

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: III

Mechanical Engineering (I.C. Engine & Automobile)

Subject Name: **Automotive Aerodynamics & Safety**

Sr. No.	Course Content
1.	The concept of bluff body; Analysis of aerodynamic drag force; types of drag force; drag coefficient of cars; strategies for aerodynamic development; low drag profiles for vehicle.
2.	Aerodynamic shape analysis; Front and modification; front and rear wind shield angle; boat tailing; hatch back, fast back and square back; dust flow patterns at the rear; effect of gap configuration.
3.	The concept of vehicle safety; Need of safety; active safety: driving safety; conditional safety; perceptibility safety; operating safety- passive safety: exterior safety, interior safety, deformation behavior of vehicle body.
4.	Regulations, automatic seat belt Tightener system; Collapsible steering column; Tilttable steering wheel; Electronic system for activating air bags; Bumper design for safety; antiskid braking system; Speed control devices; Causes of rear end collision; Frontal object detection; Rear vehicle object detection system; Object detection system with braking system interactions.

## Reference Books:

1. Hucho, W.H., Aerodynamics of Road vehicles, Butterworths Co. Ltd., 1997.
2. J.Powloski - "Vehicle Body Engineering" - Business books limited, London - 1969.
3. Ronald.K.Jurgen - "Automotive Electronics Handbook" - Second edition- McGraw-Hill Inc., - 1999.
4. ARAI Safety standards