CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

The steering system is the primary interface between the driver and the vehicle, through which the driver inputs his intentions to control the vehicle direction, and from which the driver receives important information about the vehicle state of motion and road condition from the steering torque. Consequently, the steering system characteristic has a great effect on the driver’s, and vehicle response towards driver’s input. The front wheels are reserved for the steering duties which it perform two functions, both the cornering forces and the engine acceleration/deceleration forces. So in a front drive the tires capacity can be easily exceeded. In a rear drive car the rear tires handle the engine acceleration/deceleration while the front only needs to handle the steering forces. Not only does this balance the load on the tires but it reserves the front tires exclusively for the all important steering duties.

1.2 PROBLEM STATEMENT

Steering of vehicles on a slippery highway is a difficult task for most passenger car drivers. The vehicles tend to slide outward with less lateral forces than on normal roads. When the drivers notice that their vehicles on a slippery highway start to depart from the cornering lane, most of them easily panic and make a sudden steering and/or braking, which in turn may induce spin-out and instability on their vehicles.

While driving, vehicle often bump into patholes and rocks and this will cause vibration at wheels. The vibration that occurs will somehow transmit to the steering
wheel and cause the steering to vibrate. It will cause oversteer, understeer and neutral steer to the vehicle. The angle produce at the rear wheel is larger than front wheel, it will produce oversteer and make the vehicle turn into curve more than the driver intended.

While steering a vehicle, there is an effort has to be applied by driver at steering wheel to overcome frictional force that occurs between the wheels and the roads. By studying the function of steering gear, this effort can be reduces and steering wheels will turn easier.

In order to have better performance in wheel handling and while cornering, the relationship between steering wheel and tyre direction, speed and toe angle should be determined. The data between steering wheel and tyre movement in various driving maneuver should be obtain to study the effect of driving maneuver to the on-road performance.

1.3 OBJECTIVES

i. To collect the on-road performance data between steering wheel and tyre movement in various driving maneuver.
ii. To analyse the relationship between steering wheel and tyres direction, and speed while cornering for steady and ride road condition.

1.4 WORK SCOPES

The scopes of the project as follow:

i. Literature review about steering system and front wheel movement
ii. Preparations on procedures for testing
iii. Run testing based on procedures for steady and ride road condition
iv. Analyse the results obtained for steering-tyre performance analysis
v. Discuss and conclude the project in the final report
1.5 PROCESS FLOW CHART

![Diagram](attachment:image.png)

**Figure 1.1:** Project flow chart