جامعة الأمير محمد بن فهد
PRINCE MOHAMMAD BIN FAHD UNIVERSITY

College of Engineering

Department of Mechanical Engineering

Spring 2020-2021

Senior Design Project Report

Design of light weight vehicle car

In partial fulfillment of the requirements for the Degree of Bachelor of Science in Mechanical Engineering

Team Members

Student Name	Student ID
1. Wessam Aljubran	201301642
2. Ali Almoaili	201302451
3. Salman Alqahtani	201500475
4. Saleh ldan	201601226
5. Rayan Alrashdi	201403815

Project Advisors:

Advisor Name: Dr. Mohamed Elmehdi Saleh

Abstract

The lightweight vehicle car is known as a kart car and may challenge traditional cars in the future. It is one of the largest and fastest markets for small cars. Lightweight vehicle cars represent a sustainable technological path and are similar to other cars in design and manufacturing. The work on the manufacture and design of lightweight vehicle engineering helps us find the differences between lightweight vehicle cars and other cars. For this project, the lightweight vehicle car specializes in complete systems solutions with high-quality specifications. The light-weight vehicle car is a project that contains four wheels, a gas pedal, and a brick to control the speed while driving down connected to the chassis with an electrical system or a different system that helps to fully operate the chassis and the requirements of the small shape factor. Also, the lightweight vehicular has controls, precise design, and less weight. The materials of the system design of the lightweight vehicle car are generators, wheels, and pedals. At the stage of designing and manufacturing materials, we need to consider brands such as chassis, weight, and cost because there are similar designs in the manufacture of a lightweight vehicle car. You need to design a car to make a division, audit, and manufacturing work. Also, it is interesting how to manufacture the electric car and eliminate the conventional car in the future. On the other hand, lightweight vehicle cars are cheap to keep saving. Finally, a lightweight vehicle car is an advantage to the world before it has people in a way that will help us live better and live longer.

Acknowledgement

First and foremost, we want to thank our advisor, Dr. Mohamed Elmehdi Saleh, for his unwavering support and encouragement during our project. We also want to express our gratitude to our Engineering professors for their experience and guidance. We'd like to express our gratitude to Dr. Faramarz Djavanroodi, chair of PMU's Mechanical Engineering Department, for his unwavering support and belief in our ability to complete such a project that tests and challenges us to hone and apply our skills over the year. Finally, we want to express our gratitude to our parents for their unwavering love, encouragement, and attention, as it is only because of their moral support that we can stand tall in such a position.

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Chapter # 1: Introduction

1.1 Project Definition

This project aims to design and build a lightweight vehicle. The lightweight vehicle is intended for off-road use. This type of vehicle is called a light vehicle and is widely used in entertainment and off-road settings. In this project, a petrol engine with a top speed of 40 km/h will be used.

1.2 Project Objectives

This senior project's main goal is to plan and build a single-seat four-wheel off-road vehicle for the local market. The vehicle will be capable of providing its user with a safe and comfortable journey.

1. Provide low and small energy use for rapid mobility and climate protection from pollution for the mobility sector.
2. Contributes to the use of more space in narrow spaces and reduces congestion.
3. Regulation of a lightweight car includes all safety requirements to prevent any injury to the owner of the car
4. Making a lightweight car with a low cost.
5. The vehicle's architecture should include features such as the engine, transmission, suspension, braking, and electricity, among others.
6. Choose vehicle motor and transmission frameworks that can provide enough power and torque to travel at 35 to 40 mph.

1.3 Project Specifications

The specifications of this project are divided into:

1. Conduct a search, review, and collection of data on the available resources.
2. Create a concept.
3. Choose from a variety of appropriate dimensions and components. Data on all possible scenarios were analyzed.
4. Keep a record of your findings.
5. Examine the outcome.
6. Recommendations

Chapter # 2: Literature Review

2.1 Project Background

What is the point of making a lightweight vehicle car? These vehicles are inexpensive and a lot of fun to ride and drive in off-road environments, dirt, and even mud. It does not have a lot of force, but it is sufficient for two adults to travel on back roads. We use SOLIDWORKS to create the project so that we can see the dimensions, lengths, and angles of the elements. This 3D SOLIDWORKS concept will help us see the car before we build it, so this is the frame for our lightweight vehicle car. We'll use an iron because it's light and heavy.

In addition, we designed the lightweight vehicle car in a workshop, using construction steel for the frame that was both solid and inexpensive, and a small but powerful engine as the prime mover. A few choices will be considered, and the one that provides the best design and the lowest overall cost will be selected.

2.2 Previous Work

DIY projects (2020) Poland he manufacturer Off Road Go Kart. Why to make a go kart? Mainly for fun and for kids. Such cars are not expensive and really fun to ride. But what if you have two kids and one of them is too small to drive a little car? Just make two seats go kart and you will be able to control the ride with smaller one. Go kart which I'm showing to you is capable to drive on off road areas, on gravels and even mud. It doesn't have much power, but enough for country roads for two adult persons. Our projects will be in Electric engine because it doesn't environmentally friendly have Air pollution from engine exhaust, gasoline and the engine quiet more safety for kids.

