



GOVERNMENT POLYTECHNIC, NABARANGPUR
DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 6TH	Name of the Teaching Faculty:
Subject: AUTOMOBILE ENGG. & HYBRID VEHICLES	No. of days/per week class allotted: 4	Semester From date: _____ To Date: _____ 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
1 ST	1 ST	AUTOMOBILES: DEFINITION, NEED & CLASSIFICATION.
	2 ND	LAYOUT OF AUTOMOBILE CHASSIS (LINE DIAGRAM)
	3 RD	CLUTCH: NEED, TYPES, WORKING PRINCIPLE WITH SKETCH.
	4 TH	CLUTCH: NEED, TYPES, WORKING PRINCIPLE WITH SKETCH. (CONTD...)
2 ND	1 ST	GEAR BOX: PURPOSE, CONSTRUCTION, WORKING (4 – SPEED)
	2 ND	GEAR BOX: PURPOSE, CONSTRUCTION, WORKING (4 – SPEED) (CONTD..)
	3 RD	CONCEPT OF AUTOMATIC GEAR CHANGING MECHANISM
	4 TH	CONCEPT OF AUTOMATIC GEAR CHANGING MECHANISM (CONTD.)
3 RD	1 ST	PROPELLER SHAFT: CONSTRUCTIONAL FEATURES
	2 ND	DIFFERENTIAL: NEED, TYPES & WORKING PRINCIPLE
	3 RD	DIFFERENTIAL: NEED, TYPES & WORKING PRINCIPLE (CONTD..)
	4 TH	QUIZ & ASSIGNMENT - I
4 TH	1 ST	BRAKING SYSTEMS: NEED & TYPES, MECHANICAL BRAKE
	2 ND	HYDRAULIC BRAKE, AIR BRAKE
	3 RD	AIR ASSISTED HYDRAULIC BRAKE
	4 TH	VACCUM BRAKE
5 TH	1 ST	QUIZ & ASSIGNMENT - II
	2 ND	DESCRIBE BATTERY IGNITION & MAGNET IGNITION SYSTEM
	3 RD	SPARK PLUGS: PURPOSE, CONSTRUCTION & SPECIFICATIONS
	4 TH	SPARK PLUGS: PURPOSE, CONSTRUCTION & SPECIFICATIONS(CON..)
6 TH	1 ST	COMMON IGNITION TROUBLES & ITS REMEDIES
	2 ND	DESCRIBE REAR & FRONT AXLE SUSPENSION SYSTEM
	3 RD	DESCRIBE REAR & FRONT AXLE SUSPENSION SYSTEM (CONTD...)
	4 TH	COIL SPRING & TENSION BARS INDEPENDENT SUSPENSION
7 TH	1 ST	CONST. & WORKING OF TELESCOPIC SHOCK ABSORBER
	2 ND	CONST. & WORKING OF TELESCOPIC SHOCK ABSORBER (CONTD..)
	3 RD	QUIZ & ASSIGNMENT - II
	4 TH	ENGINE COOLING: NEED & CLASSIFICATION.
8 TH	1 ST	DEFECTS OF COOLING & THEIR REMEDIAL MEASURES
	2 ND	DEFECTS OF COOLING & THEIR REMEDIAL MEASURES (CONTD..)
	3 RD	FUNCTION OF LUBRICATION

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

Sign. Of Faculty
concerned

Sign. Of HOD I/C

Principal