

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND FABRICATION OF
SUSPENSION SYSTEM FOR RACING
CAR**

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ABSTRACT

Suspension is generally used for the vehicle to support the vehicle body and increase ride comfort. The suspension system also prevents road disturbances that affect passenger comfort while increasing riding capabilities and performing a smooth driving experience. Most suspension has a problem with power transfer that affects the driving experience for the driver for certain road surface quality when cornering or when handling the vehicle. Due to the quality of suspension, many vehicles have gone into an accident, for example, lost control when performing the driving experience. This project is conducted to give more driving comfort to the driver when performing a drive on any type of road obstacle like sharp corners, up and downhill roads, slippery roads, and so on. The project is also to retain stability and give smooth driving experience using the ride material or best quality for vehicles and can handle certain loads like body frame, body kit, engine system, driver's load, and other loads that are related. For the method, the suspension system will be set up using the correct ways like the angle of the suspension, and the right place to put the suspension so it will not give any major problems when handling the vehicle. Use the best quality for suspension based on the vehicle weight, and driver weight to handle the load easily without disturbing the car and preventing any disturbance from the roads. As a result, the suspension setup for the 4-wheel vehicle will have more durability and lightweight suspension that can the factor of the car to transfer weight easily and settle faster down the track. Plus, this project will also prevent lost control when the car is at a fast speed and disturbance caused by the road itself. In conclusion, the suspension and handling system will be improved, and the driver may not have any issues when conducting the vehicle.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The suspension system for a student formula car is a critical component that must be carefully designed to provide optimal performance, safety, and driver comfort. The system must be lightweight, durable, and reliable, while also being able to effectively absorb shocks and vibrations generated by the race course. Additionally, the suspension system must be designed with sustainability and cost considerations in mind, striking a balance between high-quality components and materials within budget constraints. By addressing these considerations, engineers can develop suspension systems that provide the best possible performance and safety for student formula car competitions.

1.2 Problem Statement

Most of the student formula cars may have problems with their suspension systems which are discomfort when riding and handling the car, difficulty when going through obstacles on the track, etc. With the existence of this project, the suspension system of formula student cars can be improvised and give more comfort to the car.

1.3 Objectives

The main objectives of this project are:

- a) To design the suspension system for the student formula car for more comfort and retaining stability when handling the car and going through obstacles on the track.
- b) To fabricate suspension systems with the best quality materials depending on the vehicle weight, and driver weight to handle certain loads for example, body frame, body kit, engine system, etc.