2.3 Comparative Work

Lightweight vehicle car for recreational riding on efficient with drop handlebars and narrow tires are used. Race and stamina are two types of styles and Another advantage of the Light weight vehicle car is that it has four wheels and can be driven on both rough and bumpy roads as well as regular roads.

Chapter # 3: System Design

3.1 Design Constraints and Design Methodology

3.1.1 : Sustainability:

Thinking about the task as an entire, it might nearly appear to be a totally different plan of a cart. Nonetheless, there are interesting points precisely. At the point when the weight of the cart will be lighter, it would run longer than its significant match. Since, mechanical segments like the shock absorbers, steering linkages, rubber bushings, and engine and drivetrain components be under undeniably less pressure and exhaustion. In view of such rules, we can securely guarantee the maintainability of our venture and its plan.

3.1.2 : Environmental Concern:

Also, relating the manageability and by and large actual measurements and properties of the vehicle there is a small amount of natural danger from the car then there is from ordinary vehicles. which is simply to put it into an articulation, if the vehicle's weight was substantial, it would consume more fuel which thusly will deliver more discharges into the air. In any case, since the vehicle's weight is the critical element to keep up, as low as it could be expected, it suggests that there will be less motor drag, body drag and a small amount of fuel will be consumed over significant distances delivering almost no carbon emissions. Additionally, the fuel quality won't exceed 91.

3.1.3 : Social Impact:

In general, buggies are available for everyone to buy in the markets in every shape it all depends on the usage of it. However, mostly used for sports such as golf and recreational uses. Moreover, cars are not a product that everyone buys due to many concerns such as traffics laws violations that prohibit this kind of motors to be driven on the streets. In addition, cars have many safety features such as the roll cage and some other necessary safety elements.

3.1.4 : Economic:

As far as the economic impact, our project is stringently set to follow a specific amount of recommended budget plan, anything over the spending will be considered as something not important or a custom component that was added under our wish. Since it will not have what every car has in the accessory based, it sure will have all the essential security and street commendable choices showed in it. Yet, all the maintenance costs and the running costs are affordable and not that expensive.

3.1.5 : Safety:

Safety is our priority in the project to keep whoever will ride it where ever safe. In addition, the car body will have a hollow tubular framework with a strong roll cage installed and sealed to the frame, it will also sure contain good seatbelts attached to the seats. These kinds of features surely will help to keep the driver and the rider safe if anything happened in case of an incident. Furthermore, a reflective tape will be taped in some parts of the buggy to alert other vehicles of the presence of the car.

3.1.6 : Ethics:

Our project is completely based on our design and methodology since we will be able to proceed and carry out the necessary manufacturing and fabrication work by our own. This also involves mentioning all the people who helped us making it possible to do so throughout our project.

3.2 Engineering Design Standards

The lightweight buggy's components will be mostly borrowed from a spare buggy, whose architecture and a few required components will be used.

ASTM and SAE norms must be followed. The following are the main components and their engineering standards:

Components	***Engineering Standards***
Panels for the Body	ASTM: 5052-Al
Body Frame/ Chassis	ASTM: AISI-302 (Steel)
Plastic Body Panels	ABS Plastic

Table # 1: Engineering Standards

3.3 Product Subsystems and selection of Components

The project is planned to use materials and components that are already available/pre-existing, saving time and money in the long run by not having to manufacture a dedicated and easy-to-maintain part. Furthermore, when appropriate, parts related to body panels are often aluminum plastic to protect passengers from debris, unusual objects in the cabin, and essential components such as engine and electronic equipment.

3.4 Manufacturing and Assembling (Implementation)

As previously mentioned, the majority of the parts and components will be scavenged or obtained from a spare buggy. Since their use in our vehicle could endanger the operating components and the passenger, perishables will be purchased fresh from the market.

In terms of production, work will be done in a workshop facility designated away from the local community, with staff, including our team, working in compliance with proper protection and environmental protocols. If necessary, fabrication work will be done in the workshop, to reduce chassis components and reduce overall weight stresses. as evenly as possible to support the weight of major components such as the engine and passenger, as well as under fatigue loading, without causing any damage to the frame itself.

In order to give a perspective of what can be expected from the team's on going lightweight buggy project, Fig. 1 below indicates a sample of what the buggy would look like but not the same of course.

Fig. 1: Sample Lightweight Buggy

Chapter 4: System Testing and Analysis

4.1 Experimental Setup, Sensors and data acquisition system

4.1.1 : Weighbridge:

The point of the senior year project, according to the goal, was to build a lightweight car. To compare the weights to ensure that our goal is met. We used a commercial analysis weighbridge from Alaa for Industry's (AFI) office in Dammam, which we requested. The weighbridge had to pay attention to the smallest of specifics.

- Size: 6x3m
- Capacity: 30 Tons
- Platform made out of steel

Figure # 2: Weighbridge

4.1.2 : Tachometer:

Another factor in determining increasing speed and how quickly a certain speed is achieved after a certain amount of time is speed. This drive is aimed at making use of the car's built-in tachometer and comparing the time it takes to hit the top speed of 55 km/h.

