

Discipline : <b>MECHANICAL ENGG</b>	Semester : <b>6<sup>TH</sup></b>	Name of the Teaching Faculty: <b>SHUBHAJIT BISWAL</b>
Subject: <b>AUTOMOBILE ENGINEERING AND HYBRID VEHICLES</b>	No. of days/per week class allotted: <b>04</b>	Semester From date : <b>16.01.2024</b> To Date: <b>26.04.2024</b>  No. of Weeks: <b>15</b>
Week	Class Day	Theory / Practical Topics
1 <sup>ST</sup>	1 <sup>ST</sup>	<b>1.0</b> Automobiles: Definition, need and classification
	2 <sup>ND</sup>	Layout of automobile chassis with major components (Line diagram)
	3 <sup>RD</sup>	Manufacturer's specification of auto engines of motorcycle, scooter, car & bus one from each.
	4 <sup>TH</sup>	State the classification of engines basing on working principle, fuel used position of cylinder, arrangement of cylinder.
2 <sup>ND</sup>	1 <sup>ST</sup>	Continued
	2 <sup>ND</sup>	<b>2.0</b> Clutch System: Need, Types and Working principle with neat sketch of single clutch system
	3 <sup>RD</sup>	Need, Types and Working principle with neat sketch of double clutch system
	4 <sup>TH</sup>	Continued
3 <sup>RD</sup>	1 <sup>ST</sup>	Gear Box: Purpose of gear box
	2 <sup>ND</sup>	Continued
	3 <sup>RD</sup>	Construction and working of a 4 speed gear box
	4 <sup>TH</sup>	Concept of automatic gear changing mechanisms
4 <sup>TH</sup>	1 <sup>ST</sup>	Propeller shaft: Constructional features
	2 <sup>ND</sup>	Differential: Need, Types and Working principle
	3 <sup>RD</sup>	Continued
	4 <sup>TH</sup>	<b>3.0</b> Braking systems in automobiles: Need
5 <sup>TH</sup>	1 <sup>ST</sup>	Braking systems in automobiles: Types
	2 <sup>ND</sup>	Discussed about Mechanical Brake
	3 <sup>RD</sup>	Discussed about Hydraulic brake
	4 <sup>TH</sup>	Discussed about Air brake
6 <sup>TH</sup>	1 <sup>ST</sup>	Discussed about Air assisted hydraulic brake
	2 <sup>ND</sup>	Discussed about Vacuum Brake
	3 <sup>RD</sup>	Define Auto electric system
	4 <sup>TH</sup>	Wiring diagram of Horn circuit (Sketch and description)
7 <sup>TH</sup>	1 <sup>ST</sup>	Lighting circuit, Cut-out circuit (Sketch and description)

	2 <sup>ND</sup>	Voltage current regulator circuit and Flasher circuit (Sketch and description)
	3 <sup>RD</sup>	Continued
	4 <sup>TH</sup>	State the common ignition troubles and its remedies.
8 <sup>TH</sup>	1 <sup>ST</sup>	Spark plugs: Purpose, construction and specifications
	2 <sup>ND</sup>	Continued
	3 <sup>RD</sup>	<b>5.0</b> Description of the conventional suspension system for Rear and Front axle.
	4 <sup>TH</sup>	Description of independent suspension system used in cars (coil spring and tension bars)
9 <sup>TH</sup>	1 <sup>ST</sup>	Constructional features and working of a telescopic shock absorber.
	2 <sup>ND</sup>	State tyre specifications.
	3 <sup>RD</sup>	Explain the causes and remedies of tyre wear.
	4 <sup>TH</sup>	Describe necessity of engine cooling.
10 <sup>TH</sup>	1 <sup>ST</sup>	Continued
	2 <sup>ND</sup>	Describe defects of cooling and their remedial measures.
	3 <sup>RD</sup>	Describe the Function of lubrication.
	4 <sup>TH</sup>	Continued
	5 <sup>TH</sup>	Describe the lubrication System of I.C. engine.
11 <sup>TH</sup>	1 <sup>ST</sup>	Continued
	2 <sup>ND</sup>	Define Fuel and Ignition system
	3 <sup>RD</sup>	Discussed For petrol Engine: Fuel and Ignition system
	4 <sup>TH</sup>	For petrol Engine: Describe carburetion and Air fuel ratio.
12 <sup>TH</sup>	1 <sup>ST</sup>	Continued
	2 <sup>ND</sup>	For petrol Engine: Describe the Battery ignition and Magnet ignition system.
	3 <sup>RD</sup>	Continued
	4 <sup>TH</sup>	For petrol Engine: Describe Multipoint fuel injection system.
13 <sup>TH</sup>	1 <sup>ST</sup>	For Diesel engine: Describe the working principle of Fuel feed pump.
	2 <sup>ND</sup>	For Diesel engine: Describe the working principle of Injector and Fuel filter.
	3 <sup>RD</sup>	For Diesel engine: Describe the working principle fuel injection system for multi cylinder engine.

	4 <sup>TH</sup>	Introduction, Social and Environmental importance of Hybrid and Electric Vehicles
14 <sup>TH</sup>	1 <sup>ST</sup>	Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles
	2 <sup>ND</sup>	Continued
	3 <sup>RD</sup>	Continued
	4 <sup>TH</sup>	Battery for Electric Vehicles, Battery types and fuel cells
15 <sup>TH</sup>	1 <sup>ST</sup>	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations;
	2 <sup>ND</sup>	Solar powered vehicles
	3 <sup>RD</sup>	Previous year questions discussion
	4 <sup>TH</sup>	Previous year questions discussion

**Learning Resources:**

<b>Sl.</b>	<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Name of the Publisher</b>
1	R.B.Gupta	Automobile Engineering	Satya Prakashan
2	Dr Kirpal Singh	Automobile Engineering Vol- I & II	Standard Publishers
3	C.P.Nakra	Automobile Engineering	Dhanpat Rai Publication

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