GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI

Automobile Engineering

Subject Name: **Automobile Chassis and Body Engineering**
Subject Code: **160205**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Practical (I)**
3	0	0	3	70	30	50

Sr. No.	Course Contents	Total Hrs
1.	**Vehicle Aerodynamics:** 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 Optimisation of drag – wind tunnel testing of scale model.	8
2.	**Car Body:** Types, Regulations, Drivers seat design & dimensions parameters, drivers visibility, methods for improving visibility and space in cars, design for safety, safety requirements for car (with reference to Vehicle Body Engineering), car body construction. Crash Test and Roll over test regulations. Heating and ventilation systems. Dash boards, instrument panel and passenger compartment lighting, Audio – visual systems.	10
3.	**Bus Body Details:** Types: Mini bus, single decker & double decker, two level, split level and articulated bus, bus body layout, floor height, engine location, entrance and exit locations, passenger seating dimensions , seat layout for RTO registration, constructional details, frame construction, double skin construction, types of metal sections used, conventional and integral coach type construction. Bus body Code Regulations (ARAI). Pneumatic equipment for passenger door opening & closing. Air conditioning equipment selection and mounting.	7
4.	**Commercial Vehicle Details:** 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	5

	considerations, pay load and related regulations.	
5.	**Body Loads:** 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.	6
6.	**Body Materials:** Metal sheets (Steel, Aluminum 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.	12

Text Books:

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.

Reference Books:

1. "Body Engineering", by Sydney F. Page, Chapman & Hill Ltd., London.
2. "Fundamentals of Vehicle Body work", by J. Fairbrother, Hutchinson, London.
3. "Automotive Chassis", by P.M. Heldt, Chilton Co. NK
4. "Vehicle Body Layout & Analysis", by John Fenton, Hutchinson, London.
5. "Vehicle Body Engineering", by J. Powloski, Business Books Ltd., London.
6. "Body Construction and Design", (Vol. 6), by J.G. Giles, Llefe Books/Butterworth & Co. London