

**Subject Code: 01AE0601**

**Subject Name: Automobile Chassis & Body Engineering**

**B.Tech. III Year – (Sem-6) Automobile Engineering**

**Type of course:** Engineering

**Prerequisite:** Production Technology

**Rationale:** Understanding of chassis and body design of Automobile systems

**Teaching and Examination Scheme:**

Teaching Scheme (Hours)			Credits	Evaluation Scheme					Total Marks
Theory	Tutorial	Practical		Theory Marks			Practical Marks		
				ESE(E)	IA	CSE	Viva(V)	Term Work(TW)	
4	0	2	5	50	30	20	25	25	150

**Course Outcomes:**

1. The student can identify different areas of automobile chassis and body engineering.
2. Can find the applications of all the areas in day to day life.

Sr No	Contents	Duration	Weightage
1	<b>Vehicle Aerodynamics</b> Types of Chassis frames & body, aerodynamic consideration in body profiling, ergonomic consideration, defects in frame and body. Vehicle drag and types, various types of forces and moments, effects of forces and moments, side wind, various body optimization techniques and Aerodynamic Aids for Optimization of drag.	10	20
2	<b>Car Body Details :</b> Types, Regulations, Drivers seat design & dimensions parameters, drivers visibility, methods for improving visibility and space in cars, design for safety, car safety requirements, car body construction. Crash Test & Roll over test regulations. Heating and ventilation systems. Instrument panel, Dash boards & passenger compartment lighting, Audio- visual systems.	9	20

3	<b>Bus Body Details:</b> Types: Mini bus, single decker & double decker, two level, split level and articulated bus, bus body layout, floor height, engine location, entrance - exit locations, passenger's seating dimensions, seat layout according to RTO registration, details of construction, construction of frame, double skin construction, types of metal sections used, integral and conventional coach type construction. Bus body Code Regulations (ARAI). Pneumatic equipment for passenger door opening & closing. Air conditioning equipment selection and mounting.	10	20
4	<b>Commercial Vehicle Details:</b> Types of body, flat platform, drop side, fixed side, tipper body, tanker body, light commercial vehicle body types. Dimensions of driver's seat in relation to controls, drivers cab design. Tipper body designs, volume/weight considerations, pay load and related regulations.	9	20
5	<b>Body Loads:</b> Idealized structure, structural surface, shear panel method, symmetric and asymmetric vertical loads in a car, longitudinal load, different loading situations, chassis frame design. Construction of Doors, door apertures, windows. Spare wheel carrier construction and design for different types of vehicle and weight distribution criteria in relation to Spare wheel location. Sources of body noises testing and methods of elimination. Water leakage test.	5	10
6	<b>Body Materials:</b> Metal sheets (Steel, Aluminium etc.), plastics, timber, GRP, FRP, Insulating materials, adhesives and sealants. Wind screen, Back light & window Glasses and regulations for glasses. Difference between toughened glass, sheet glass & laminated glass. Composite materials, properties of materials, corrosion, anti-corrosion methods, selection of paint and painting process, body trim items, body mechanisms.	5	10

R Level	U Level	A Level	N Level	E Level
25	30	20	15	10

**Legends: R:** Remembrance; **U:** Understanding; **A:** Application, **N:** Analyze, and **E:** Evaluate

### List of Experiment

- 1 Modelling of Chassis
- 2 Dead load analysis
- 3 Live load analysis
- 4 Conclusive reaction of dead and live load
- 5 Assembly of chassis by different mounting

**References**

1. “Automotive Chassis & Body”, by P.L.Kohli, Papyrus Publishing House, New Delhi.
2. “Automotive Chassis”, by Crouse W.H.& Anglin D.L, McGraw-Hill Int. Book Co.
3. “Body Engineering”, by Sydney F. Page, Chapman & Hill Ltd., London.
4. “Fundamentals of Vehicle Body work”, by J. Fairbrother, Hutchinson, London.
5. “Automotive Chassis”, by P.M. Heldt, Chilton Co. NK
6. “Vehicle Body Layout & Analysis”, by John Fenton, Hutchinson, London.
7. “Vehicle Body Engineering”, by J. Powloski, Business Books Ltd., London.