DETAILED TEACHING PLAN

Lecture No	Unit no	Topic to be covered	Planned Date	Execution Date	Remarks
	Unit-1.0 Basics Concepts of thermodynamics	1. 1 Basic Concepts - Definition and importance of Thermodynamics, Thermodynamic systems, Thermodynamic properties,Work, heat and energy, Thermodynamic equilibrium,Quasi-static process, work done during Quasi- static process,Zeroth law of Thermodynamics	09/09/24 10/09/24 11/09/24	09/09/24 10/09/24 11/09/24	
		1. 2 First law of thermodynamics -First law of thermodynamics and its applications, Steady flow energy equation and its applications to boiler, engine, turbine, compressor and nozzle	18/09/24 19/09/24 20/09/24 21/09/24	18/09/24 19/09/24 20/09/24 21/09/24	
		1.3 Thermodynamic processes and representation on P-V and T-S diagram, Simple Numerical problem on first law of thermodynamics.	23/09/24 25/09/24	23/09/24 25/09/24	
		1.4 Second Law of Thermodynamics - Limitations of First law of thermodynamics, Second law of thermodynamics: Kelvin Planck's and Clausiusstatements, Heat reservoir, Heat source and Heat sink, Concept of heat engine, heat pump and refrigerator, Carnot cycle Thermal Efficiency, Coefficient of performance, Parameters affecting thermal efficiency, Means of increasing efficiency, Thermodynamically reversible and irreversible processes. Factors that makes a process irreversible.	26/09/24 28/09/24 29/09/24 30/09/24 01/09/24 03/09/24 04/09/24	26/09/24 28/09/24 29/09/24 30/09/24 01/09/24 03/09/24 04/09/24	
		1.5 Entropy- Clausius inequality, concept of Entropy, Principle of increase of entropy, T-S and H-S diagrams computation of change in entropy	07/10/24 09/10/24 14/10/24	07/10/24 09/10/24 14/10/24	
	Unit-2.0 Air Standard Cycles and internal combustion engines	2.1 Air standard cycles-definition and its purpose, Otto, Diesel cycles, their representation on PV & TS diagrams, Derivation of air standard efficiency and their comparison and limitation.	15/10/24 16/10/24 17/10/24 19/10/24 22/10/24	15/10/24 16/10/24 17/10/24 19/10/24 22/10/24	
		2.2 Internal Combustion engines Introduction and classification of IC engine, I.C. engine components and their function, Working of two-stroke and four stroke cycle engines and their comparison,	05/11/24 14/11/24 16/11/24	05/11/24 14/11/24 16/11/24	
		2.3 Indicator diagram, calculation of IP, BP, FP, Thermal Efficiency, Mechanical efficiency and relative efficiency, Pollution from IC engines and emission	18/11/24 19/11/24 20/11/24	18/11/24 19/11/24 20/11/24	

	Unit-3.0 Pure substances	3.1 Pure substance, phase, phase changes, steam as a two phase system,steam formation and its representation on the enthalpy plane	21/11/24 22/11/24	21/11/24 22/11/24	
		3.2 Representation of wet, dry and saturated and superheated steam on P-V,T-S and H-S planes, Dryness fraction of steam table.	23/11/24 24/11/24	23/11/24 24/11/24	
		3.3 Simple calculations on quality of steam using Steam table	25/11/24 26/11/24	25/11/24 26/11/24	
		3.4 Safety precautions in handling steam.	27/11/24	27/11/24	

	Unit-4.0 Ideal Gases and Ideal Gas Processes	4.1 Avogadro's law, Derivation of characteristic gas equation using Boyle's and Charle's law, characteristic gas constant and universal gas constant. , simple numerical problems based on above.	28/11/24 30/11/24	28/11/24 30/11/24	
		4.2 Ideal gas processes – Isobaric, Isochoric, Isothermal, Isentropic, Polytropic, Throttling and their representation on P-V and T-S diagrams, determination of work, heat, internal energy, enthalpy change and entropy change.	03/12/24 04/12/24 05/12/24 06/12/24	03/12/24 04/12/24 05/12/24 06/12/24	
	Unit-5.0 Air Compressors	5.1 Basics of compression , industrial uses of compressed air	09/12/24	09/12/24	
		5.2 Classification of compressors, Description of reciprocating compressor and Centrifugal compressor, Work done in single stage reciprocating compressor, Volumetric, Isothermal and Isentropic efficiencies of reciprocating air compressor,	10/12/24 11/12/24	10/12/24 11/12/24	
		5.3 Multistage compression and inter cooling and advantages.	12/12/24	10/12/24	
		5.4 Safety precautions in handling compressed air.	13/12/24	13/12/24	
	Unit-6.0 Heat Transfer	6.1 Modes of heat transfer Conduction, convection and radiation. Terms related to heat transfer - thermal conductivity, Heat transfer coefficient , thermal diffusivity , heat flux, thermal resistance.	14/12/24	14/12/24	
		6.2 Conduction-Fourier's law of heat conduction, temperature gradient,	16/12/24	16/12/24	
		6.3 Determination of heat transfer across a flat plate through conduction, engineering applications/examples.	19/12/24	19/12/24	
		6.4 Convection- Newton's law of cooling, natural and forced convection, engineering applications/examples. Radiation- Stefan-Boltzmann law of thermal radiation, absorptivity, reflectivity, transmissivity, emissivity, Black body, Grey body, Emissive power, shape factor,	20/12/24 21/12/24	20/12/24 21/12/24	
		6.5 Heat Exchangers - Classification, construction and working of shell and tube, shell and coil, pipe in pipe type & plate type heat exchanger and their applications.	23/12/24	23/12/24	

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