4.1.3: Tape measure

Following production, the car was expected to be measured in its general dimensions, which included the wheelbase, ground clearance, and front and rear wheel tracks. A precision tape degree was used to record the measurements described earlier in order to properly degree it.

• Dimensions: 16 x 10.3 x 2.9 cm;
• Weight: 100 grams
• Measuring Capacity: 3000 mm or 10 feet

Figure # 3: Tape Measure

4.1 Results, Analysis & Discussion

Physical Dimension:

The results obtained for our light weight buggy prototype are displayed in the figure given below:

Dimension Type	Dimension
Length	2450 mm
Front and Rear Wheel Track (Width)	21x7*10/22x10*10
Wheel Base	1885mm
Ground Clearance	180 mm
Weight (without passenger)	330 kg
Engine Power	10 Horsepower
Torque	20 Nm @ 450 rpm

Table # 2: Physical Dimensions

Speed:

The speed of the car sometime recently weight shedding and after weight shedding did give a small upper hand in quickening to the best speed. Since the weight was decreased, so did the drag and underneath are the numbers gotten from the examination from the analysis.

Top Speed		Time Taken	
Heavy Weight	**Light Weight**	**Heavy Weight**	**Light Weight**
40 km/h	40 km/h	90 seconds	64 seconds

Table # 3: Speed Results

Chapter 5: Project Management

5.1 Project Plan

The project consists of a variety of tasks that were distributed fairly evenly among our team members. To successfully complete their part of the project and achieve good results, each member of the team was given a benchmark and a specific time. The table that follows.

S. No.	Tasks		Start	End	Duration
1.	Chapter # 1: Introduction		11 Feb. 2021	12 Feb. 2021	1 Day
2.	Chapter # 2: Literature Review	Project Background	13 Feb.2021	20 Feb.2021	7 Days
		Previous work			
		Comparative Study			
3.	Chapter # 3: System Design	Design Constraints and Design Methodology	5 Mar.2021	25 Mar.2021	20 Days
		Engineering Design Standards			
		Product Subsystems & Selection of Components			
		Manufacturing & Assembly			

4.	Chapter # 4: System Testing & Analysis	Experimental Setup, Sensors and Data	12 April. 2021	28 May. 2021	16 Days
		Results, Analysis & Discussions			
5.	Chapter # 5: Project Management	Contribution of team Members	29 May. 2021	4 May. 2021	5 Days
		Project Execution Monitoring			
		Challenges and Decision Making			
		Project Bill of Materials and Budget			
6.	Chapter # 6: Project Analysis	Impact of Engineering Solution	5 May. 2021	8 May. 2021	3 Days
		Contemporary Issues Addressed.			
7.	Chapter # 7: Conclusion & Recommendation	Conclusion	9 May. 2021	14 May. 2021	5 Days
		Future Recommendation			
8.	Design of Prototype		14 Feb. 2021	10 Mar. 2021	24 Days
9.	Parts Purchase		01 Mar. 2021	21Mar. 2021	20 Days
10.	Manufacturing		01 Apri. 2021	24 Apri. 2021	23 Days

11.	Testing	1 May. 2021	12 May. 2021	11 Days

Table # 4: Tasks and their Duration

S. No.	Task	Assigned Members
1.	Chapter # 1: Introduction	Wessam
2.	Chapter # 2: Literature Review	All team member
3.	Chapter # 3: System Design	Saleh, Rayan & Wessam
4.	Chapter # 4: System Testing & Analysis	Saleh
5.	Chapter # 5: Project Management	Wessam
6.	Chapter # 6: Project Analysis	Rayan
7.	Chapter # 7: Conclusion & Recommendation	All team member
8.	Design of Prototype	Ali & Salman
9.	Parts Purchased	Ali & Salman
10.	Manufacturing	All team member
11.	Testing	All team member

Table # 5: Assigned Members for Tasks

5.2 Contribution of Team Members

Because each member of our team was responsible for meeting the project's requirements, they each contributed their amount of effort and time based on their work abilities and performance. The table below depicts the extent to which each team member contributed.

S. No.	Tasks		Assigned Member	Contribution
1.	Chapter # 1: Introduction		All team member	100%
2.	Chapter # 2: Literature Review	Project Background	Ali & Salman	33%
		Previous work	Saleh	35%
		Comparative Study	Rayan	33%
3.	Chapter # 3: System	Design Constraints and	Wessam	50%

	Design	Design Methodology		
		Engineering Design Standards	Rayan	20%
		Product Subsystems & Selection of Components	Salman	40%
		Manufacturing & Assembly	Ali	60%
		Experimental Setup, Sensors and Data	All team member	100%
4.	Chapter # 4: System Testing & Analysis	Results, Analysis & Discussions	All team member	100%
		Contribution of team Members		100%
5.	Chapter # 5: Project Management	Project Execution Monitoring	Wessam	100%
		Challenges and Decision Making		100%
		Project Bill of Materials and Budget		
		Impact of Engineering Solution		
6.	Chapter # 6: Project Analysis	Contemporary Issues Addressed.	All team member	100%
		Conclusion		100%
7.	Chapter # 7: Conclusion & Recommendation	Future Recommendation	All team member	100%
8.	Design of Prototype		Ali & Salman	100%
9.	Parts Purchase		Ali & Salman	100%

10.	Manufacturing	All team member	100%

Table # 6: Contribution of Tasks

5.3 Project Execution Monitoring

We had to attend several meetings with our managers as well as among our team members in order to keep our project moving forward. Furthermore, since input reports and presentations were needed during our developmental phases, they were all handled and completed on time, as shown in the table below.

