GOVERNMENT POLYTECHNIC, KORAPUT

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: **MECHANICAL ENGG**	Semester: **6TH**	Name of the Teaching Faculty: A SUDHIR KUMAR
Subject: **AUTOMOBILE ENGG. & HYBRID VEHICLES**	No. of days/per week class allotted: **4**	Semester From date: 20/1/21 To Date: 03/5/21 No. of Weeks:
COURSE OUTCOMES	**CO1:** UNDERSTAND AUTOMOBILE CHASSIS, TRANSMISSION, BRAKING & FUEL SYSTEM. **CO2:** UNDERSTAND THE BASIS OF ELECTRIC VEHICLE KINEMATICS. **CO3:** UNDERSTAND THE CONCEPTS OF HYBRID ELECTRIC VEHICLES.	

Week	Class Day	Theory/Practical Topics
1ST	1ST	AUTOMOBILES: DEFINTION, NEED & CLASSIFICATION.
	2ND	LAYOUT OF AUTOMOBILE CHASSIS (LINE DIAGRAM)
	3RD	CLUTCH: NEED, TYPES, WORKING PRINCIPLE WITH SKETCH.
	4TH	CLUTCH: NEED, TYPES, WORKING PRINCIPLE WITH SKETCH. (CONTD…)
2ND	1ST	GEAR BOX: PURPOSE, CONSTRUCTION, WORKING (4 – SPEED)
	2ND	GEAR BOX: PURPOSE, CONSTRUCTION, WORKING (4 – SPEED) (CONTD..)
	3RD	CONCEPT OF AUTOMATIC GEAR CHANGING MECHANISM
	4TH	CONCEPT OF AUTOMATIC GEAR CHANGING MECHANISM (CONTD.)
3RD	1ST	PROPELLER SHAFT: CONSTRUCTIONAL FEATURES
	2ND	DIFFERENTIAL: NEED, TYPES & WORKING PRINCIPLE
	3RD	DIFFERENTIAL: NEED, TYPES & WORKING PRINCIPLE (CONTD..)
	4TH	QUIZ & ASSIGNMENT - I
4TH	1ST	BRAKING SYSTEMS: NEED & TYPES, MECHANICAL BRAKE
	2ND	HYDRAULIC BRAKE, AIR BRAKE
	3RD	AIR ASSISTED HYDRAULIC BRAKE
	4TH	VACCUM BRAKE
5TH	1ST	QUIZ & ASSIGNMENT - II
	2ND	DESCRIBE BATTERY IGNITION & MAGNET IGNITION SYSTEM
	3RD	SPARK PLUGS: PURPOSE, CONSTRUCTION & SPECIFICATIONS
	4TH	SPARK PLUGS: PURPOSE, CONSTRUCTION & SPECIFICATIONS(CON.)
6TH	1ST	COMMON IGNITION TROUBLES & ITS REMEDIES
	2ND	DESCRIBE REAR & FRONT AXLE SUSPENSION SYSTEM
	3RD	DESCRIBE REAR & FRONT AXLE SUSPENSION SYSTEM (CONTD…)
	4TH	COIL SPRING & TENSION BARS INDEPENDENT SUSPENSION
7TH	1ST	CONST. & WORKING OF TELESCOPIC SHOCK ABSORBER
	2ND	CONST. & WORKING OF TELESCOPIC SHOCK ABSORBER (CONTD..)
	3RD	QUIZ & ASSIGNMENT - II
	4TH	ENGINE COOLING: NEED & CLASSIFICATION.
8TH	1ST	DEFECTS OF COOLING & THEIR REMEDIAL MEASURES
	2ND	DEFECTS OF COOLING & THEIR REMEDIAL MEASURES (CONTD..)
	3RD	FUNCTION OF LUBRICATION

	4TH	FUNCTION OF LUBRICATION (CONTD..)
9TH	1ST	LUBRICATION SYSTEM OF I.C ENGINE
	2ND	LUBRICATION SYSTEM OF I.C ENGINE (CONTD…)
	3RD	QUIZ & ASSIGNMENT - III
	4TH	DESCRIBE AIR – FUEL RATIO.
10TH	1ST	DESCRIBE CARBURETION PROCESS FOR PETROL ENGINE.
	2ND	DESCRIBE CARBURETION PROCESS FOR PETROL ENGINE. (CONTD..)
	3RD	MULTIPOINT FUEL INJECTION SYSTEM FOR PETROL ENGINE
	4TH	M.F.I.S FOR PETROL ENGINE (CONTD..)
11TH	1ST	WORKING PRINCIPLE OF F.I MULTI CYLINDER PETROL ENGINE
	2ND	DESCRIBE THE FILTER FOR DIESEL ENGINE.
	3RD	FUEL FEED PUMP & FUEL INJECTOR FOR DIESEL ENGINE
	4TH	FUEL FEED PUMP & FUEL INJECTOR FOR DIESEL ENGINE (CONTD...)
12TH	1ST	QUIZ & ASSIGNMENT - IV
	2ND	HYBRID & ELECTRIC VEHICLES: INTRO, SOCIAL & ECONOMIC IMPORTANCE
	3RD	HYBRID & ELECTRIC VEHICLES: INTRO, SOCIAL & ECONOMIC IMPORTANCE (CONTD..)
	4TH	DESCRIBE ELECTRIC VEHICLES, OPERATIONAL ADVANTAGES
13TH	1ST	PRESENT PERFORMANCE, APPLICATIONS OF ELECTRIC VEHICLES
	2ND	BATTERY FOR ELECTRIC VEHICLE, BATTERY TYPES & FUEL CELLS
	3RD	BATTERY TYPES & FUEL CELLS (CONTD..)
	4TH	HYBRID & ELECTRIC VEHICLES: TYPES, PARALLEL & SERIES
14TH	1ST	PARALLEL & SERIES CONFIGURATIONS (CONTD...)
	2ND	DRIVE TRAIN
	3RD	DRIVE TRAIN (CONTD...)
	4TH	SOLAR POWERED VEHICLES
15TH	1ST	QUIZ & ASSIGNMENT - V
	2ND	REVISION
	3RD	REVISION
	4TH	REVISION

LEARNING RESOURCES:

AUTOMOBILE ENGINEERING, R.B GUPTA, SATYA PRAKASHAN PUBLICATIONS.
AUTOMOBILE ENGINEERING VOL – I&II, Dr. KIRPAL SINGH, STANDARD PUBLICATIONS.
AUTOMOBILE ENGINEERING, C.P NAKRA, DHANPAT RAI PUBLICATIONS.
AUTOMOTIVE ENGINE, W.H COURSE, McGRAW HILL

WEBSITE RESOURCES:

A. Sudhir Kumar
Sign. Of Faculty concerned

Sharmila Lebar
Sign. Of HOD I/C

Principal