



C. U. SHAH UNIVERSITY

Wadhwan City

FACULTY OF: - Technology and Engineering
DEPARTMENT OF: -Automobile Engineering
SEMESTER: -VII
CODE: - 4TE07VCM1
NAME: –Vehicle Control System and Management

Teaching and Evaluation Scheme:-

| Subject Code | Name of the Subject | Teaching Scheme (Hours) | | | | Credits | Evaluation Scheme | | | | | | | |
|--------------|---------------------------------------|-------------------------|----|----|-------|---------|-------------------|-----|-----------------|-----|-------------------|----|------------|-------|
| | | Th | Tu | Pr | Total | | Theory | | | | Practical (Marks) | | | Total |
| | | | | | | | Sessional Exam | | University Exam | | Internal | | University | |
| | | | | | | | Marks | Hrs | Marks | Hrs | Pr/Viva | TW | Pr | |
| 4TE07VCM1 | Vehicle Control System and Management | 3 | 0 | 2 | 5 | 4 | 30 | 1.5 | 70 | 3 | --- | 20 | 30 | 150 |

Objectives:

To explain the principle of chassis management system and different sensors used in the vehicle control systems.

Prerequisite:

Basic knowledge of Automotive Electrical and Electronics control system.

Course Outline:

| Sr. No. | Course Content | Hours |
|---------|--|-------|
| 1 | Introduction: Components of chassis management system – role of various sensors and actuators pertain to chassis system – construction – working principle. | 08 |
| 2 | Driveline Control System: Speed control – cylinder cut - off technology, Gear shifting control – Traction /braking control, brake by wire – Adaptive cruise control, throttle by wire. Steering -power steering, collapsible and tillable steering column – steer by wire. | 10 |
| 3 | Safety and Security System: Airbags, seat belt tightening system, collision warning systems, child Lock, anti-lock braking systems, Vision enhancement, road recognition system, Anti-theft technologies, smart card system, number plate coding, central locking system. | 09 |
| 4 | Comfort System: Active suspension systems, requirement and characteristics, different types, Vehicle Handling and Ride characteristics of road vehicle, pitch, yaw, bounce control, power Windows, thermal management system, and adaptive noise control. | 08 |
| 5 | Intelligent Transportation system: Traffic routing system - Automated highway systems - Lane warningsystem – Driver Information System, driver assistance systems - Data communication within the car, Driver conditioning warning - Route Guidance and Navigation Systems – vision enhancement system - In-Vehicle Computing – Vehicle Diagnostics system – Hybrid/ Electric and Future Cars – Case studies. | 10 |

Learning Outcomes:

- Student will be able to understand about vehicle control system, management and transport regulation.
- The subject helps the students to understand the latest developments in the field of vehicle control system and management also modern trend of electronics in automobile.

Text Books:

1. Automotive Control Systems by **U. Kiencke, and L. Nielsen**, SAE and Springer-Verlag, 2000
2. Intelligent Vehicle Technologies by **Ljubo Vlacic, Michel Parent**, Fumio Harashima Butterworth-Heinemann publications, Oxford, 2001

Reference Books:-

1. Automotive Mechanics by Crouse, **W.H. & Anglin, D.L.**, Intl. Student edition, 9 edition, TMH, New Delhi, 2002.
2. Understanding Automotive Electronics by **William B. Ribbens**, 5th edition, Butterworth Heinemann Woburn, 1998.
3. Automotive Handbook, **Bosch**, 6th edition, SAE, 2004