Time/Date	Activities/Events
Once in week	Assessment Meeting
Weekly	Meeting with the group members
Bi-Weekly	Online Meeting with the Advisor
20 March, 2021	First Finished Prototype
8 April, 2021	Midterm Presentation
20 April, 2021	First Test of System
4 May, 2021	Finishing Final Prototype
10 May, 2021	Test of the System
15 May, 2021	Final Submission of Report
20 May, 2021	Final Presentation

Table # 7: Dates of Activities & Events

5.4 Challenges and Decision Making

We ran into some issues when working on bringing our project to its final stages, which hampered our progress and served as a roadblock to overcome. They were finally corrected after a series of different recommendations and feedback. Some of the issues we encountered were as follows:

5.4.1 : Equipment and Device Problems

- **Body Frame**

We had some trouble minimizing the weight of the body frame, as it was too heavy and exceeded the necessary lightweight configuration, given the objectives of our project. To solve this problem, we had to fabricate the frame just a little bit differently to avoid sacrificing structural rigidity.

- **Electrics**

  Since we just wanted to keep the necessary electrical switches and buttons, such as those for the headlights, horn, and taillights, the team was involved in managing electrical wirings and properly grounding all connections so we don't have any live wires presenting an electric shock danger, particularly because the entire body is made of metal and little to no insulation was integrated as it would be needed most financial and time capital

5.4.2 : Testing & Safety Issues

The testing of our lightweight vehicle was a consideration because it has a significant size and weight, making it unsafe for those close to it when it is in operation. The testing was carried out on an abandoned road outside of the city. Since the team needed the testing of top speed in a certain period as opposed to what it had before losing weight, helmets and seatbelts were worn at all times to avoid injury in the event of an unforeseen mishap. This was a major safety risk because the vehicle's momentum was already deadly to humans.

5.4.3 : Design Problems

Since the chassis had several trusses and safety crash-proof beams, the first prototype design was heavy. This was a major issue since the body frame alone accounted for 60% of the buggy's weight, with the rest consisting of the engine, transmission, tires, and rims. As a result, the height of the body structure was reduced, resulting in a lower center of gravity and a reduction in weight. However, it was sufficient to protect the occupant from neck and head injury in the event of a rollover.

5.5 Project Bill of Materials & Budget

The table below shows the parts we bought and the money we paid a third party to make some of the more complicated parts for us. It includes the total amount spent on our project in Saudi Riyals (SAR), which includes a 15% VAT (VAT).

Materials	Cost (SAR)
Body of the vehicle	1000
Steering components	280
Brake components	150
Electrical parts	250
Tires	350
Engine and gear	500
lights	150
Suspension	320
Seats	140
Labor Charges (including fabrication and manufacturing)	1000
Total	**4.140**

Table # 8: Project Bill of Material

Chapter 6: Project Analysis

6.1 Life-Long Learning

As a team working on this kind of project, we had a one-goal to maintain and achieve which is to do the project and complete it in the best professional way possible. Furthermore, in order to reach that goal and achieve it perfectly, we had the chance to get the benefit of doing a pre-planned schedule to work on. Indeed, that was the thing that gave us a boost in every step we did. Kindly, we would like to share our experience.

6.1.1: Software Skills:

In order to design our prototype, we had to go through the internet and then use our knowledge in Solid-works Simulation to design and simulate our prototype components for our system to make sure that our prototype operates well according to our needs which is to use less material possible and the most sufficient to be able to put and use in our system in order to make it run perfectly. Gladly, it all went amazingly well due to our teamwork.

6.1.2: Hardware Skills:

In order of testing and experimenting with our prototype, we had to do some test drives in order to test if the car and see if the mechanical components had suffered any problems. As a team, we were all involved and worked together during the fabrication and assembly processes. On the other hand, we learned about every tool we used and know where every tool is used and how to perform welds, and remove every broken and rusted bolt.

6.1.3: Time Management:

Since time was the biggest issue, we made sure to finish at the time given to us which is 3 months, and make sure to be ahead of time, to avoid any problem and make sure that we will never be affect by it. Besides all of the problems, we faced our team really worked hard and took all of their spare time to finish everything on time.

6.1.4: Project Management:

In order to manage and go through all the things assigned to us on time. We had to have weekly meetings with our teammates and sometimes we had to do two or three meetings a week. Furthermore, we were able to assign everyone his own task and work in a team. This amazing mutual communication helped us to manage the whole process perfectly and that we are proud of.

6.2 Impact of Engineering Solutions

6.2.1: Society:

We have started the project in order to make it serve society and the environment. We concentrated on renewable energy which is what all of this project about and how to educate society by expressing that in our project and show them that a simple mechanism can reduce our usage of electricity. Furthermore, our goal is to utilize a renewable source that will be healthy for us as humans and the environment.

