

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		1AU2610	Subject Name		AUTOMOBILE TOOLS AND GARAGE PRACTICE				
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:
The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:
CO1. Explain the need of Vehicle Maintenance.
CO2. Calculate various parameters related to vehicle performance.
CO3. Inspect and Analyze engine components for faults.
CO4. Propose solutions for Customer Complaints.
CO5. Test various engine components for normal operation.

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
<b>UNIT – 1 (Vehicular Maintenance Practices)</b>	1.1 Types of maintenance schedules (daily, weekly and monthly) in respect of the Scheduled 1.2 maintenance chart shown in service book of a vehicle, 1.3 Break down, Preventive, Predictive maintenance practices.	1a. Learn to prepare various maintenance schedules 1b. Learning of maintenance types/technique	10	8
<b>UNIT – 2 (Special Measuring Instruments)</b>	2.1 Measuring instruments for wear, 2.2 Fuel consumption, speed, acceleration, vibration, noise, Pollution.	2a. Learn to use various measuring instruments. 2b. Learn measuring of various quantities.	10	7
<b>UNIT – 3 (Garage Practices &amp; Workshop management practice)</b>	3.1 Service station, functions and operations, activities, depot and workshop layouts. 3.2 Study of Garage measuring instruments and testing, calibration, repair equipments: 3.3 Their function, usage and testing procedures. 3.4 Repairing processes and machines used for servicing and lubrication.	3a. Able to understand function, activities of workshop. 3b. Learn testing methods at garage level. 3c. Learning of workshop documents and records	12	10

	<p>3.5 Transport services or State Transport undertaking workshop layout.</p> <p>3.6 Study of Workshop documents &amp; records (job cards, bill, satisfaction voucher, history sheet, manufacturer's service coupon book, warranty policy etc.)</p> <p>3.7 Study of Workshop Manual, Parts Catalogue and Parts price list.</p> <p>3.8 Billing procedure.</p> <p>3.9 Customer complaint Handling &amp; consumer cases in case of any dispute.</p>			
<p><b>UNIT – 4 (Maintenance &amp; Overhauling of engine components)</b></p>	<p>4.1 Cylinder Block bore – measurement, Cylinder boring/Cylinder liners fitting, honing.</p> <p>4.2 Cylinder head - facing, valve seat lapping.</p> <p>4.3 Study Valve timing &amp; Fuel injection pump timing procedure and timing gear train. Rocker arm gap adjustment/setting procedure.</p> <p>4.4 Petrol Engine - Carburettor- tuning and setting of MPFI engines.</p> <p>4.5 Diesel engine - Fuel injection pumps and fuel injector's calibration.</p> <p>4.6 Cleaning of water cooling system, water pump &amp; radiator maintenance.</p> <p>4.7 Gear box - repairing of gear box and shifting mechanism.</p> <p>4.8 Final drive and differential maintenance, differential back lash adjustment.</p> <p>4.9 Wheels and tyre maintenance, re-treading of tyres, wheel balancing.</p>	<p>4a. Learning of different garage equipments and practices</p> <p>4b. Learning of different reconditioning methods</p>	14	10
<p><b>UNIT – 5 (Maintenance &amp; Overhauling of vehicle components)</b></p>	<p>5.1 Steering system linkages, Wheel alignment: toe in, toe out, caster and camber.</p> <p>5.2 Hydraulic brakes circuit- brake adjustment, bleeding of brakes. I) Study of Air Brakes circuit &amp; system components</p> <p>5.3 Chassis greasing, wheel bearing greasing, Bearing Preload adjustment.</p> <p>5.4 Suspension system – lubrication, maintenance.</p> <p>5.5 Adjustment of clutch pedal free play, repair/replacement of clutch parts.</p> <p>5.6 Repair &amp; maintenance of Propeller</p>	<p>5a. Learning of different garage equipments and practices</p> <p>5b. Learning different reconditioning methods of vehicles.</p>	14	10

	shaft "U" joints and Centre bearing.			
	5.7 Maintenance & repair practices for Leakage of Oil, Engine Oil consumption.			
	5.8 Maintenance & repair practices for radiator Coolant leakage and overheating of Engine.			
	5.9 Diagnosis for Low fuel average complaint.			
	5.10 Diagnosis for starting trouble in Petrol & Diesel engines (including Air lock).			
	5.11 Diagnoses for poor pick up complaint.			
	5.12 Diagnosis for Low engine oil pressure complaint.			
	5.13 Maintenance & repair of electrical and ignition system.			
		Total	60	45

