

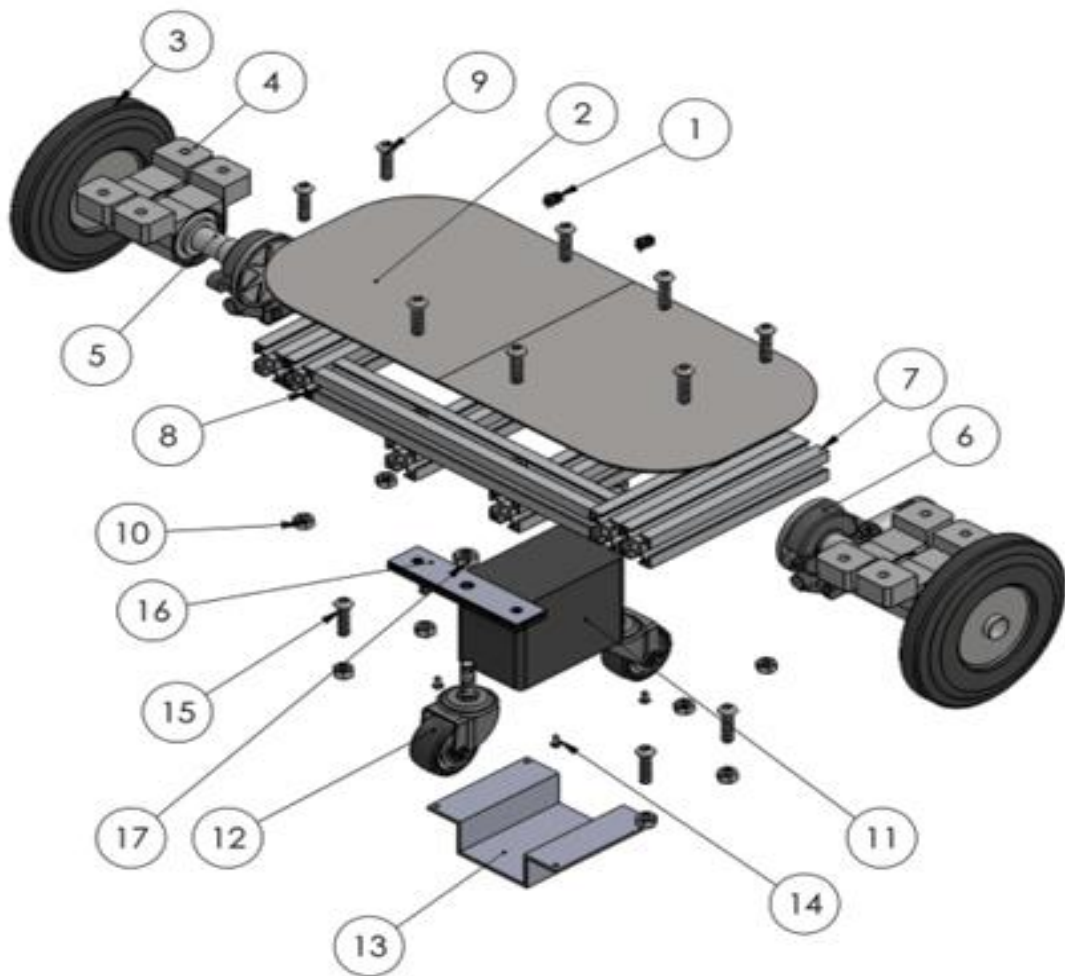
PROTOTYPE DESIGN COLLECTION

SERIES 2



Prototype Design Collection

Series 2



AHMAD NAJMIE RUSLI

**UNIVERSITI TEKNOLOGI MARA CAWANGAN JOHOR
KAMPUS PASIR GUDANG**

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FOREWORD

This digital book on Prototype Design Collection Series 2 (PDC Series 2) is published as a reference design for mechanical engineering students. The designs presented experience a few phases of analysis before fabrication of prototype. Each project summarises the project description, prototype, figures, and design parameter. The design products vary in tools or equipment for household, workshop, entrepreneur, etc. Suggested material and detail of prototype dimension are also mentioned in this book.

It is hoped that this book will assist the students to have more ideas on innovation design products in the future.

