



AUTOMOBILE

ENGINE MECHANICS

COURSE CONTENT

Automobile Engine Mechanics

SESSION 1

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

SESSION 2

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 notation
 - Tyre types
- Traction Control



SESSION 3

BRAKING UNIT

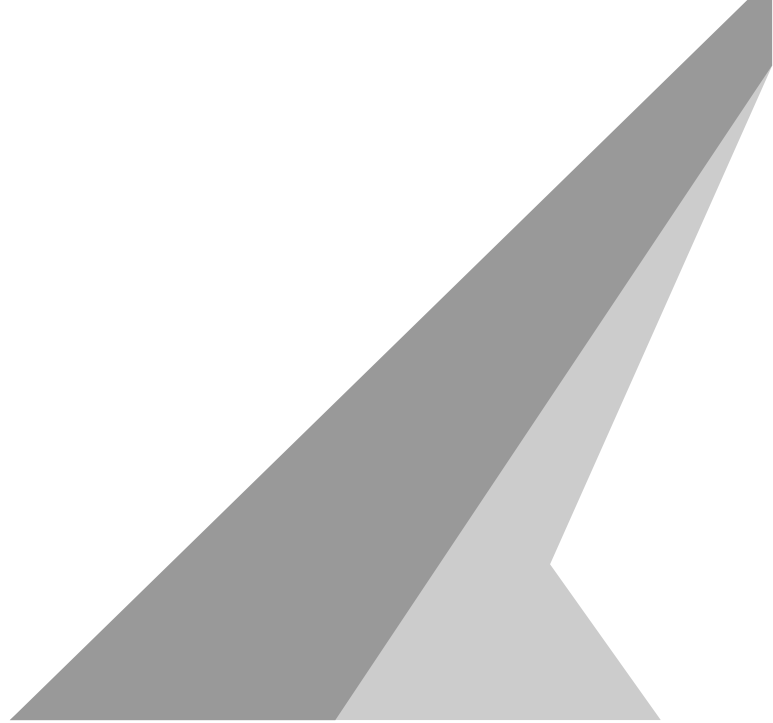
- Disc Brakes
- Drum Brakes
- Magnetic Brakes
- Vacuum Brakes
- Anti-lock braking System
 - 4-Channel, 4-Sensor ABS
 - 3-Channel, 3-Sensor ABS
 - 1-Channel, 1-Sensor ABS
- Brake Actuators
 - Cable operated
 - Solid Bar connection
 - Single-circuit hydraulic
 - Dual-circuit hydraulic
- Power Brakes
- 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

SESSION 4

LIVE DEMONSTRATION –

IC Engine Dismantling and Assembling

COMPETITION

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