

GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology				Branch/Spec.	Automobile Engineering			
Semester	VIII				Version	1.0.0.0			
Effective from Academic Year			2020-21		Effective for the batch Admitted in			July 2017	
Subject code	2AE804PE3		Subject Name		Advanced Automotive Technology				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Fundamentals of Automobile Engines, Automobile Systems and Automobile Electronics									
Objectives of the Course:									
After completion of this course, student will be able to									
<ol style="list-style-type: none"> 1. Apply knowledge of advanced electrical/electronic systems leading to diagnosis and repair of a vehicle's systems 2. Diagnose, adjust, and repair advanced electrical fuel injection systems, including but not limited to computer controls, fuel exhaust, ignition, and emission systems 3. Demonstrate workplace skills related to the occupation, including but not limited to maintaining a safe and healthy workplace environment, demonstrating workplace skills, ethics, and teamwork. 									
Theory syllabus									
Unit	Content								Hrs.
1	Introduction A brief introduction of Modern Engine Technology and Modern Car body technology. Electronics control unit (engine) Electronics Control Unit, Control of Air/Fuel Ration, Control of idle speed, Crank angle sensor, Lambda sensor, MAP sensor, On-Board Diagnostics Tool, Sensors and actuators for automobile industries.								12
2	Vehicle safety Anti-lock braking systems- Traction Control system- Electro-hydraulic brakes- Occupant safety systems- Airbags, seat belt tightening system, collision warning systems, child Lock – Power windows- Power Sunroof- Seat and steering Column- Biometric systems- Driver-assistance systems- Adaptive cruise control. Drive train Modern Engine Technology like DTS- i, DTS – Fi, DTS – Si, VVT, Camless Engine, GDi, CRDI								12
3	Vehicle safety and comfort system Vision enhancement, road recognition system, Anti-theft technologies, smart card system, number plate coding. Locking system- Central locking system- acoustic signaling devices Active suspension systems, requirement and characteristics, different types, Vehicle Handling and Ride characteristics of road vehicle, pitch, yaw, bounce control, Climate control management system.								9
4	Vehicle information and communication Instrumentation- Vehicle Information system- Trip Recorders- Parking systems- Analog and digital signal transmission- Automotive sound systems- Mobile and data radio- Mobile Information services- navigation system- Traffic telematics- Multimedia systems OBD-I Engine diagnostic system- OBD-II Engine Control systems- SAE DTC Standards- Scan Tools- Strategy based diagnosis – Engine and vehicle performance problems. Intelligent transportation system Traffic routing system - Automated highway systems - Lane warning system – Driver Information System, driver assistance systems - Driver conditioning warning - Route Guidance and Navigation Systems- Hybrid / Electric and Future Cars.								12
Practical content									
None									

Text Books:	
1	Nadovich, C., “Synthetic Instruments Concepts and Applications”. Elsevier,2005
2	Bitter, R., Mohiuddin, T. and Nawricki, M., “Labview Advanced programming Techniques”, CRC Press, 2nd Edition, 2007.
Reference Books	
1	Robert N.Brandy, “Automotive Electronics and Computer Systems”, Prentice Hall, 2001.
ICT/ MOOCs references	
1.	https://www.slideshare.net/AnkulGupta2/electronic-control-unitecu - ECU in Engines
2.	https://www.slideshare.net/kaustubhmarudwar/vehicle-safety-system - Vehicle Safety Systems
Course Outcomes:	
<ol style="list-style-type: none"> 1. Understand Electronics and different sensors of IC engine. 2. Analyze different drive trains and safety parameters. 3. Moderate about use of communication in automobile. 4. Know about different intelligent transport systems of automobile. 	