6.2.2: Economy:

In our project, we had to work on a budget and make it economically affordable. Moreover, we mostly used material which was abandoned and thrown away and no one used for a while, which in the future will affect the environment and the atmosphere. After ensuring that the prototype can actually work with such materials we had to put some more money in order to make our prototype perfect and presentable.

6.2.3: Environment:

Since our project is all about using renewable energy, we made sure to make it an environmentally friendly buggy that produces a lower carbon emission than a regular car would. Definitely, all of this will lead us to use a much-improved fuel consumption that will produce a small carbon footprint.

6.3 Contemporary Issues Addressed

Since our country (Saudi Arabia) has total reliance on fuel assets, the side-effects being delivered are troublesome for the climate, economy, and individuals. Along these lines, to have an impact in assisting with the reason for saving the planet and humans from the unpleasant dangers such sorts of tasks ought to be investigated at a lot greater scale to advance less reliance on vehicles which are of greater motor and size as it will thusly yield more emanations, more fuel uses and more harm to the planet.

Chapter 7: Conclusion & Future Recommendations

7.1 Conclusion

To summarize, we completed our project and prototype within the time frame allotted to us as a group. Furthermore, based on the established objectives, this resulted in the effective completion and construction of the lightweight vehicle. These goals were successfully met by keeping the project's financial budget well under 5000 Saudi Riyals, including the 15% value-added tax (VAT). In addition, the team was able to keep the safety features in the frame system to prevent any technical problems that could result in injury or death in the event of a mishap. Furthermore, this contributed to one of the project's main goals, which was to aid the vehicle's lightweight to improve performance and fuel efficiency.

7.2 Future Recommendations

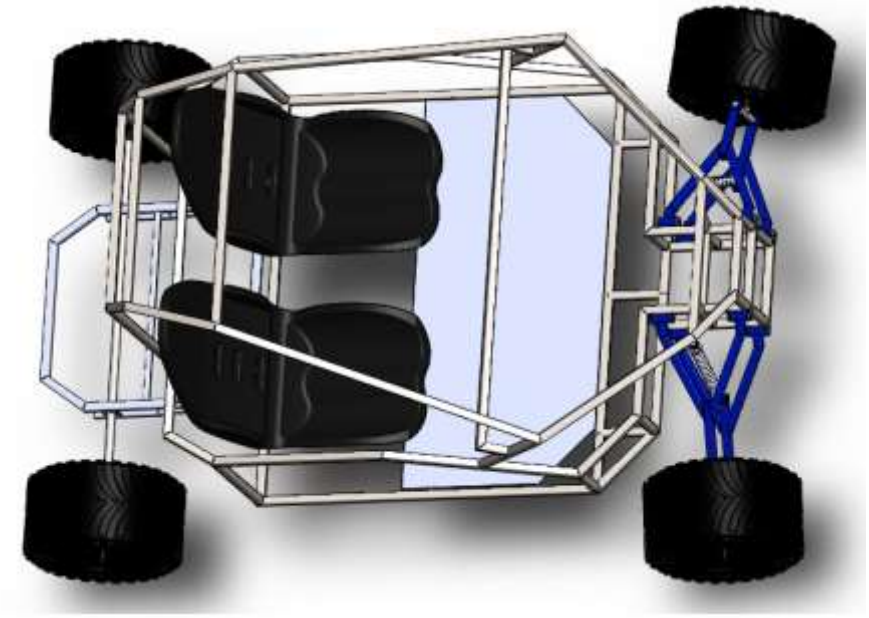
The design and construction of the lightweight vehicle were not as refined as the team had hoped. However, it resulted in a trade-off against time, requiring both the driver and the passenger to forego some in-cabin convenience and features. To suggest any potential changes to this project:

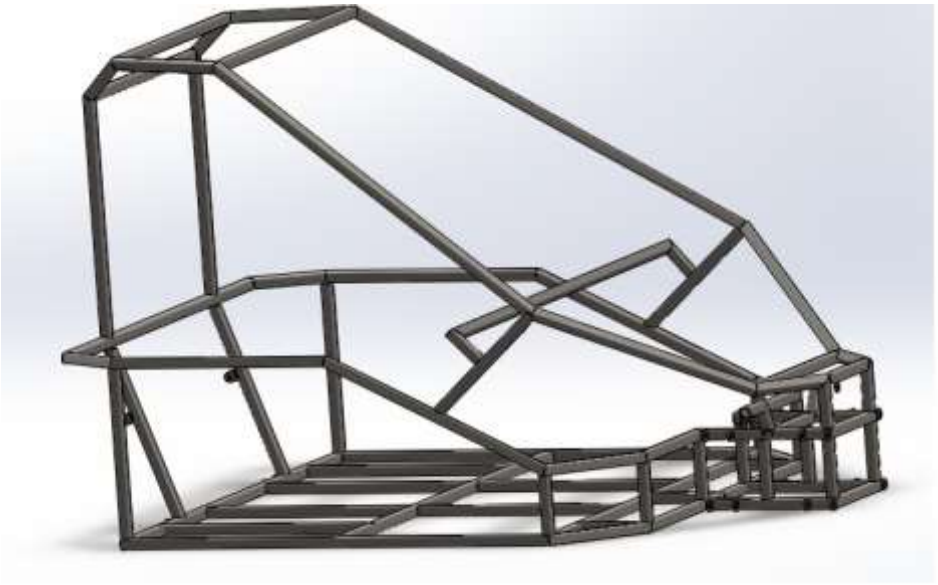
- The vehicle could benefit from additional cabin features that would make riding and riding in easier and more comfortable. Take, for example, a GPS device.
- • A steering wheel that adjusts to the driver's physical characteristics, such as tilt and telescopic motions, to accommodate drivers of various body types and sizes.

