

**GOVT. POLYTECHNIC, NAYAGARH**  
**LESSON PLAN**  
**6th SEMESTER MECHANICAL ENGINEERING (2022-23)**  
(w.e.f 14/02/2023)

**SUBJECT-AUTOMOBILE ENGINEERING AND HYBRID VEHICLES(TH.2)**  
**BRANCH- MECHANICAL ENGINEERING.**  
**NAME- RAMYA RASHMI ROUT, Lecturer (PTGF)**

**TOTAL PERIODS-60**  
**THEORY-4P/WEEK**

<b>Week</b>	<b>Class Day</b>	<b>Theory / Practical Topics</b>
1st	1 <sup>st</sup>	Automobiles: Definition, need and classification.
	2 <sup>nd</sup>	Layout of automobile chassis with major components (Line diagram).
	3 <sup>rd</sup>	Clutch System: Need, Types (Single & Multiple) and Working principle with sketch
	4 <sup>th</sup>	Clutch System: Need, Types (Single & Multiple) and Working principle with sketch
2 <sup>nd</sup>	1 <sup>st</sup>	Gear Box: Purpose of gear box, Construction and working of a 4 speed gear Box.
	2 <sup>nd</sup>	Gear Box: Purpose of gear box, Construction and working of a 4 speed gear Box.
	3 <sup>rd</sup>	Concept of automatic gear changing mechanisms
	4 <sup>th</sup>	Concept of automatic gear changing mechanisms
3 <sup>rd</sup>	1 <sup>st</sup>	Propeller shaft: Constructional features
	2 <sup>nd</sup>	Propeller shaft: Constructional features
	3 <sup>rd</sup>	Differential: Need, Types and Working principle
	4 <sup>th</sup>	Differential: Need, Types and Working principle
4 <sup>th</sup>	1 <sup>st</sup>	Braking systems in automobiles: Need and types.
	2 <sup>nd</sup>	Mechanical Brake, Hydraulic brake
	3 <sup>rd</sup>	Air brake
	4 <sup>th</sup>	Air assisted hydraulic brake
5 <sup>th</sup>	1 <sup>st</sup>	Vacuum Brake
	2 <sup>nd</sup>	Describe the Battery ignition and Magnet ignition system
	3 <sup>rd</sup>	Spark plugs: Purpose, construction and specifications
	4 <sup>th</sup>	State the common ignition troubles and its remedies
6 <sup>th</sup>	1 <sup>st</sup>	Description of the conventional suspension system for Rear and Front axle
	2 <sup>nd</sup>	Description of the conventional suspension system for Rear and Front axle
	3 <sup>rd</sup>	Description of independent suspension system used in cars (coil spring and tension bars)
	4 <sup>th</sup>	Description of independent suspension system used in cars (coil spring and tension bars)
7 <sup>th</sup>	1 <sup>st</sup>	Constructional features and working of a telescopic shock absorber
	2 <sup>nd</sup>	Constructional features and working of a telescopic shock absorber
	3 <sup>rd</sup>	Engine cooling: Need and classification
	4 <sup>th</sup>	Engine cooling: Need and classification
8 <sup>th</sup>	1 <sup>st</sup>	Describe defects of cooling and their remedial measures
	2 <sup>nd</sup>	Describe defects of cooling and their remedial measures
	3 <sup>rd</sup>	Describe the Function of lubrication
	4 <sup>th</sup>	Describe the Function of lubrication
9 <sup>th</sup>	1 <sup>st</sup>	Describe the lubrication System of I.C. engine
	2 <sup>nd</sup>	Describe the lubrication System of I.C. engine
	3 <sup>rd</sup>	Describe Air fuel ratio
	4 <sup>th</sup>	Describe Carburetion process for Petrol Engine

10 <sup>th</sup>	1 <sup>st</sup>	Describe Carburetion process for Petrol Engine
	2 <sup>nd</sup>	Describe Multipoint fuel injection system for Petrol Engine
	3 <sup>rd</sup>	Describe Multipoint fuel injection system for Petrol Engine
	4 <sup>th</sup>	Describe Multipoint fuel injection system for Petrol Engine
11 <sup>th</sup>	1 <sup>st</sup>	Describe the working principle of fuel injection system for multi cylinder Engine
	2 <sup>nd</sup>	Describe the working principle of fuel injection system for multi cylinder Engine
	3 <sup>rd</sup>	Filter for Diesel engine
	4 <sup>th</sup>	Describe the working principle of Fuel feed pump
12 <sup>th</sup>	1 <sup>st</sup>	Describe the working principle of Fuel Injector for Diesel engine
	2 <sup>nd</sup>	What is electric and hybrid vehicles(Introduction)
	3 <sup>rd</sup>	Social and Environmental importance of Hybrid and Electric Vehicles
	4 <sup>th</sup>	Description of Electric Vehicles, operational
13 <sup>th</sup>	1 <sup>st</sup>	Advantages and dis advantages of Electric Vehicles
	2 <sup>nd</sup>	present performance and applications of Electric Vehicles
	3 <sup>rd</sup>	present performance and applications of Electric Vehicles
	4 <sup>th</sup>	Battery for Electric Vehicles, Battery types and fuel cells
14 <sup>th</sup>	1 <sup>st</sup>	Battery for Electric Vehicles, Battery types and fuel cells
	2 <sup>nd</sup>	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations;
	3 <sup>rd</sup>	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations;
	4 <sup>th</sup>	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations;
15 <sup>th</sup>	1 <sup>st</sup>	Drive train
	2 <sup>nd</sup>	Drive train
	3 <sup>rd</sup>	Solar powered vehicles
	4 <sup>th</sup>	Solar powered vehicles