

19AE332 MODERN VEHICLE TECHNOLOGY

Hours Per Week :

L	T	P	C
3	-	-	3

Total Hours :

L	T	P	CS	WA/RA	SSH	SA	S	BS
45	-	-	5	5	40	8	5	5



Source :
<https://innovation-destination.com>

COURSE DESCRIPTION AND OBJECTIVES:

This course provides knowledge on recent advancements in various automotive systems which have become indispensable for comfort, safety, navigation and engine management. The objective of the course is to offer up to date technologies and innovations in automotive industries various aspects of vehicle operation. It also includes driver and passenger information systems, entertainment systems, electronic engine management systems that ensure smooth running of the automobile and more importantly the safety system with various sensory networks.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to achieve the following outcomes.

COs	Course Outcomes	POs
1	Understand various Automobile accessories and engine management system.	1,10
2	Apply knowledge on various safety systems in a vehicle	2,9,11,12
3	To create and implement effective air conditioning system	3,7,9
4	Apply and implement knowledge on the Anti-braking system	5,10,11
5	Analyze and evaluate various passenger comfort systems.	2,4,5,9,10,12

SKILLS:

- ✓ Identify various information and safety systems.
- ✓ Analyze the working of driver monitoring system, vehicle support systems, etc.
- ✓ Identify requirements and propose various comfort systems.
- ✓ Evaluate requirements and characteristics of comfort suspension systems.
- ✓ Analyze working of adaptive cruise control, noise control and engine cut-off Technologies.

UNIT – I**L-9**

INTRODUCTION: Driver support systems – driver information, Driver perception, Driver convenience, Driver monitoring. Vehicle support systems – general vehicle control, collision avoidance, Vehicle status monitoring.

UNIT – II**L-9**

GLOBAL POSITIONING SYSTEMS: Geographical information systems, Navigation systems, Automotive vision system, Road recognition, Driver assistance systems.

UNIT – III**L-9**

ACTIVE AND PASSIVE SAFETY SYSTEMS: Airbags, Seat belt tightening system, Collision warning systems, Child lock, Anti lock braking systems, Traction control, Electronic Stability Programme. Crash worthiness of vehicle, Vehicle crash testing, Testing with dummies. Security Systems: Anti theft technologies, Smart card system, Number plate coding.

UNIT – IV**L-9**

ACTIVE SUSPENSION SYSTEMS: Requirement and characteristics, Different types, Power steering, Collapsible and tiltable steering column, Power windows, Biometric systems.

ADAPTIVE CONTROL SYSTEMS: Adaptive cruise control, Adaptive noise control, Anti spin regulation, Cylinder cut- off technology.

UNIT – V**L-9**

INJECTION SYSTEMS: The Feedback control carburetor, Single point and multipoint injection system, Working of electronic fuel injector, Different types of electronic fuel injection systems like L, K, KE, LU, LH and Motronic, ME & MH systems.

TEXT BOOKS:

1. James E. Duffy, "Modern Automotive Technology", 9th Edition, Goodheart-Willcox Publisher, 2015.
2. Konrad Reif, "Fundamentals of Automotive and Engine Technology: Standard Drives, Hybrid Drives, Brakes, Safety Systems", Springer, 2014.

REFERENCE BOOKS:

1. L.Vlasic, Michel Parent and Fumio Harashima, "Intelligent Vehicle Technologies", 1st Edition, Butterworth Heinemann publications, 2001.
2. Ronald.K.Jurgen, "Navigation and Intelligent Transportation Systems – Progress in Technology", Automotive Electronics Series, Society of Automotive Engineers, 1998.