Any additional innovative features that do not jeopardize the vehicle's efficiency or safety are warmly accepted and valued for future refinement and use.

Appendix A: Prototype Development Pictures

Appendix B: CAD drawings





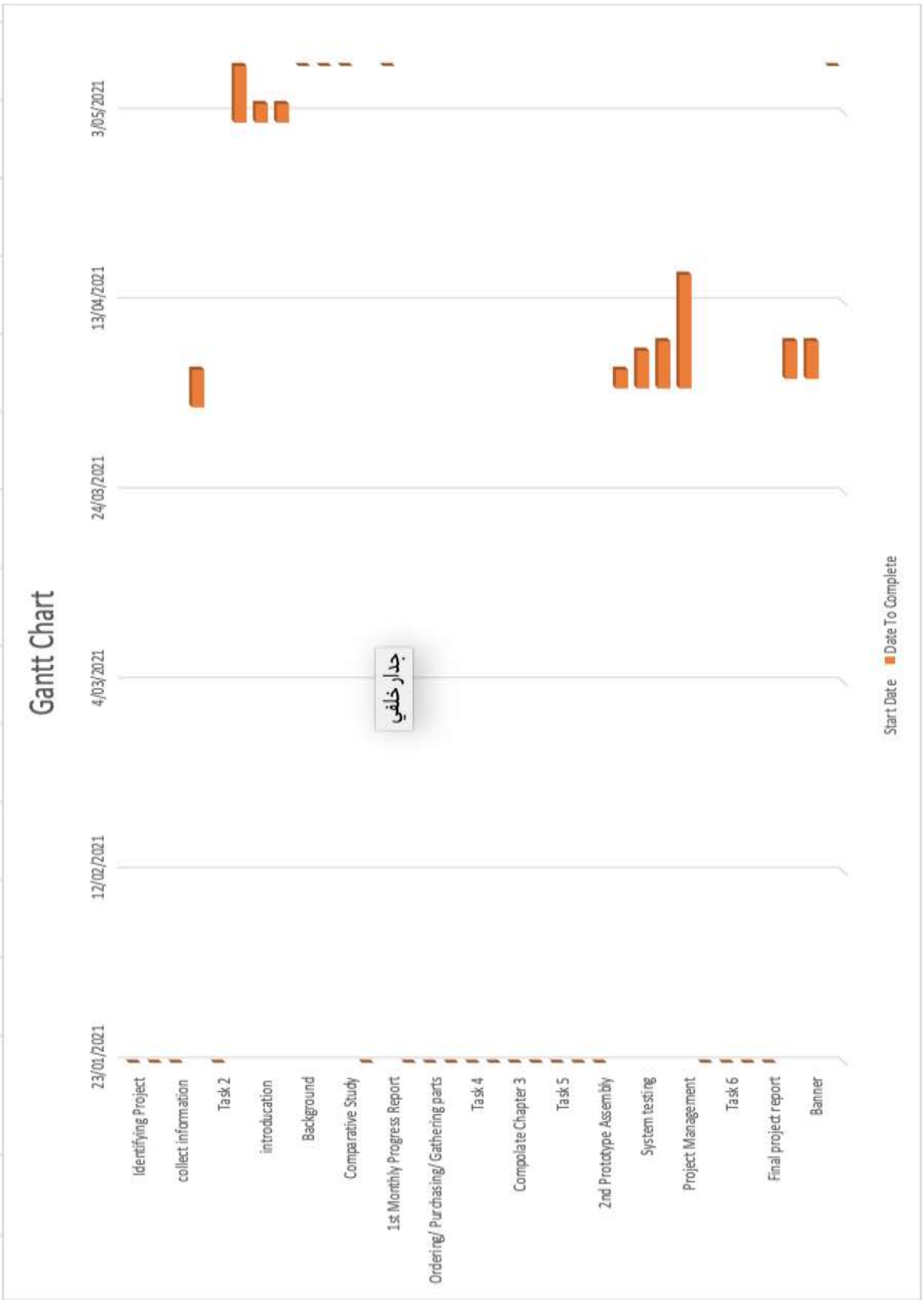
Appendix C: Engineering Standards

Components	***Engineering Standards***
Panels for the Body	ASTM: 5052-Al
Body Frame/ Chassis	ASTM: AISI-302 (Steel)
Plastic Body Panels	ABS Plastic

