

PAU6J005|AUTOMOTIVE SAFETY (4-0-0)

MODULE I INTRODUCTION TO SAFETY

Vehicle structural crashworthiness and Crash testing. Design of crash crumple zones, modeling and simulation studies, Optimization of vehicle structures for crashworthiness, Types of impacts, and Impact with rebound, movable barrier tests, Analysis and simulation of vehicle in barrier impacts, Roll over crash tests, Behavior of specific body structures in crash testing, Photographic analysis of impact tests, regulatory requirements for crash testing.

MODULE II SAFETY CONCEPTS

Active safety: driving safety, conditional safety, perceptibility safety, operating safety, passive safety: exterior safety, interior safety, deformation behaviour of vehicle body, speed and acceleration characteristics of passenger compartment on impact.

MODULE III SAFETY EQUIPMENTS

Seat belt, regulations, automatic seat belt tightener system, collapsible steering column, tiltable steering wheel, air bags, electronic system for activating air bags, bumper design for safety.

MODULE IV COLLISION WARNING, COMFORT AND CONVENIENCE SYSTEM

Collision warning system, causes of rear end collision, frontal object detection, rear vehicle object detection system, object detection system with braking system interactions. Steering and mirror adjustment, central locking system , Garage door opening system, tyre pressure control system, rain sensor system, environment information system

TEXT BOOK

1. Bosch - "Automotive Handbook" - 5th edition - SAE publication - 2000.

REFERENCES

1. J.Powloski - "Vehicle Body Engineering" - Business books limited, London - 1969.
2. Ronald.K.Jurgen - "Automotive Electronics Handbook" - Second edition- McGraw-Hill Inc., - 1999.
3. Watts, A. J., et al "Low speed Automobile Accidents" Lawyers and Judges 1996
4. JullianHappian-Smith 'An Introduction to Modern Vehicle Design' SAE, 2002
5. Johnson, W., and Mamalis, A.G., "Crashworthiness of Vehicles, MEP, London, 1995