# AN OVERVIEW OF THE AUTOMOBILE

## Cover Page – Slide 1

I welcome you all to this exciting session on An Overview of the Automobile.

## Learning Outcomes – Slide 2

At the end of this session, it is my belief that we would have achieved the following Learning Outcomes:

- Identify different parts of the Automobile.
- List the systems and units of the Automobile, and,
- Explain the working principles of the different systems that makes up the Automobile.

## Introduction – Slide 3

An automobile is a self-propelled motor vehicle intended for passenger transportation on land. It usually has four wheels and an internal combustion engine fuelled most often by gasoline, a liquid petroleum product. Known more commonly as a car, formerly as a motorcar, it is one of the most universal of modern technologies, manufactured by one of the world's largest industries.

The conventional automobile is a complex assembly which is composed of the following main parts and systems:

1. The Chassis or Frame.
2. The Body.
3. The Suspension System.
4. The Power Unit.
5. Transmission System.
6. Steering System.
7. Braking System, and,
8. Electrical System.

We would now look at each of the main parts or systems of the automobile in details:

## The Automobile Chassis – Slide 4

The Chassis is the frame or "skeleton" of the car. Its main function is to act as a mounting for all the other units and assemblies.

It must also keep other units of the car their correct relative position despite all the varying loads to which they may be subjected to.

The chassis must be strong and rigid and so shaped that it will not cause undue complication to the design and operation of other assemblies. It is usually made from steel pressing which are welded or riveted together; reinforcing being added where necessary

## The Automobile Body – Slide 5

***The body is comprised of so many parts made from steel and are welded together. It forms a weatherproof and comfortable compartment for the driver and the passengers.***

The body is bolted to the chassis at numerous points, but it adds little or no strength to the assembly.

## The Automobile Suspension System – Slide 6

***The function of the suspension system is to reduce, as far as practicable the number of shocks and vibration transmitted from the road wheels to chassis and body.***

Modern system use coil springs for the front wheel, but many different arrangements are possible and are in use.

## The Automobile Power Unit – Slide 7

***The Automobile Power Unit includes the engine and the system essential for its operation; that is the radiator for cooling, fuel, system and lubrication.***

The function of the engine is to convert the heat energy contained in the petrol into mechanical energy in the form of torque or turning power available at the engine crankshaft.

Based on the manner, in which combustion is initiated, we can distinguish two basic type of internal combustion engines namely the spark ignition (SI) and the compression ignition (CI) engines. While the spark ignition mainly operates on petrol, compression ignition engines mainly use diesel oil and are usually referred to as diesel engines.

## The Automobile Transmission System – Slide 8

The Automobile Transmission System includes the clutch, gearbox, propeller, shaft, final drive and rear axle. The function of the transmission is to transfer the torque available to the crankshaft and to the driving road wheels.

The size of the torque and the speed of the drive shafts is modified by the drivers use of gearbox to suit the loads acting on the engine.

## The Automobile Electrical System – Slide 9

The Automobile Electrical System is used to supply and control all the electrical energy needed to operate the many electrical units fitted to the car to increase its use, convenience, comfort e.g. ignition, light of all kinds, motors and battery charging and also air conditioning

## The Automobile Steering System – Slide 10

***The Automobile Steering System controls the direction of movement of the vehicle; thereby offering the driver an easy turning of front wheels with minimum effort in any direction. The system enables the driver to control and continuously adjust the steered path of the vehicle.***

Also it provides a positive response to whatever direction the driver may make on the steering wheel. To achieve these objectives, a suitable mechanical linkage is incorporated between the front – steered road wheels and the driver steering wheel.

This mechanism operates effectively under all normal conditions without interfering with the wheel or with the suspension movement.

## The Automobile Wheels and Tyres – Slide 11

***The wheels are the legs of the automobile; it supports the total weight of the vehicle. It has well balance construction particularly for running at high speeds.***

The Automobile Wheels and tyres controls acceleration and braking, through the tyres and their friction created on the road surface.

## Conclusion – Slide 14

Hey, so in the past few minutes, we have been able to look at an overview of the automobile system.

The Automobile has become a very useful invention, where it makes transportation easy, fun and comfortable. But without adequate care and maintenance, the benefits that come with owning an Automobile will be no more.

Therefore, to adequately maintain an Automobile, mastering its makeup is a must.

Thank you and Stay Safe. Bye.