

Automobile Workshop Content

Day 1

Session-1: Introduction (30Min)

1. What is an automobile?
2. Brief history.
3. Changes over the years.
4. Indian automobile industry.

Session-2: Chassis design (1Hr)

- **Brief terminology –**
 1. Multi point strut bar.
 2. Fender bar.
 3. Anti-roll bar.
 4. Monocoque.
- **Types of chassis –**
 1. Ladder frame chassis.
 2. Tubular space frame chassis.
 3. Monocoque frame chassis.
 4. Ulsab monocoque.
 5. Backbone frame chassis.
 6. Aluminium space frame.
 7. Carbon fibre monocoque.

Session-3: Suspension Unit (1Hr)

- **Brief terminology –**
 1. Weight Transfer
 2. Jacking forces
 3. Camber and Caster angle
 4. Spring Rate
 5. Travel
 6. McPherson Strut
- **Types of suspensions –**
 1. Dependent suspension
 2. Independent suspension
 3. Torsion Bars

4. Solid-axle, leaf-spring
5. Solid-axle, coil-spring

Session-4: Steering System (1Hr)

- **Ackerman Steering Principle**
- **Steering Mechanisms**
 1. Rack and Pinion
 2. Recirculating Ball Type
 3. Worm and Sector
- **Understeer, Oversteer**
- **Power Steering**

Session-5: Design Softwares – Basics of AutoCAD & Catia V6 (2Hr)

- **Drawing, modifying & dimensioning in AutoCAD**
- **Part Modelling in CATIA**

Session-6: Transmission system (2Hr)

- **Flywheel**
- **Clutch**
 1. Single Plate Clutch
 2. Multi Plate Clutch
 3. Cone Clutch
 4. Centrifugal Clutch
 5. Electromagnetic Clutch
- **Gearbox**
 1. Constant mesh type
 2. Synchromesh type
 3. Sliding mesh type
- **Reverse and its working**
- **Types of Transmission -**
 1. Manual
 2. Semi-Automatic
 3. Automatic
 4. CVT
- **Differential**
- **2WD, 4WD, AWD**
- **Tyres**
 1. Tyre size notations

2. Tyre types
 - Traction Control

Query Session (30 mins)

Day-2

Session 7: Braking Unit (1Hr)

- Disc Brakes
- Drum Brakes
- Magnetic Brakes
- Vacuum Brakes
- Anti-lock braking System
 1. 4-Channel, 4-Sensor ABS
 2. 3-Channel, 3-Sensor ABS
 3. 1-Channel, 1-Sensor ABS
- Brake Actuators
 1. Cable operated
 2. Solid Bar connection
 3. Single-circuit hydraulic
 4. Dual-circuit hydraulic
- Power Brakes
- Brake Fluids

Session 8: Fuel Supply System (30Min)

- Fuel Filter
- Carburettor
- Fuel Injector
- Spark Plug

Session 9: IC Engine (2Hr)

- Types of IC Engine
- 4-Stroke Engine
- 2-Stroke Engine
- Engine Layout and working
- Valves and Valve Timing
- Engine Cooling
- Turbochargers
- Superchargers

- **Latest Technologies**

1. PGMFi
2. MPFi
3. CRDi
4. VVTi

Session 10: Live Demonstration –

IC Engine Dismantling and Assembling (2Hr)

Query and Competition (2Hr)

Eligibility: Any B-tech student who wants to pursue his career in Automobile industry

Duration: 2 days (8 hours per day)

Fees: 800 /- per participant