Fan</b> .....	<b>105</b>
Muhammad Hazeq Bin Misuan and Zeno Michael .....	105
<b>CHAPTER 52</b> .....	<b>107</b>
<b>Development of Propulsion System for Water Trash Collector</b> .....	<b>107</b>
Raudah Binti Nordin and Norhisyam Jenal .....	107
<b>CHAPTER 53</b> .....	<b>109</b>
<b>Design and Fabrication of Motorized Bench Vise</b> .....	<b>109</b>
Isyraf Zikry Bin Hafidzal and Nur Aini Sabrin Binti Manssor .....	109
<b>CHAPTER 54</b> .....	<b>111</b>
<b>Design, Analysis and Fabrication of Adjustable Wrench</b> .....	<b>111</b>
Muhammad Amirul Aiman Mohd Faizal and Mohd Fadzli Ismail .....	111
<b>CHAPTER 55</b> .....	<b>113</b>
<b>Design of Alternative Way to Refill Waffle Maker Machine</b> .....	<b>113</b>
Seri Fazira Nuraisya Binti Rosli and Nurulsaidatulsyida Binti Sulong .....	113
<b>CHAPTER 56</b> .....	<b>115</b>

<b>Design, Analysis and Fabrication of Mini Belt Sander.....</b>	<b>115</b>
Azad Hazim Bin Bahrulashikin and Ahmad Faidzal Khodori.....	115
<b>CHAPTER 57 .....</b>	<b>117</b>
<b>Design, Analysis and Fabrication of Hydraulic Jack.....</b>	<b>117</b>
Ammar Bin Azman and Suhadiyana Hanapi.....	117
<b>CHAPTER 58 .....</b>	<b>119</b>
<b>Design and Fabrication of Innovation of Goods Sanitizer .....</b>	<b>119</b>
Muhammad Faez Haikhal Bin Mohd Fuad and Zeno Michael .....	119
<b>CHAPTER 59 .....</b>	<b>121</b>
<b>Design, Analysis and Fabrication of Sheet Metal Bender .....</b>	<b>121</b>
Ahmad Fareez Izham Bin Che Ramli and Ahmad Najmie Rusli .....	121
<b>CHAPTER 60 .....</b>	<b>123</b>
<b>Design, Analysis and Fabrication of Mini Portable Kettle.....</b>	<b>123</b>
Nur Farra Nazirah Binti Che Mohammad Saidi and Nurulsaidatulsyida Binti Sulong .....	123
<b>CHAPTER 61 .....</b>	<b>125</b>
<b>Design, Analysis and Fabrication of Ice Cream Machine with Dispenser .....</b>	<b>125</b>
Nur'ain Humaira binti Mohamad Nasir and Nurulsaidatulsyida Binti Sulong .....	125
<b>CHAPTER 62 .....</b>	<b>127</b>
<b>Mini Agriculture Shovel with Cutter .....</b>	<b>127</b>
Muhammad Izzat Shamsul Bahri and Najibah Ab Latif.....	127
<b>CHAPTER 63 .....</b>	<b>129</b>
<b>Development of a Piping System for a Flow Visualization Water Tunnel.....</b>	<b>129</b>
Muhammad Aimi Aireez Bin Zamir and Norhisyam Jenal.....	129
<b>CHAPTER 64 .....</b>	<b>131</b>
<b>Development of an Adjustable-Motorized Wheelbarrow .....</b>	<b>131</b>
Muhammad Syahrin Bin Suhaimi and Wan Muhammad Syahmi Wan Fauzi .....	131
<b>CHAPTER 65 .....</b>	<b>133</b>
<b>Design and Fabrication of Vegetable Slicing Machine .....</b>	<b>133</b>
Muhammad Amirul Hafiz Amirzali and Mohd Fadzli Ismail.....	133
<b>CHAPTER 66 .....</b>	<b>135</b>
<b>Design, Analysis and Fabrication of Malay Traditional Snacks Cutter .....</b>	<b>135</b>
Amirah Hanis Binti Azman and Ahmad Najmie Rusli .....	135
<b>CHAPTER 67 .....</b>	<b>137</b>
<b>Design, Analysis and Fabrication of Desk Mount Laptop Stand with Cooler.....</b>	<b>137</b>
Anaqi Bunyamin Bin Zulhazmi and Ahmad Faidzal Khodori .....	137



