

**GOVT. POLYTECHNIC KANDHAMAL, (PHULBANI)**

**LESSON PLAN: AUTOMOBILE ENGINEERING AND HYBRID VEHICLES**

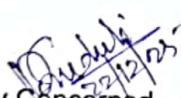
**6<sup>TH</sup> – SEMESTER, 2026 (S)**

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

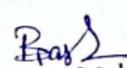
6 <sup>TH</sup>	1 <sup>ST</sup>	3.4 Description of the conventional suspension system for Rear and Front axle
	2 <sup>ND</sup>	3.4 Description of the conventional suspension system for Rear and Front axle
	3 <sup>RD</sup>	3.5 Description of independent suspension system used in cars (coil spring and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

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

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