GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Engineering				Branch	Automobile Engineering		
Semester	VI				Version	1.0.0.0		
Effective from Academic Year		2020-21			Effective for the batch Admitted in			July 2018
Subject code	1ME2605		Subject Name		AUTOMOBILE ENGINEERING			
Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:

Course Learning Outcomes:
On successful completion of the course, the student will be able to, Co.1. Demonstrate the vehicle construction, chassis, lubrication system and cooling system in automobile, 3-way catalytic converter. Co.2. Describe the principle and working of Carburettors, CRDI, MPFI, electronic fuel injection system and Ignition system. Co.3. Differentiate between clutch, gear box, rear axle drives, fluid flywheel, and torque converter. Co.4. Identify the wheels, tyres, steering gear box, suspension system-telescopic, and leaf spring. Co.5. Appraise the recent trends in alternate fuels and automobile safety system.

Course Content

Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs.
UNIT – 1 **General classification of vehicles& Transmission system**	1.1 Power unit 1.2 All components of power unit 1.3 Transmission system; 1.4 clutches, couplings, 1.5 gear boxes, and torque converters.	1a.Introduction to engineering analysis of the automobile and Its sub-systems. 1b. Understand basic automobile component and its working also understand functioning of clutch and gear box in automobile engineering.	10	6
UNIT – 2 **Steering systems & Suspension system**	2.1Steering layout, types of steering gears, steering linkages, steering mechanism. 2.2 Power steering. 2.3 definitions and significance of camber, caster and king pin inclination toe in and toe out. 2.2 Wheel and suspension systems Types of suspension systems.	2a.Application of engineering Principles to automotive design. 2b.Learn steering system, working, repair. 2c.Understand suspension system,mounting,front and rear mechanism	15	12

	2.3 Functional requirements of suspension systems. 2.4 Front suspension system and Steering. 2.5 Types, Definitions for wheel orientation and its effect, Types and Constructional features of Front Suspension.			
UNIT – 3 **Axles** **&** **brakes**	3.1 Front and Rear Axles. 3.2 Live axles and dead axles 3.3 axle housing 3.4 Differentials 3.5 final drives. 3.6 Mechanical, hydraulic, and pneumatic brakes, Power brakes. 3.7 Four wheel drive. 3.8 Fundamentals of braking: braking distance, braking efficiency 3.9ABS and Electronic Braking system: Working principles, Features and advantages.	3a.Familiarization with modelling and analysis methods. 3b. Understand various types of axle and function of axle in vehicle. 3c. Understand various types of brakes and working of it. 3d. Understand modern braking system.	15	12
UNIT – 4 **Electrical systems**. **Lighting and electrical accessories**	4.1 construction, operation, and maintenance of batteries. 4.2 Starter motors. 4.3 Panel board instruments 4.4 Automobile air conditioning Troubleshooting.	4a.Familiarization with the automotive industry and its terminology	13	9
UNIT – 5 **Modern Vehicles**	5.1 Introduction to electric vehicles & hybrid vehicles	5a. Overview of future technology used in automobile In recent years.	7	6
		Total	**60**	**45**

List of Practical		
No.	**Unit**	**Name of Practical**
1	1	Study on engine components.
2	1	Study components of transmission system
3	1	Study constructional features and working of clutches and automatic transmission system.
4	2	Study different types of steering systems, constructional features and related configurations.
5	3	Study different types of braking systems, their constructional features and typical layout for hydraulic pneumatic and electronic brakes.
6	4	Study features, requirement and components of electrical and lighting system.
7	5	Study electronic systems of a vehicle along with different types of sensors, safety features and their integration.
List of Instruments/Equipment/Trainer Board		
1	Frames of different types of vehicles.	

2	Section model of different types of transmission systems
3	Working models of vehicle systems
4	Educational cut section models of all the modules are required.

Link of Text Books

No	Title of Books	Authors	Publication
1	Automobile Engineering	R. B. Gupta	SatyaPrakashan, New Delhi
2	Automobile Technology	N.K. Giri,	Khanna Publishers
3	Automotive Engineering, Vol. I & II	Kripal Singh	Standard Publishers, New Delhi

List of Reference Books

No	Title of Reference Books	Authors	Publication
1	Automotive Mechanics	W.H.Crouse& D.L. Anglin	Tata Mc-Graw Hill Publishing Co. Ltd.- New Delhi
2	Automobile Mechanical and Electrical Systems Automotive Technology: Vehicle Maintenance and Repair	Tom Denton	Butterworth Heinemann
3	Advanced Vehicle Technology	Heinz and Heizler	Elsevier

Link of Learning Web Resource

1	https://nptel.ac.in/