<b>CHAPTER 68</b> .....	<b>139</b>
<b>Design, Analysis and Fabrication of Wire Cutting Machine</b> .....	<b>139</b>
Muhammad Nabil Bin Saeman and Abdul Hadi Abdol Rahim @ Ibrahim .....	139
<b>CHAPTER 69</b> .....	<b>141</b>
<b>Design, Analysis and Fabrication of Semi-Auto Kuih Siput Maker</b> .....	<b>141</b>
Nornatasha Binti Azani and Nurrul Amilin Binti Zainal Abidin .....	141
<b>CHAPTER 70</b> .....	<b>143</b>
<b>Design, Analysis and Fabrication of 2 in 1 French Fries Machine</b> .....	<b>143</b>
Ahmad Hakim Bin Khamis and Ahmad Najmie Rusli.....	143
<b>CHAPTER 71</b> .....	<b>145</b>
<b>Foldable Multifunction Hand Trolley</b> .....	<b>145</b>
Muhammad Luqman Fahmi Mohd Zaki and Najibah Ab Latif .....	145
<b>CHAPTER 72</b> .....	<b>147</b>
<b>Design, Analysis and Fabrication of Shoes Dryer</b> .....	<b>147</b>
Muhammad Ruzaini Bin Harun and Abdul Hadi Abdol Rahim @ Ibrahim .....	147
<b>CHAPTER 73</b> .....	<b>149</b>
<b>Design, Analysis and Fabrication of Climbing Spinning Cart</b> .....	<b>149</b>
Muhammad Syamin Haiman Bin Harun and Abdul Hadi Abdol Rahim @ Ibrahim .....	149
<b>CHAPTER 74</b> .....	<b>151</b>
<b>Design, Analysis and Fabrication of Ceiling Fan Wiper</b> .....	<b>151</b>
Nouqib Aizad Azryil Bin Mat Azim and Haszeme Bin Abu Kasim .....	151
<b>CHAPTER 75</b> .....	<b>153</b>
<b>Design, Analysis and Fabrication of An Escalator Model for Educational Purposes</b> .....	<b>153</b>
Ahmad Harith Bin Abdullah, Ilya Izyan Binti Shahrul Azhar and Miqdad Bin Khairulmaini .....	153
<b>CHAPTER 76</b> .....	<b>155</b>
<b>Design, Analysis and Fabrication of Grill and Fry Box</b> .....	<b>155</b>
Farries Hazieq Bin Nor Fauzy and Muhamad Faris Syafiq Bin Khalid.....	155
<b>CHAPTER 77</b> .....	<b>157</b>
<b>Design, Analysis and Fabrication of Wheel Dolly Jack</b> .....	<b>157</b>
Muhammad Haiqal Danish Bin Ahmad and Nor Liawati Abu Othman .....	157
<b>CHAPTER 78</b> .....	<b>159</b>
<b>Design, Analysis and Fabrication of Mechanical Leaves Scraper</b> .....	<b>159</b>
Nur Fatihah Binti Saiful Effendy and Ahmad Faidzal Khodori.....	159
<b>CHAPTER 79</b> .....	<b>161</b>

<b>Design, Analysis and Fabrication of Solar Power Bank Using Recycle Battery .....</b>	<b>161</b>
Aqil Hafiz Tsen Loong Tyan and Suhadiyana Hanapi.....	161
<b>CHAPTER 80 .....</b>	<b>163</b>
<b>Design, Analysis and Fabrication of Mini Taffy Puller .....</b>	<b>163</b>
Amiratul Aqilah Binti Mohd Zainol and Suhadiyana Hanapi .....	163
<b>CHAPTER 81 .....</b>	<b>165</b>
<b>Design and Fabricate of Solar Box Cooker .....</b>	<b>165</b>
Muhammad Shahir Bin Ismail and Abdul Hadi Abdol Rahim @ Ibrahim.....	165
<b>CHAPTER 82 .....</b>	<b>167</b>
<b>Design, Analysis and Fabricate of Automatic Noodle Making Machine .....</b>	<b>167</b>
Azril Firdaus Bin Azmi and Ahmad Faizal Khodori.....	167
<b>CHAPTER 83 .....</b>	<b>169</b>
<b>Design, Analysis and Fabricate of Coconut Water Juice Extractor.....</b>	<b>169</b>
Ahmad Radhee Bin Athaillah and Ahmad Najmie Rusli.....	169
<b>CHAPTER 84 .....</b>	<b>171</b>
<b>Design, Analysis and Fabricate of Smart Vacuum Cleaner .....</b>	<b>171</b>
Alif Bin Amaluddin and Ahmad Najmie Rusli .....	171
<b>CHAPTER 85 .....</b>	<b>173</b>
<b>Design, Analysis and Fabricate of Foldable and Adjustable Desk .....</b>	<b>173</b>
Muhammad Ammar Amsyar Azran and Mohd Fadzli Ismail .....	173
<b>CHAPTER 86 .....</b>	<b>175</b>
<b>Design, Analysis and Fabricate of The Humidifier and Air Freshener .....</b>	<b>175</b>
Muhammad Syazwan Fathullah Bin Mohd Yunus and Nor Liawati Abu Othman .....	175
<b>CHAPTER 87 .....</b>	<b>177</b>
<b>Design and Fabricate of Road Cleaning Machine.....</b>	<b>177</b>
Ahmad Safwan Bin Ariffin and Haszeme Bin Abu Kasim.....	177
<b>CHAPTER 88 .....</b>	<b>179</b>
<b>Design, Analysis and Fabrication of Seed Machine .....</b>	<b>179</b>
Muhammad Zakwan Bin Zainol Arifen and Haszeme Bin Abu Kasim .....	179
<b>CHAPTER 89 .....</b>	<b>181</b>
<b>Drain Cleaner .....</b>	<b>181</b>
Nik Muhammad Haiqal Bin Nik Muhammad Shukrri and Haszeme Bin Abu Kasim .....	181
<b>CHAPTER 90 .....</b>	<b>183</b>
<b>Design, Analysis and Fabrication of Chapatti Mini Making Machine.....</b>	<b>183</b>
Norshamimie Binti Mohd Nazir and Haszeme Bin Abu Kasim .....	183