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CHAPTER 55

Development of a Hoverboard

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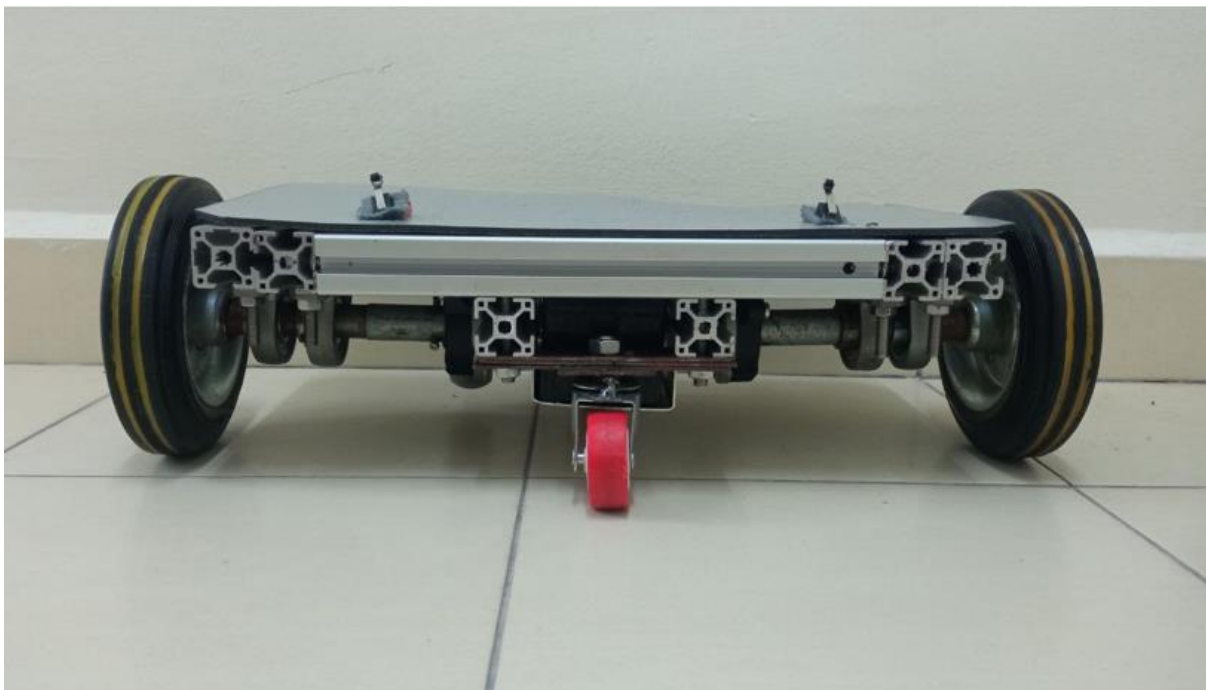
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PROJECT DESCRIPTION

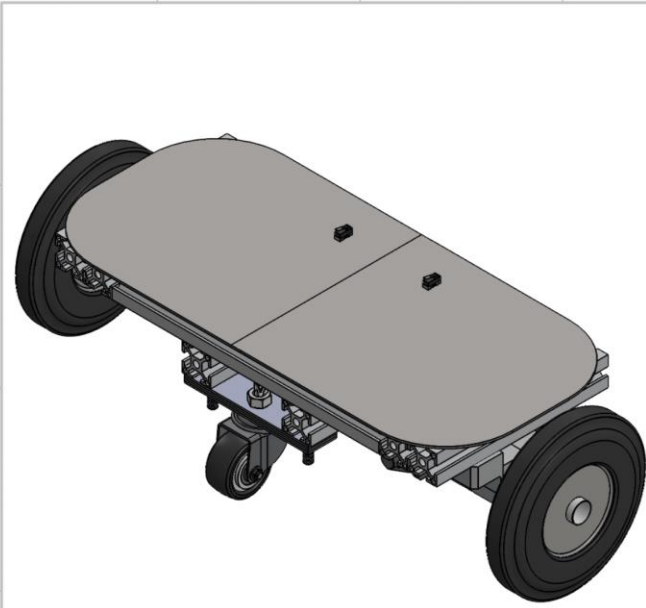
Hoverboarding is a mode of personal transportation that allows people to get to their destination quickly without becoming physically tired as they would if they were walking. Walking long distances can be physically exhausting and time-consuming, especially for students who have a tight schedule. The aim of this project is to design and fabricate a hoverboard for students to use on their daily walks to and from class. The hoverboard is designed to be controlled by pedals and powered by DC batteries. When the pedals are pressed or loaded, the engine beneath the platform turns the tires connected to it, and the board naturally balances when people ride it, preventing any mishaps. The constructed hoverboard proved to be an efficient and reliable mode of transportation for students, saving time and energy and providing a convenient alternative to walking. This study recommends introducing the hoverboard to students on their daily walks to and from class to help improve their commuting experience. The hoverboard has the potential to change the way students move around the campus, providing a comfortable and efficient mode of transportation.