Appendix D: Prototype Specifications

Dimension Type	Dimension
Length	2450 mm
Front and Rear Wheel Track (Width)	21x7*10/22x10*10
Wheel Base	1885mm
Ground Clearance	180 mm
Weight (without passenger)	330 kg
Engine Power	10 Horsepower
Torque	20 Nm @ 450 rpm

Appendix E: Gantt Chart



Team 04 - Spring smester 2020-2021

Wessam Aljubran	**201301642**
Ali Almoaili	**201302451**
Salman Alqahtani	**201500475**
Saleh Al Idan	**201601226**
Rayan Alrashdi	**201403815**

Task	Start Date	Date To Complete	Students
Task 1			
Identifying Project	1/23/2021	1	All team member
Determine objectives	1/25/2021	2	All team member
collect information	1/28/2021	3	All team member
Write a literature review	2/04/2021	4	All team member
Task 2	**Start Date**	**Date to Complete**	**students**
Developing Report	2/05/2021	7	All team member
introducation	2/05/2021	2	Wessam
Objectives	2/05/2021	2	Rayan
Background	2/06/2021	1	Saleh
Previous Work	2/07/2021	4	All team member
Comparative Study	2/11/2021	2	Salman
Task 3	**Start Date**	**Date to Complete**	**students**
1st Monthly Progress Report	2/12/2021	1	Wessam & Ali
Design	2/14/2021	10	Ali
Ordering/ Purchasing/ Gathering parts	2/24/2021	12	Salman & Ali
1st prototype Assembly	3/14/2021	10	All team member
Task 4	**Start Date**	**Date to Complete**	**students**
Taking the Calculations	3/15/2021	3	Saleh
Compolate Chapter 3	3/19/2021	5	Rayan & Saleh
Preaper for midterm presentation	3/24/2021	5	All team member
Task 5	**Start Date**	**Date to Complete**	**students**
2st Monthly progress Report	3/25/2021	1	Wessam
2nd Prototype Assembly	3/26/2021	8	All team member
Prototype testing	4/04/2021	2	Ali & Salman
System testing	4/04/2021	4	Saleh
System Analysis	4/04/2021	5	Rayan
Project Management	4/04/2021	12	Ali
Project Analysis	4/10/201	13	Wessam
Task 6	**Start Date**	**Date to Complete**	**students**
3nd Monthly progress report	4/25/2021	1	Wessam
Final project report	4/27/2021	7	All team member
Brochure	5/04/2021	4	Wessam & Saleh
Banner	5/04/2021	4	Rayan
Final presentation Preparation	5/08/2021	10	All team member

Appendix F: Progress Reports

	SDP – WEEKLY MEETING REPORT
	Department of Electrical Engineering **Prince Mohammad bin Fahd University**

SEMESTER:	**Spring semester**	**ACADEMIC YEAR:**	**2020-2021**
PROJECT TITLE	**Design of light weight vehicle car**		
SUPERVISORS	**Dr. Mohamed Elmehdi Saleh**		

Month 1: February

ID Number	Member Name
201301642	Wessam Aljubran
201302451	Ali Almoaili
201500475	Salman Alqahtani
201403815	Rayan Alrashdi
201601226	Saleh Al ldan

List the tasks conducted this month and the team member assigned to conduct these tasks

#	Task description	Team member assigned	Progress 0%-100%	Delivery proof
1	Plan of project	All team member	100%	On blackboard
2	Decision of project	All team member	100%	On blackboard
3	Decision making / bill From materials and budget	All team member	100%	On blackboard
4	Measure the dimensions of the parts	All team member	100%	On blackboard

List the tasks planned for the month of March and the team member/s assigned to conduct these tasks

#	Task description	Team member/s assigned
1	Design the parts in SolidWorks	Ali Wessam
2	Design the final parts of project in SolidWorks	Ali Wessam
3	A search of parts for the prototype	Salman Rayan Saleh

4	**Buy some parts for the prototype**	Salman Rayan Saleh
5	**Start manufacturing of the prototype**	All team members

- **To be Filled by Project Supervisor and team leader:**
- **Please have your supervisor fill according to the criteria shown below**

Outcome MEEN4:
an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Criteria	None (1)	Low (2)	Moderate (3)	High (4)
MEEN4A. Demonstrate an understanding of engineering professional and ethical standards and their impact on engineering solutions in global, economic, environmental and societal context	Fails to demonstrate an understanding of engineering professional and ethical standards and their impact on engineering solutions in global, economic, environmental, and societal contexts	Shows limited and less than adequate understanding of engineering professional and ethical standards and their impact on engineering solutions in global, economic, environmental, and societal contexts	Demonstrates satisfactory understanding of engineering professional and ethical standards and their impact on engineering solutions in global, economic, environmental, and societal contexts	Understands appropriately and accurately the engineering professional and ethical standards and their impact on engineering solutions in global, economic, environmental, and societal contexts

