

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.E. SEMESTER : VIII

### MECHANICAL ENGINEERING

Subject Name: **AUTOMOBILE BODY ENGINEERING**

Sr. No.	Course Contents	Total Hrs
1.	<b>Vehicle Aerodynamics:</b> Objectives ,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 ,wind tunnel testing of scale model, component balance to measure forces and moments.	07
2.	<b>Car Body:</b> Types, Regulations, drivers visibility, tests for visibility, methods for improving visibility and space in cars, safety design, safety requirements for car, car body construction, Crash Test and Roll over test regulations, Heating and ventilation systems, dash board instruments	07
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 and exit locations, passenger seating dimensions, constructional details, frame construction, double skin construction, types of metal sections.	07
4.	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, driver's cabin design. volume/weight	06
5.	<b>Body Materials:</b> 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.	07
6.	<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.	09
7.	Automobile body repair and servicing: Interior trim and upholstery, Glass and door service, Body insulation and sealing, Exterior trim, major and minor body repairs	02

**Term Work:** The term work shall be based on the topics mentioned above.

**Practical / Oral:** The candidate shall be examined on the basis of term-work.

#### Text Books:

1. Crouse W. H. & Anglin D. L., "Automotive Chassis", McGraw-Hill Int. Book Co.2009
2. P. L. Kohli, "Automotive Chassis & Body", Papyrus Publishing House, New Delhi.2010
3. J Powloski, "Vehicle Body Engineering", Business Books Ltd., London

#### Reference Books:

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