Keywords: *Hoverboard, Powered DC batteries*

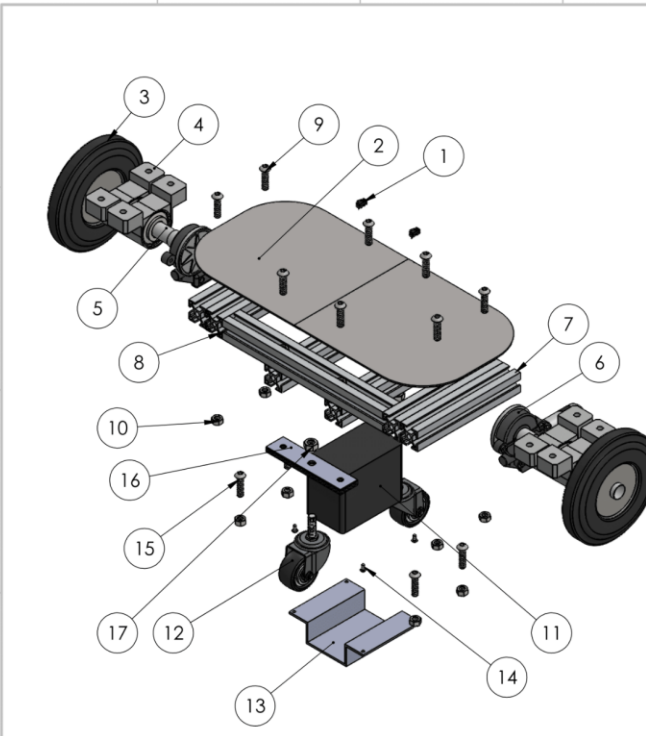
PROTOTYPE



DESIGN PARAMETER



FAKULTI KEJURUTERAAN MEJANIKAL (FKM) UNIVERSITI TEKNOLOGI MARA (UTM) KAMPUS PASIR GUDANG				
Course Name		MEC299 - FINAL YEAR PROJECT 1 SESSION; MARCH 2021 - AUGUST 2021		
Group		J4EM1104E		
Approved	Checked	Drawn SITI RAFHANAH BINTI SUWANDI		
Drawing Title		ASSEMBLY OF A HOVERBOARD		
Part Name		-		
Part No.		-		
Rev.	Scale	Projection	Weight	Sheet
0	1:3		11.0 kg	12/13



BILL OF MATERIALS (BOM)			
PART NO.	PART NAME	DESCRIPTION	QTY.
1	Push Button	-	2
2	Platform	440 mm × 200 mm × 5 mm	1
3	Main Tire	152.4 mm	2
4	Pillow Block bearing	20 mm (diameter)	4
5	Shaft	20 mm (diameter)	2
6	Motor	-	2
7	Frame	30 mm × 420 mm × 180 mm	1
8	Button Head Screw	M8×16	4
9	Button Head Screw	M8×40	4
10	Nut M8	M8	18
11	Battery	65 mm × 95 mm	1
12	Support Tire	76.2 mm	2
13	Battery Bracket	125 mm × 60 mm × 3 mm	1
14	Button Head Screw	M5 × 8	2
15	Button Head Screw	M8 × 30	12
16	Support Tire Plate	200 mm × 200 mm × 2 mm	6
17	Nut M10	M10	2

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Course Name		MEC299 - FINAL YEAR PROJECT 1 SESSION; MARCH 2021 - AUGUST 2021		
Group		J4EM1104E		
Approved	Checked	Drawn SITI RAFHANAH BINTI SUWANDI		
Drawing Title		EXPLODED ASSEMBLY OF A HOVERBOARD		
Part Name		-		
Part No.		-		
Rev.	Scale	Projection	Weight	Sheet
0	1:10		11.0 kg	13/13