GOVT. POLYTECHNIC KANDHAMAL, (PHULBANI)

LESSON PLAN: AUTOMOBILE ENGINEERING AND HYBRID VEHICLES

6TH – SEMESTER, 2026 (S)

Discipline: **Mechanical Engineering**	Semester: **Summer 2026**	Name of the teaching faculty: **SNEHASISH MUDULI**
Subject: **AE & HV**	No of days/per week class allotted: **04**	Semester From Date:**22.12.2025** To Date: **18.04.2026** No of weeks:**16**
Week:	Class day:	**Theory/practical topics:**
1ST	1ST	**Unit -1 (INTRODUCTION & TRANSMISSION SYSTEM)** 1.1 Automobiles: Definition, need and classification: Layout of automobile chassis with major components (Line diagram)
	2ND	1.1 Automobiles: Definition, need and classification: Layout of automobile chassis with major components (Line diagram)
	3RD	1.2 Clutch System: Need, Types (Single & Multiple) and Working principle with sketch
	4TH	1.2 Clutch System: Need, Types (Single & Multiple) and Working principle with sketch
2ND	1ST	1.3 Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box
	2ND	1.3 Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box
	3RD	1.4 Concept of automatic gear changing mechanisms
	4TH	1.4 Concept of automatic gear changing mechanisms
3RD	1ST	1.5 Propeller shaft: Constructional features
	2ND	1.6 Differential: Need, Types and Working principle
	3RD	1.6 Differential: Need, Types and Working principle
	4TH	Revision
4TH	1ST	**Unit – 2 (BRAKING SYSTEM)** 2.1 Braking systems in automobiles: Need and types 2.2 Mechanical Brake
	2ND	2.3 Hydraulic Brake
	3RD	2.4 Air Brake
	4TH	2.5 Air assisted Hydraulic Brake
5TH	1ST	2.6 Vacuum Brake & Revision
	2ND	**Unit -3 (IGNITION & SUSPENSION SYSTEM)** 3.1 Describe the Battery ignition and Magnet ignition system
	3RD	3.2 Spark plugs: Purpose, construction and specifications
	4TH	3.3 State the common ignition troubles and its remedies

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6TH	1ST	3.4 Description of the conventional suspension system for Rear and Front axle
	2ND	3.4 Description of the conventional suspension system for Rear and Front axle
	3RD	3.5 Description of independent suspension system used in cars (coil spring and tension bars)
	4TH	3.5 Description of independent suspension system used in cars (coil spring and tension bars)
7TH	1ST	3.6 Constructional features and working of a telescopic shock absorber
	2ND	3.6 Constructional features and working of a telescopic shock absorber & Revision
	3RD	Revision
	4TH	**Unit – 4 (COOLING AND LUBRICATION)** 4.1 Engine cooling: Need and classification
8TH	1ST	4.2 Describe defects of cooling and their remedial measures
	2ND	4.2 Describe defects of cooling and their remedial measures
	3RD	4.3 Describe the Function of lubrication
	4TH	4.4 Describe the lubrication System of I.C. engine
9TH	1ST	4.4 Describe the lubrication System of I.C. engine
	2ND	4.4 Describe the lubrication System of I.C. engine
	3RD	Revision
	4TH	**Unit – 5 (FUEL SYSTEM)** 5.1 Describe Air fuel ratio
10TH	1ST	5.2 Describe Carburetion process for Petrol Engine
	2ND	5.3 Describe Multipoint fuel injection system for Petrol Engine
	3RD	5.3 Describe Multipoint fuel injection system for Petrol Engine
	4TH	5.4Describe the working principle of fuel injection system for multi cylinder Engine
11TH	1ST	5.4Describe the working principle of fuel injection system for multi cylinder Engine
	2ND	5.5 Filter for Diesel engine
	3RD	5.6 Describe the working principle of Fuel feed pump and Fuel Injector for Diesel engine
	4TH	5.6 Describe the working principle of Fuel feed pump and Fuel Injector for Diesel engine
12TH	1ST	Revision
	2ND	**Unit -6 (ELECTRIC AND HYBRID VEHICLES)** 6.1 Introduction, Social and Environmental importance of Hybrid and Electric Vehicles
	3RD	6.2 Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles
	4TH	6.2 Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles

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13TH	1ST	6.2 Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles
	2ND	6.3 Battery for Electric Vehicles, Battery types and fuel cells
	3RD	6.3 Battery for Electric Vehicles, Battery types and fuel cells
	4TH	6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations
14TH	1ST	6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations
	2ND	6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations
	3RD	6.5 Drive train
	4TH	6.5 Drive train
15TH	1ST	6.6 Solar powered vehicles
	2ND	6.6 Solar powered vehicles
	3RD	Revision
	4TH	Revision
16TH	1ST	Revision
	2ND	Revision
	3RD	Revision
	4TH	Revision

Sign. of Faculty Concerned 22/12/25

22/12/2025
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