Lesson Plan

Name of the Faculty : Sh. Sunil Chaudhry

Discipline : Mechanical Engineering

Semester : 6th (Section A & B)

Subject : **AUTOMOBILE ENGINEERING**

Lesson Plan duration : 15 weeks (from 22nd March, 2021 to 2nd July, 2021)

Work load per week : Lecture – 03, Practical – 02

Week	Theory		Practical	
	Lecture Day	Topic (Including assessment/test)	Practical Day	Topic
1st	1st	**Unit 1. Introduction:** Automobile and its development, Various types of automobiles manufactured	1st	Introduction about the Lab and brief discussion over the practical work to be conducted
	2nd	Their manufacturer and location of their manufacturing unit, classification of automobiles, Layout of chassis,		
	3rd	Types of drives: Front wheel, Rear Wheel and Four wheel. Introduction to electric and hybrid vehicles.		
2nd	4th	Governing of fuel- carburettor, electronic control module (ECM i.e, 8 bit, 16 bit and 32 bit computers)	2nd	Fault and their remedies in Battery Ignition system.
	5th	Concept of double overhead cam, single overhead cam, Twin cam 16 valve technology in 4 cylinder engine.		
	6th	**Unit 2. Transmission System**: Clutch - Functions, Constructional details of single plate and multi plate friction clutches,		
3rd	7th	Centrifugal and semi centrifugal clutch, Cone clutch, Hydraulic clutch	3rd	Adjustment of (i) Head Light Model (ii) Wiper and Indicators.
	8th	Gear Box - Function, Working of sliding mesh, constant mesh gear box		
	9th	Synchromesh gear box, Torque converter and overdrive		

4th	10th	Introduction to Automated Manual Transmission, Automatic transmission and Continuously Variable transmission.	4th	Dismantling and inspection of (i) AC Pump (ii) SU Pump.
	11th	Propeller shaft and rear axle - Functions, Universal joint, Differential, Different types of rear axles and rear axle drives.		
	12th	Wheels and Tyres - Types of wheels, Types and specifications of tyres used in Indian vehicles,		
5th	13th	Toe in, Toe out, camber, caster, kingpin inclination, Wheel balancing and alignment, Factors affecting tyre life.	5th	Dismantle i) rear axle (ii) differential and find out the gear ratio of crown wheel and driven sun gear and planet pinion.
	14th	**Unit 3.Steering System:** Function and principle of Ackerman steering mechanism,		
	15th	Function and principle of Davis steering mechanism,		
6th	16th	Types of steering gears - worm and wheel, rack and pinion,	6th	Checking of Practical file.
	17th	**1st sessional test (Tentative)**		
	18th	**Assessment**		
7th	19th	Power steering- Hydraulic and Electrical.	7th	Fault finding practices on an automobile - four wheelers (petrol/ diesel Vehicles).
	20th	**Unit 4: Braking system:** Constructional details and working of mechanical brake,		
	21st	hydraulic brake, Air and vacuum brake,		
8th	22nd	Relative merits and demerits.	8th	Servicing /Tuning of a 2 wheeler / 4-wheeler.
	23rd	Details of master cylinder, wheel cylinder, Concept of brake drum,		
	24th	brake lining/pad and Brake adjustment,		
9th	25th	Introduction to Anti-lock Brake System and its working.	9th	Servicing of hydraulic brakes: a) adjustment of brakes b) bleeding of brakes c) fitting of lather pads
	26th	**Unit 5: Suspension System:** Function, Types, working of coil spring,		
	27th	leaf spring, Air suspension,		
10th	28th	Shock Absorber (Telescopic type) – Function, construction and working.	10th	Checking of Practical file.
	29th	**2nd sessional test (Tentative)**		

	30th	**Assessment**		
11th	31st	**Unit 6: Battery** Constructional details of lead acid cell battery	11th	Tuning of an automobile engine.
	32nd	Specific gravity of electrolyte, effect of temperature on specific gravity,		
	33rd	Specification of battery-capacity, rating , number of plates,		
12th	34th	selection of battery for particular use, Battery charging,	12th	Testing and Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte.
	35th	chemical reactions during charge and discharge, Maintenance of batteries,		
	36th	Checking of batteries for voltage and specific gravity. Batteries for electric and hybrid vehicles.		
13th	37th	**Unit 7. Dynamo and Alternator:** Dynamo - Function and details, Regulators - voltage current and compensated type,	13th	Changing of wheels and inflation of tyres, balancing of wheels.
	38th	Cutout - construction, working and their adjustment,		
	39th	Alternator - Construction and working, Charging of battery by alternator.		
14th	40th	Introduction to Integrated starter-alternator, wiring Diagram of an Automobile.	14th	Measuring spark gap and valve clearance and ring clearance: carrying out Cleaning operations for adjustment.
	41st	**3rd sessional test (Tentative)**		
	42nd	**Assessment**		
15th	43rd	Revision	15th	Checking of Practical file & Evaluation
	44th	Revision		
	45th	Revision		