JMIETI, Radaur

Lesson Planning of Mechanical Engineering Deptt. 8th Semester w.e.f. 01.01.19

Name of Teacher : Er. Naveen Sharma

Designation : Assistant Professor

Subject with code : **Automobile Engineering - ME-402N**

Objective of Course:

1. To make aware the students with the study of engineering which teaches manufacturing and mechanical-mechanisms as well operations of automobiles.
2. It is an introduction to vehicle engineering which deals with motorcycles, cars, buses trucks etc.
3. It includes branch study of mechanical, electronic, and safety elements. Some of the engineering attributes and disciplines that are of importance to the automotive engineer.

LECTURE PLAN

Week/ Month	Class	Topic/Chapter Covered	Academic Activity	Test/Assignment
Jan.	8th Semester	Brief history of automobiles, Main components of an automobile, Brief description of each component	Teaching	
Jan.	8th Semester	Brief description of constructional details and working of a four stroke I.C. Engine	Teaching	
Jan.	8th Semester	S.I. and C.I. Engines including lately developed overhead cam shaft Engines	Teaching	

Jan.	8th Semester	Multi-cylinder engines, Introduction to recent developments in I.C Engine	Teaching	
Jan.	8th Semester	Direct injection systems, Multi-point fuel injection systems	Teaching	
Jan.	8th Semester	Introduction, Brief description of different Components of Transmission System.	Teaching	
Jan.	8th Semester	Introduction to Clutch and its different types	Teaching	
Jan.	8th Semester	Principle of Friction Clutch, Clutch Lining and friction materials used in Friction Clutches	Teaching	
Jan.	8th Semester	Torque transmitted, Brief description of Cone Clutch, Single and Multiplate Plate Clutches	Teaching	Assignment
Jan.	8th Semester	clutches, Dry and wet Automatic clutch action ,Centrifugal clutches	Teaching	
Jan.	8th Semester	Electromagnetic clutches, Fluid Flywheel	Teaching	
Feb.	8th Semester	Gear Box Air resistance, Gradient resistance and rolling resistance coming across a moving automobile	Teaching	
Feb.	8th Semester	Tractive effort, Variation of tractive effort with speed	Teaching	
Feb.	8th Semester	Performance curves (object and need of a gear box), Sliding mesh gear box	Teaching	Test 1

Feb.	8th Semester	Control mechanism, Sliding type selector mechanism, Ball type selector mechanism	Teaching	
Feb.	8th	Steering column gear shift control, Constant mesh	Teaching	

	Semester	gear box		
Feb.	8th Semester	Synchromesh device, Automatic transmission in general, AP automatic gear box	Teaching	
Feb.	8th Semester	Torque converter, Torque converter with direct drive, Lubrication of Gear Box	Teaching	
Feb.	8th Semester	Functions and requirements of a propeller shaft, Universal Joint	Teaching	
March	8th Semester	Constructional forms of universal joints, Flexible- ring joints	Teaching	
March	8th Semester	Rubber-bushed flexible joints. Constant-velocity joints	Teaching	Test 2
March	8th Semester	Principle operation of Differential, Constructional details of a typical Differential unit	Teaching	
March	8th Semester	Multi-plate clutch type traction control device, Brake Functions and methods of operation, Brake efficiency	Teaching	
March	8th Semester	Elementary theory of shoe brake & shoe adjustments, A modern rear-wheel brake	Teaching	
March	8th Semester	Disc brakes, Brake linkages, Leverage and adjustment of the brake linkage	Teaching	
March	8th Semester	Servo- and power operated brakes, Vacuum brake operation	Teaching	
March	8th	Hydraulic Brakes-constructional details and	Teaching	Assignment

	Semester	working, Direct action vacuum servos, Power- operated brakes		
March	8th Semester	A dual power air brake system, principles, Road irregularities and human susceptibility	Suspension Teaching	
March	8th Semester	Suspension system, Damping, Double tube damper, Single tube damper, Lever arm type damper, Springs-Leaf springs, Coil and torsion springs	Teaching	
March	8th Semester	variable rate springs, Composite leaf springs, Rubber springs, Air springs, Adjustable and self- adjusting suspensions	Teaching	Test 3
April	8th Semester	Interconnected air and liquid suspensions, Independent suspension system, Different	Teaching	

		independent suspension layouts		
April	8th Semester	Steering Geometry -Castor, Camber, Kingpin inclination, Combined angle, Toe-in, Steering system-basic aims, Ackerman linkage	Teaching	
April	8th Semester	Steering linkages for independent suspension, Center point steering, Co-starring or trailing action	Teaching	
April	8th Semester	Cornering power, Self-righting torque, Steering characteristics-over steer and under steer, Axle beam	Teaching	
April	8th Semester	Stub- construction column axle , Steering , Reversible and irreversible steering, Rack-and-pinion steering mechanism	Teaching	
April	8th Semester	Effect of toe-in on steering, Power steering, Vickers System	Teaching	
April	8th Semester	Emission control through catalytic converter, Double catalytic converter, Aspects of pollution control in Automobiles	Teaching	

Course Outcomes:

On successful completion of the course, the student will be able to-

1. Demonstrate the vehicle construction, chassis, lubrication system and cooling system in automobile, 3-way catalytic converter.
2. Describe the principle and working of Carburettors, CRDI, MPFI, electronic fuel injection system and Ignition system.
3. Differentiate between clutch, gear box, rear axle drives, fluid flywheel, and torque converter.
4. Identify the steering gear box, suspension system-telescopic, and leaf spring. 5. Appraise the recent trends in alternate fuels and automobile safety system.