

Automobile & IC Engine

Course Curriculum

Automobile & IC Engine

01

Introduction

- What is an automobile?
- Brief history.
- Indian automobile industry.

02

Vehicle Dynamics

- Introduction to Friction and its types.
- Introduction and Calculation of Air drag offered to a car
- Crash Analysis of high speed cars
- Effect of composite materials on vehicle performance

03

Chassis design:

Introduction to Types of chassis –

- Ladder frame chassis.
- Tubular space frame chassis.
- Monocoque frame chassis.
- Backbone frame chassis..
- Carbon fibre Monocoque.

04

Suspension Unit

- Weight Transfer
- Camber and Caster angle
- Spring Rate
- Suspension Travel

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05

Types of Suspensions

- Dependent suspension
- Independent suspension
- Direct Control Suspension with selective damping in Mercedes Benz

06

Steering System

- Ackerman Steering Principle
- Steering Mechanisms
 - Rack and Pinion
 - Recirculating Ball Type
 - Worm and Sector
- Under steer, Over steer
- Power Steering

08

Transmission system

- Flywheel
- Clutch
- Gearbox
 - Constant mesh type
 - Synchromesh type
 - Sliding mesh type
- Types of Transmission
 - Manual
 - Semi-Automatic
 - Automatic
 - CVT
 - 7-G automatic transmission in Mercedes Benz.
- Differential
- 2WD, 4WD, AWD
- Tyres (notations and types)
- Traction Control
- Tire Pressure loss warning system in Mercedes Benz.

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06

Braking Unit

- Disc Brakes
- Drum Brakes
- Magnetic Brakes
- Vacuum Brakes
- Anti-lock braking System
- Brake Actuators
- Power Brakes
- Brake Fluids

06

IC Engine

- Introduction to IC Engine and its components.
- Types of IC Engine
- Engine Layout and working
- Differentiating between Petrol and Diesel Engine
- Introduction to In-line and V arrangements of cylinders and its effect on Engine performance
- Valves and Valve Timing
- Engine Cooling
- Fuel pre-heating
- CRDI, MPFI and Piezo Injectors.
- Turbochargers
- Superchargers
- Introduction to Various sensors in Mercedes Engines.
- Mechatronics in Mercedes Benz for Vehicle performance and Driver's comfort.

08

Fuel Supply System

- Fuel Filter
- Carburetor
- Fuel Injector
- Spark Plug



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