Lesson Plan

Name of Faculty : NARESH, Assistant Professor (GUEST FACULTY)
Discipline : Mechanical Engg.
Semester : 3rd
Subject : THERMODYNAMICS, ME-201E
Lesson Plan Duration: 15 weeks (from AUG, 2018 to DECEMBER, 2018)
Work Load (Lecture) per week (in hours): **Lectures 04 hours**

Week	Theory		No Practical	
	Lecture Day	Topic (Including Assignment/Test)		
Unit-I,II : BASIC CONCEPT, FIRST LAW THERMODYNAMICS				
1st	1	Macroscopic and Microscopic Approaches, Thermodynamic Systems, Surrounding and Boundary		
	2	Thermodynamic Property – Intensive and Extensive, Thermodynamic Equilibrium, State, Path, Process and Cycle,		
	3	Quasi-static, Reversible and Irreversible Processes,		
	4	Working Substance. Concept of Thermodynamic Work and Heat		
	5	Problem and solutions		
2nd	6	Equality of Temperature, Zeroth Law of Thermodynamic and its utility		
	7	Energy and its Forms		
	8	Energy and first law of thermodynamics		
	9	Internal Energy and Enthalpy,		
	10	Problem and solutions		
3rd	11	PMMFK, Steady flow energy equation		
	12	Ist Law Applied to Non- flow process,		
	13	Flow Process and Transient Flow Process		
	14	Throttling Process and Free Expansion Process		
	15	Problem and solutions		
4th	16	Limitations of First Law, Thermal Reservoir		
	17	Heat Source and Heat Sink,		
	18	Heat Engine, Refrigerator and Heat Pump		
	19	Kelvin- Planck Clausius Statements		
	20	Problem and solutions		
Unit-III,IV: SECOND LAW OF THERMODYNAMICS, Availability and Irreversibility:				
5th	21	PMMSK. Carnot Cycle, Carnot Heat Engine		
	22	Carnot Heat Pump,		
	23	Carnot Theorem and its Corollaries,		
	24	Thermodynamic Temperature Entropy, Clausius Inequality,		
	25	Problem and solutions		
6th	26	Principle of Entropy Increase, Temperature Entropy		
	27	Entropy Change in Different Processes,		
	28	Introduction to Third Law of thermodynamic		
	29	Problems and solutions		
	30	Problem and solutions		

7th		**1st Minor Test**		
8th	31	High and Low Grade Energy, Availability and Unavailable Energy,		
	32	Loss of Available Energy Due to Heat Transfer Through a Finite Temperature difference		
	33	Temperature Difference, Dead state of a system, Availability of a Non-Flow or Closed Availability of a Steady Flow System, Helmholtz and Gibb's Functions,		
	34	Problem and solution Effectiveness and Irreversibility, Second law efficiencies of processes & cycles.		
	35	Assignment 1		
Unit-V,IV: PURE SUBSTANCE ,IDEAL AND REAL GASES				
9th	36	Pure Substance and its Properties, Phase and Phase Transformation,		
	37	Vaporization, Evaporation and Boiling,		
	38	Saturated and Superheat Steam,		
	39	SOLID , LIQUID, Vapour Equilibrium,		
	40	Problem and solutions		
10th	41	T-V, P-V and P-T Plots During Steam Formation,		
	42	Properties of Dry,		
	43	Wet and Superheated Steam, Property Changes During Steam Processes,		
	44	Entropy (T-S) and Enthalpy – Entropy (H-S) Diagrams,		
	45	Problem and solutions Throttling and Measurement of Dryness Fraction of Steam.		
UNIT-VI ,VII: IDEAL GASE AND REAL GASES , THERMODYNAMICS RELATIONS				
11th	46	Concept of an Ideal Gas, Basic Gas Laws		
	47	GAS Equation, Avogadro's law and Universal Gas Constant,		
	48	P-V-T surface of an Ideal Gas.		
	49	Vander Waal's Equation of state, Reduced Co-ordinates,		
	50	Problem and solutions		
12th	51	Compressibility factor and law of corresponding states.		
	52	Mixture of Gases, Mass, Mole and Volume Fraction,		
	53	Gibson Dalton's law, Gas Constant and Specific Heats,		
	54	Entropy for a mixture of non-reactive gases.		
	55	Problem and solutions		
13th	56	Maxwell Relations,		
	57	Clapeyron Equation,		
	58	RELATION FOR changes in Enthalpy and Internal Energy & Entropy,		
	59	Specific Heat Capacity Relations,		
	60	Problem and solutions		
14th	**2nd Minor Test**			
15th	61	Thomson coefficient & inversion curve.		
	62	Problems and Solutions		
	63	Problem and solutions		
	64	Presentation		
	65	Assignment-II		

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