List of Practical			
No.	Unit	Name of Practical	
1	1	Study of modern workshop layout	
2	3	Study of different types of job cards & maintenance schedule chart.	
3	4	Study of measuring, gauging & service equipments	
4	4	Demonstration on tyre changer and car washer unit.	
5	4	Performance on wheel balancer.	
6	5	Overhauling of any component or system of a vehicle.	
7	5	Performance on wheel aligner.	
8	4	Cleaning and testing of petrol injector	
9	4	Bleeding of hydraulic brakes	
List of Instruments/Equipment/TrainerBoard			
1	BASIC TOOL KIT,HAND TOOLS		
2	WHEEL ALIGNMENT,WHEEL BALANCING,TWO POST LIFT		
3	AIR COMPRESSOR,INJECTOR CLENER,SPARK PLUG CLEANER& TESTER		
4	BATTERY CHARGER,AC GAS RECHARGER,MARUTI CAR ON BOARD ELECTRIC CIRCUIT		
5	TESTING EQUIPMENT		
Link of Text Books			
No	Title of Books	Authors	Publication
1	Automotive Mechanics	William Crouse	TMH
2	Automobile Systems	Anil Chikara	Satya Prakashan
List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Automobile Engineering	K. K. Ramlingan	SciTech Publications
2	Automechanics	Joseph Heitner	East West Press
3	Automotive Service Basics	Pattern and Donald	Pearson

Link of Learning Web Resource	
1	<a href="https://www.youtube.com/watch?v=rddQmcNk1w4">https://www.youtube.com/watch?v=rddQmcNk1w4</a>
2	<a href="https://www.youtube.com/watch?v=dALHxpxR2e8">https://www.youtube.com/watch?v=dALHxpxR2e8</a>
3	<a href="https://www.youtube.com/watch?v=3KsRjnn83T0">https://www.youtube.com/watch?v=3KsRjnn83T0</a>
	<a href="https://www.youtube.com/watch?v=9obGUoLHEFA">https://www.youtube.com/watch?v=9obGUoLHEFA</a>
	<a href="https://www.youtube.com/watch?v=T_iXLNkkjFo">https://www.youtube.com/watch?v=T_iXLNkkjFo</a>
	<a href="https://www.youtube.com/watch?v=lvYUCk5_tEw">https://www.youtube.com/watch?v=lvYUCk5_tEw</a>
	<a href="https://www.youtube.com/watch?v=j4sq4CmGV5o">https://www.youtube.com/watch?v=j4sq4CmGV5o</a>
	<a href="https://www.youtube.com/watch?v=RT1Q5_lzKws">https://www.youtube.com/watch?v=RT1Q5_lzKws</a>
	<a href="https://www.youtube.com/watch?v=xJT194sl4DM">https://www.youtube.com/watch?v=xJT194sl4DM</a>
	<a href="https://www.youtube.com/watch?v=u4AfvfHqCBM">https://www.youtube.com/watch?v=u4AfvfHqCBM</a>
	<a href="https://www.youtube.com/watch?v=f7JuMGsyDAg">https://www.youtube.com/watch?v=f7JuMGsyDAg</a>
	<a href="https://www.youtube.com/watch?v=7d2K_mKgsZ0">https://www.youtube.com/watch?v=7d2K_mKgsZ0</a>
	<a href="https://www.youtube.com/watch?v=nn8vwZkZ91U">https://www.youtube.com/watch?v=nn8vwZkZ91U</a>
	<a href="https://www.youtube.com/watch?v=gUrnEI5JV1o">https://www.youtube.com/watch?v=gUrnEI5JV1o</a>
	<a href="https://www.youtube.com/watch?v=8X2GMD1TPzg">https://www.youtube.com/watch?v=8X2GMD1TPzg</a>