LESSON PLAN.

Academic Session :- 2022-23

Subject :-THERMAL ENGG. -1 , Subject code -Theory 4 **Total Period :** 60

Teacher :- SHEKHAR SUMAN PRADHAN (PTGF, MECHANICAL ENGINEERING DEPT.) **Theory :- 4p/week**

SEMESTER:-3rd

MONTH	Week	DATE	UNIT NO/PERIOD ALLOTED	Syllabus to be covered	Syllabus actually covered	Short fall	Signature
SEPTEMBER	4TH	19-09-2022	13	1) THERMODYNAMIC CONCEPTS AND TERMINOLOGY - Introduction	COVERED	NILL	
	4TH	21-09-2022		Thermodynamic systems and its types - pressure , volume	COVERED	NILL	
	4TH	22-09-2022		Temperature and its different scale of measurement	COVERED	NILL	
	4TH	24-09-2022		Macroscopic and microscopic approach of thermodynamics	COVERED	NILL	
	5TH	26-09-2022		Basic of Entropy, Enthalpy and Internal Energy	COVERED	NILL	
	5TH	28-09-2022		Intensive and Extensive properties	COVERED	NILL	
	5TH	29-09-2022		Basic concept of process, path, cycle and state	COVERED	NILL	
OCTOBER	3RD	10/10/2022		Path function , Point function and its Difference	COVERED	NILL	
	3RD	12/10/2022		State Thermodynamic equlibrium (what is Thermal, chemical and mechanical equilibrium)	COVERED	NILL	
	3RD	13/10/2022		Discuss about Quasistatic process	COVERED	NILL	
	3RD	15/10/2022		Concept of Energy and its sources	COVERED	NILL	
	4TH	17/10/2022		Define Work and Heat and its comparision	COVERED	NILL	
	4TH	19/10/2022		Mechanical equivalent of heat ,work transfer and Displacement work	COVERED	NILL	
	4TH	20/10/2022		2) LAWS OF THERMODYNAMICS - State and Explain Zeroth law of Thermodynamics	COVERED	NILL	
	4TH	22/10/2022		Zeroth law explanation and its application	COVERED	NILL	
	5TH	26/10/2022		State and Explain 1st Law of Thermodynamics	COVERED	NILL	
	5TH	27/10/2022		1st law of thermodynamics for process and cycle for closed system	COVERED	NILL	
	5TH	29/10/2022		Limitation of 1st law of thermodynamics	COVERED	NILL	

	6TH	31/10/2022		1st law of thermodynamics for open system and basic of control volume	COVERED	NILL	
NOVEMBER	1ST	2/11/2022	13	Define steady flow energy equation and its derivation for open system	COVERED	NILL	
	1ST	3/11/2022		Application of 1st law of thermodynamics equation in Turbine and Compressor	COVERED	NILL	
	1ST	5/11/2022		Introduction to 2nd law of thermodynamics	COVERED	NILL	
	2ND	7/11/2022		Discussion about Kelvin- Planks and Clausius statement	COVERED	NILL	
	2ND	9/11/2022		**S**tate and define heat engine, heat pump and refrigerator	COVERED	NILL	
	2ND	10/11/2022		Efficiency calculation of heat engine and COP calculation of heat pump and refrigerator	COVERED	NILL	
	2ND	12/11/2022		Numerical practice on SFEE , and efficiency of heat engine and cop of heat pump and refrigerator	COVERED	NILL	
	3RD	14/11/2022		**3) PROPERTIES PROCESSES OF PERFECT GAS -** INTRODUCTION	COVERED	NILL	
	3RD	16/11/2022		Define perfect gas and real gas and its difference, Boyles law	COVERED	NILL	
	3RD	17/11/2022		**Define Charle's law and Gaylussac law**	COVERED	NILL	
	3RD	19/11/2022		Define Avogadro's law and Dalton's law of partial pressure	COVERED	NILL	
	4TH	21/11/2022		**D**iscuss about General gas equation , characteristics gas constant and universal gas constant	COVERED	NILL	
	4TH	23/11/2022		Explain specific heat of Gas (Cp and Cv) , relation between Cp and Cv	COVERED	NILL	
	4TH	24/11/2022		Define Enthalpy of Gas , derieve relation between enthalpy , internal energy , pressure and volume	COVERED	NILL	
	4TH	26/11/2022	14	workdone during nonflow process of Isobaric, Isochoric and Isothermal process	COVERED	NILL	
	5TH	28/11/2022		Derieve workdone of isothermal and adiabatic process	COVERED	NILL	
	5TH	30/11/2022		derieve workdone of polytropic process			
	1ST	1/12/2022		**Discussion of** free expansion and throttling process			
	1ST	3/12/2022		numerical on Boyle's law , Charle's law , gaylussac law			
	2ND	5/12/2022		Numerical on Avogadro's law and Daltons's law of partial pressure and General gas equation			
	2ND	7/12/2022		Numerical on work transfer and heat transfer for different nonflow process			

	2ND	8/12/2022		Numerical on enthalpy , specific heat Cp,Cv			
	2ND	10/12/2022		4) **INTERNAL COMBUSTION ENGINE** - INTRODUCTION			
	3RD	12/12/2022		**E**xplain and classify IC engine			
	3RD	14/12/2022		Terminology of IC engine such as bore, dead centre,stroke volume , piston speed and RPM			
DECEMBER	3RD	15/12/2022		Explain the working principle of 4-stroke SI engine			
	3RD	17/12/2022		Explain the working principle of 4- stroke CI engine			
	4TH	19/12/2022		Discussion of difference between 4-stroke SI and CI engine			
	4TH	21/12/2022		Explain the working principle of 2-stroke SI engine			
	4TH	22/12/2022		Explain the working principle of 2-stroke CI engine			
	4TH	24/12/2022	18	Discussion of difference between 2-stroke SI and CI engine			
	5TH	26/12/2022		Discussion claussius ineuqality and explanation of entropy			
	5TH	28/12/2022		**E**ntropy calculation for different process and phase cahnge			
	5TH	29/12/2022		**E**ntropy calculation for different process and phase cahnge			
	5TH	31/12/2022		Discussion of carnot theorem and its proof			
	2ND	2/1/2022		Explanation of Carnot cycle and its derivation			
	2ND	4/1/2022		Numericals on both Carnot theorem and carnots cycle			
	2ND	5/1/2022		Explanation about Otto cycle and its efficiency derivation			
	2ND	7/1/2022		Explanation about Diesel cycle and its efficiency derivation			
	3RD	9/1/2022		Comaprision between Otto ,Diesel and Dual cycle			
	3RD	11/1/2022		5) **FUELS AND COMBUSTION** - INTRODUCTION			
	3RD	12/1/2022		Define fuel and its types explanation			
JANUARY	3RD	14/1/2022		Application of different types of fuel			
	4TH	16/1/2022		Heating value of fuel and its types			
	4TH	18/1/2022	5	Quality of IC engine fuels , octane no. and cetane no.