<b>CHAPTER 91 .....</b>	<b>185</b>
<b>Design, Analysis and Fabrication of Remote-Controlled Mop .....</b>	<b>185</b>
Nuqman Aliff Bin Masukor and Haszeme Bin Abu Kasim .....	185
<b>CHAPTER 92 .....</b>	<b>187</b>
<b>Design, Analysis and Fabrication of Portable Washing and Drying Machine .....</b>	<b>187</b>
Muhammad Zarif bin Abdul Aziz and Haszeme Bin Abu Kasim .....	187
<b>CHAPTER 93 .....</b>	<b>189</b>
<b>Design and Fabrication of Hydraulic Crane for Preschool Education Purpose .....</b>	<b>189</b>
Alnizar and Zeno Michael.....	189
<b>CHAPTER 94 .....</b>	<b>191</b>
<b>Design and Fabrication of Automatic Fishing Rod Snatcher .....</b>	<b>191</b>
Muhammad Hakim Bin Rasdi and Nur Kamarliah Kamardin .....	191
<b>CHAPTER 95 .....</b>	<b>193</b>
<b>Design and Development of Mini Wind Tunnel for Replicate Aeroplane .....</b>	<b>193</b>
Alisa Syafiqah Bin Jasmi and Ab Aziz Bin Mohd Yusof .....	193
<b>CHAPTER 96 .....</b>	<b>195</b>
<b>Design and Fabrication of a Portable Hack Saw Machine.....</b>	<b>195</b>
Danish Haikal Bin Mohamad Hamzani and Miqdad Bin Khairulmaini .....	195
<b>CHAPTER 97 .....</b>	<b>197</b>
<b>Design and Fabrication of a Fan Cleaning Machine.....</b>	<b>197</b>
Balqis Safiyyah Binti Othaman and Miqdad Bin Khairulmaini .....	197
<b>CHAPTER 98 .....</b>	<b>199</b>
<b>Portable Dry Leaf Sweeper Powered by a Single Motor.....</b>	<b>199</b>
Siti Nurdyana Binti Mazlan and Wan Muhammad Syahmi Wan Fauzi .....	199

## CHAPTER 31

### Design, Analysis and Fabrication of Automatic Lawnmower

Nur Amirah Binti Mazlan and Haszeme Bin Abu Kasim

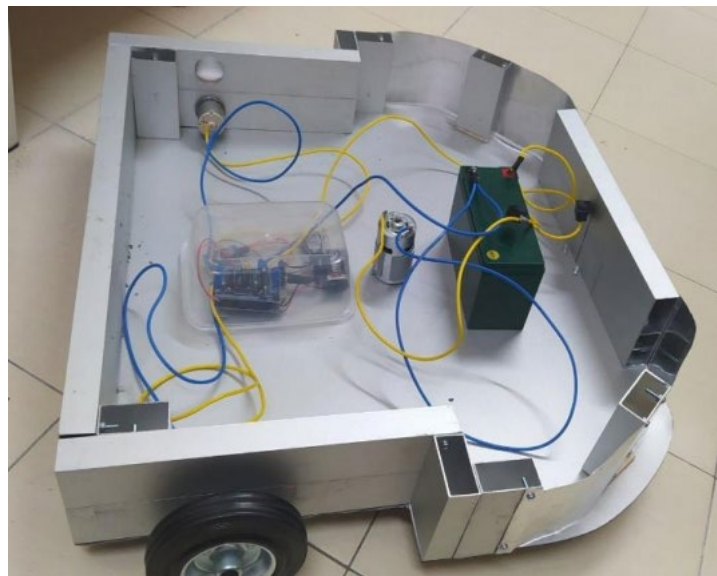
College of Engineering (Mechanical), Universiti Teknologi MARA Johor Branch,  
Pasir Gudang Campus, 81750 Masai, Bandar Seri Alam, Johor Darul Ta'zim.  
Email: miramazlan27@gmail.com

