



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: **20/11/21** To Date: **03/01/22**

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

9 TH	4 TH	FUNCTION OF LUBRICATION (CONTD..)
	1 ST	LUBRICATION SYSTEM OF I.C ENGINE
	2 ND	LUBRICATION SYSTEM OF I.C ENGINE (CONTD...)
	3 RD	QUIZ & ASSIGNMENT - III
10 TH	4 TH	DESCRIBE AIR - FUEL RATIO.
	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
11 TH	4 TH	M.F.I.S FOR PETROL ENGINE (CONTD..)
	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
12 TH	4 TH	FUEL FEED PUMP & FUEL INJECTOR FOR DIESEL ENGINE (CONTD...)
	1 ST	QUIZ & ASSIGNMENT - IV
	2 ND	HYBRID & ELECTRIC VEHICLES: INTRO, SOCIAL & ECONOMIC IMPORTANCE
	3 RD	HYBRID & ELECTRIC VEHICLES: INTRO, SOCIAL & ECONOMIC IMPORTANCE (CONTD..)
13 TH	4 TH	DESCRIBE ELECTRIC VEHICLES, OPERATIONAL ADVANTAGES
	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..)
14 TH	4 TH	HYBRID & ELECTRIC VEHICLES: TYPES, PARALLEL & SERIES
	1 ST	PARALLEL & SERIES CONFIGURATIONS (CONTD...)
	2 ND	DRIVE TRAIN
	3 RD	DRIVE TRAIN (CONTD...)
15 TH	4 TH	SOLAR POWERED VEHICLES
	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:

A. Sudhakar Kumar
 Sign. Of Faculty
 concerned

Sharmila Lebar
 Sign. Of HOD I/C

[Signature]
 Principal