Outcome MEEN5:
an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

Criteria	None (1)	Low (2)	Moderate (3)	High (4)
MEEN5A: Ability to develop team work plans and allocate resources and tasks	Fails to develop team work plans and allocate resources and tasks	Shows limited and less than adequate ability to develop team work plans and allocate resources and tasks	Demonstrates satisfactory ability to develop team work plans and allocate resources and tasks	Properly and efficently makes team work plans and allocate resources and tasks
MEEN5B: Ability to participate and function effectively in team work projects to meet objectives	Fails to participate and function effectively in team work projects to meet objectives	Shows limited and less than adequate ability to participate and function effectively in team work projects to meet objectives	Demonstrates satisfactory ability to participate and function effectively in team work projects to meet objectives	Function effectively in team work projects to meet objectives

MEEN5C: Ability to communicate effectively with team members	Fails to communicate effectively with team members	Shows limited and less than adequate ability to communicate effectively with team members	Demonstrates satisfactory ability to communicate effectively with team members	Communicates properly and effectively with team members

Indicate the extent to which you agree with the above statement, using a scale of 1-4 (1=None; 2=Low; 3=Moderate; 4=High)

#	Name	Criteria (MEEN4A)	Criteria (MEEN5A)	Criteria (MEEN5B)	Criteria (MEEN5C)
1	**Wessam Aljubran**				
2	**Ali Almoaili**				
3	**Salman Alqahtani**				
4	**Rayan Alrashdi**				
5	**Saleh Al ldan**				

	SDP – WEEKLY MEETING REPORT
	Department of Mechanical Engineering **Prince Mohammad bin Fahd University**

SEMESTER:	**Spring semester**	**ACADEMIC YEAR:**	**2020-2021**
PROJECT TITLE	**Design of light weight vehicle car**		
SUPERVISORS	**Dr. Mohamed Elmehdi Saleh**		

Month : April

ID Number	Member Name
201301642	Wessam Aljubran
201601226	Saleh Al ldan
201302451	Ali Almoaili
201500475	Salman Alqahtani
201403815	Rayan Alrashdi

List the tasks conducted this month and the team member assigned to conduct these tasks

#	Task description	Team member assigned	Progress 0%-100%	Delivery proof
1	**Prepare for Midterm presentation**	All team member	100%	On blackboard
2	**Provide presentation**	All team member	100%	On blackboard
3	**Make a video for the prototype work**	All team member	100%	On blackboard
4	**Discussing future matters**	All team member	100%	On blackboard

List the tasks planned for the month of April and the team member/s assigned to conduct these tasks

#	Task description	Team member/s assigned
1	**Finishing the frame design**	All team member
2	**The installation of Tie rods, steering wheel and Hinges**	All team member
3	**Beginning of installing the basics of prototype**	All team member
4	**Work on selecting the engine**	Ali Salman
5	**Dye the prototype**	All team member

- **To be Filled by Project Supervisor and team leader:**
- **Please have your supervisor fill according to the criteria shown below**

Outcome MEEN4:
an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

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2	**Saleh Al ldan**				
3	**Ali Almoaili**				
4	**Salman Alqahtani**				
5	**Rayan Alrashdi**				

	SDP – WEEKLY MEETING REPORT
	Department of Electrical Engineering **Prince Mohammad bin Fahd University**

SEMESTER:	**Spring semester**	**ACADEMIC YEAR:**	**2020-2021**
PROJECT TITLE	**Design of light weight vehicle car**		
SUPERVISORS	**Dr. Mohamed Elmehdi Saleh**		

Month: May

ID Number	Member Name
201301642	Wessam Aljubran
201601226	Saleh Al ldan
201302451	Ali Almoaili
201500475	Salman Alqahtani
201403815	Rayan Alrashdi

List the tasks conducted this month and the team member assigned to conduct these tasks

#	Task description	Team member assigned	Progress 0%-100%	Delivery proof
	Work on the Final report	All team member	100%	On blackboard
	Prepare for the final presentation	All team member	100%	On blackboard
	Work on Brochure	All team member	100%	On blackboard
	Print the Banner	All team member	100%	On blackboard

List the tasks planned for the month of May and the team member/s assigned to conduct these tasks

#	Task description	Team member/s assigned
	Engine installation	Ali Salman
	Installation of the final touches of the prototype	All team member
	Complete the prototype	All team member
	Make a test run for the prototype	All team member
	Prototype temperature measurement	All team member

- **To be Filled by Project Supervisor and team leader:**
- **Please have your supervisor fill according to the criteria shown below**
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Outcome MEEN4: an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts				
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Outcome MEEN5: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives				
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MEEN5B: Ability to participate and function effectively in team work projects to meet objectives	Fails to participate and function effectively in team work projects to meet objectives	Shows limited and less than adequate ability to participate and function effectively in team work projects to meet objectives	Demonstrates satisfactory ability to participate and function effectively in team work projects to meet objectives	Function effectively in team work projects to meet objectives

MEEN5C: Ability to communicate effectively with team members	Fails to communicate effectively with team members	Shows limited and less than adequate ability to communicate effectively with team members	Demonstrates satisfactory ability to communicate effectively with team members	Communicates properly and effectively with team members

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1	**Wessam Aljubran**				
2	**Saleh Al ldan**				
3	**Ali Almoaili**				
4	**Salman Alqahtani**				
5	**Rayan Alrashdi**				