

## **Automobile Mechanics & IC Engine**

A self-propelled passenger vehicle that has wheels and an internal-combustion engine, It consist chassis design, working of Suspension unit, Steering System, Braking unit, Transmission, Fuel Supply System, IC Engine and some Advanced Technologies In this workshop, we will learn about each and every part of engine, and assembling of engine. Even you can explore your projects under the guidance of trainers.

### **Introduction**

- What is an automobile?
- Brief history.
- Changes over the years
- Indian automobile industry.

### **Chassis design**

#### *Brief terminology*

- Multi point strut bar.
- Fender bar.
- Anti-roll bar.
- Monocoque.

#### *Types of chassis*

- Ladder frame chassis.
- Tubular space frame chassis.
- Monocoque frame chassis.
- Ulsabmonocoque.
- Backbone frame chassis.
- Aluminium space frame.
- Carbon fibremonocoque.

### **Suspension Unit**

#### *Brief terminology*

- Weight Transfer
- Jacking forces
- Camber and Caster angle
- Spring Rate
- Travel
- McPherson Strut

#### *Types of suspensions*

- Dependent suspension
- Independent suspension

## Steering System

- Ackerman Steering Principle
  - Steering Mechanisms
    - Rack and Pinion
    - Recirculating Ball Type
    - Worm and Sector
- Understeer, Oversteer  
Power Steering

## Transmission system

- Flywheel
- Clutch
  - Single Plate Clutch
  - Multi Plate Clutch
  - Cone Clutch
  - Centrifugal Clutch
  - Electromagnetic Clutch

### Gearbox

- Constant mesh type
- Synchromesh type
- Sliding mesh type

### Reverse and its working

### Types of Transmission

- Manual
- Semi-Automatic
- Automatic
- CVT

### Differential

2WD, 4WD, AWD

### Tyres

- Tyre size notations
- Tyre types

### Traction Control

## Braking Unit

- Disc Brakes
- Drum Brakes
- Magnetic Brakes
- Vacuum Brakes
- Anti-lock braking System
  - 4-Channel, 4-Sensor ABS
  - 3-Channel, 3-Sensor ABS
  - 1-Channel, 1-Sensor ABS

### Actuators

- Cable operated
- Solid Bar connection
- Single-circuit hydraulic
- Dual-circuit hydraulic

### Power Brakes

### Brake Fluids

### Fuel Supply System

- Fuel Filter
- Carburettor
- Fuel Injector
- Spark Plug

### IC Engine

- Types of IC Engine
- 4-Stroke Engine
- 2-Stroke Engine
- Engine Layout and working
- Valves and Valve Timing
- Engine Cooling
- Turbochargers
- Superchargers
- Latest Technologies
  - PGMFi
  - MPFi
  - CRDi
  - VVTi

### Query Session

After completing workshop there will be a query session which will help students to clear all their doubts.

### Competition

After the hand on theory and practical experience from the workshop, Competition will be conducted for the participants.

### Certificate Distribution

Participants will get Participation Certificate and winners will get winning Certificates.