

**GOVT. POLYTECHNIC MAYURBHANJ , TIKARPADA**

**ACADEMIC SESSION-2024-25 , LESSON PLAN**

<b>Discipline : MECHANICAL ENGG.</b>		<b>Semester: 3rd Sem</b>	<b>Name of the Teaching Faculty :SASMITA SAHA</b>
<b>Subject : THERMAL ENGG.-I</b>		<b>No. of Days / per week class allotted : 04</b>	<b>Semester From date : 01/07 /24 To Date : 08/11/24</b>
<b>MONTH</b>	<b>Week</b>	<b>Day</b>	<b>Topics</b>
<b>JULY</b>	<b>1ST</b>	1st	<b>CHAPTER-1 :Thermodynamic concept &amp; Terminology:</b> Thermodynamic Systems (closed, open, isolated)
		2nd	Thermodynamic properties of a system (pressure, volume, temperature)
		3rd	entropy, enthalpy, Internal energy and units of measurement.
		4th	Intensive and extensive properties Define thermodynamic processes, path,cycle , state.
	<b>2nd</b>	1st	Define thermodynamic processes, path,cycle , state..
		2nd	Revision,Path function, point function
		3rd	Thermodynamic Equilibrium
		4th	Quasi-static Process
	<b>3rd</b>	1st	work, its sign convention different types of work.
		2nd	Heat, its sign convention.
		4th	comparison between heat and work. Mechanical Equivalent of Heat.
	<b>4th</b>	1st	Work transfer, Displacement work
		2nd	<b>CHAPTER 2:Laws of Thermodynamics :</b> State & explain Zeroth law of thermodynamics.
		3rd	State & explain First law of thermodynamics.
		4th	Limitations of First law of thermodynamics
	<b>5TH</b>	1st	Application of first lawof thermodynamics ( steady flow energy equation)
		2nd	SFEE application to turbine and compressor.
3rd		Solved problems on SFEE.	
		1st	Second law of thermodynamics, TER MER Heat engine

AUGUST	2nd	2nd	Refrigerator, Heat pump. COP
		3rd	Clausius statements
		4th	Kelvin Planck statements
			<b>CLASS TEST-1</b>
	3rd	1st	Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P
		2nd	Solved problems on Heat engine.
		3rd	Solved problems on Refrigerator heat pump
	4th	2nd	<b>CHAPTER 3: Properties Processes of perfect gas :</b> Laws of perfect gas, Boyle's law, Charle's law,
		3rd	Dalton's law of partial pressure, Guy lussac law
		4th	General gas equation, characteristic gas constant, Universal gas constant
	5TH	2nd	Explain specific heat of gas (Cp and Cv) Relation between Cp & Cv.
		3rd	Enthalpy of a gas. Work done during a non- flow process
4th		Application of first law of thermodynamics to various non flow process Isothermal, Isobaric, isochoric process.	
SEPTEMBER	1ST	1st	solved problems
		2nd	solved problems
		3rd	Isentropic and polytrophic process
		4th	solved problems
	2nd	2nd	solved problems
		3rd	Free expansion & throttling process
		4th	solved problems
	3rd	2nd	<b>CHAPTER 4: Internal combustion engine :</b> Explain & classify I.C engine.
		3rd	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed & RPM
		4th	Explain the working principle of 2-Stroke C I engine.
			<b>INTERNAL EXAMINATION</b>
	4th	1st	Explain the working principle of 2-Stroke S I engine.
		2nd	Explain the working principle of 4 -Stroke petrol engine.
		3rd	Explain the working principle of 4 -Stroke diesel engine.
		4th	Difference between petrol engine and diesel engine.
5TH	1st	Comparison between two stroke engine and four stroke engine.	
1ST	2nd	<b>CHAPTER 5: Gas Power Cycle:</b> Introduction of gas power cycle and important terms used in gas power cycle.	
	4th	Carnot cycle	
3rd	1st	simple problem solved on Carnot cycle.	
	2nd	Otto Cycle	

OCTOBER		4th	Solved problems on Otto Cycle.
	4th	1st	Diesel cycle
		2nd	Solved problems on Diesel Cycle,
		3rd	Dual cycle.
		4th	simple problem Solved
	5TH	1st	<b>CHAPTER 6:Fuels and Combustion</b> : Define Fue. Types of fuel
		2nd	Application of different types of fuel.
		3rd	Heating values of fuel
	NOVEMBER	2nd	1st
2nd			Cetane number
3rd			CLASS TEST-II
4th			Revision .