#### PROJECT DESCRIPTION

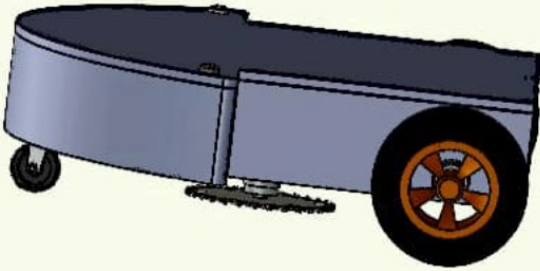
A lawnmower is a machine that consists of one or more revolving blades to cut a grass surface to an even slick height. It is not a new invention; it has been found dated back from the 1830. However, there have been further improvements since the first innovation and the earliest is that the manual lawnmower has changed into fully automatic. Due to the large size that leads to many difficulties, this project is to fabricate an automatic lawnmower machine that is compact and consumes less energy. This lawnmower is powered by three DC motors as it gives more efficiency and makes better use of the input energy. Not to mention, the body frame for this lawnmower is made of light material that helps in the portability, and its automatic reduce the human intervention that it has, it can lead to serious injury. This eco-friendly lawnmower machine will benefit all classes of users at an affordable price.

**Keywords:** *Lawnmower, Fully Automatic, Design, Fabricate, Portability*

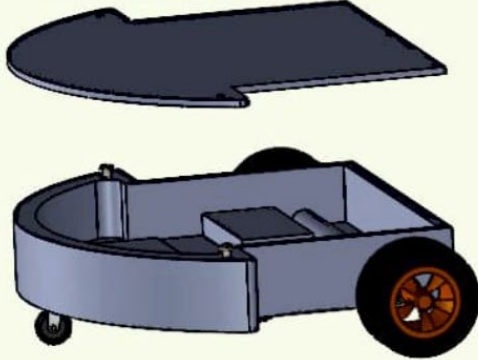
#### PROTOTYPE



## DESIGN PARAMETER



FAKULTI KEJURUTERAAN MEKANIKAL (FKM) UNIVERSITI TEKNOLOGI MARA (UTM) JOHOR KAMPUS PASIR GUDANG					
<b>Course Name</b>		MEC300 FINAL YEAR PROJECT 2 SESSION : OKT 2021 - FEB 2022			
<b>Group</b>		J4EM1105D			
<b>Approved</b>	<b>Checked</b>	<b>Drawn</b> NUR AMIRAH MAZLAN			
<b>Drawing Title</b> ASSEMBLY OF AUTOMATIC LAWNMOWER					
<b>Part Name</b>					
<b>Part No.</b>					
<b>Rev.</b> 0	<b>Scale</b> 1 : 3	<b>Projection</b>		<b>Weight</b> 5.0 kg	<b>Sheet</b> 1/2



BILL OF MATERIALS (BOM)			
PART NO.	PART NAME	DESCRIPTION	QTY.
1	COVER BODY	ALUMINIUM	1
2	BODY FRAME	ALUMINIUM	1
3	SCREWS	M10 x 30	5
4	FRONT TYRE	360 degree movement	1
5	REAR TYRES	R102	2
6	CUTTER BLADE	R92	1
7	DC MOTOR	12V	3

FAKULTI KEJURUTERAAN MEKANIKAL (FKM) UNIVERSITI TEKNOLOGI MARA (UTM) JOHOR KAMPUS PASIR GUDANG					
<b>Course Name</b>		MEC300 FINAL YEAR PROJECT 2 SESSION : OKT 2021 - FEB 2022			
<b>Group</b>		J4EM1105D			
<b>Approved</b>	<b>Checked</b>	<b>Drawn</b> NUR AMIRAH MAZLAN			
<b>Drawing Title</b> EXPLORED ASSEMBLY OF AUTOMATIC LAWNMOWER					
<b>Part Name</b>					
<b>Part No.</b>					
<b>Rev.</b> 0	<b>Scale</b> 1 : 4	<b>Projection</b>		<b>Weight</b> 5.0 kg	<b>Sheet</b> 2/2