



VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY

LESSON PLAN

Semester >>2 nd		Year >> 2015	Contact Hours per week >> 4
Basic Thermodynamics (BME 206)		Branch >> MECHANICAL ENGINEERING	Total Credit >> 4
TEACHER		Prof. S. B. Mohapatra	
Period		Jan 2015-April 2015	
Recommended books >>		Text Book: 1. Engineering Thermodynamics by P.K.Nag. TMH	
Sl. No.	Lecture No.	Topics to be covered	
MODULE -I			
1	Lecture-01	Basic Concepts: Thermodynamics system, Open system, Closed system, Isolated system and surroundings,State, Properties, Processes and cycles,Thermodynamic equilibrium	
2	Lecture-02	Heat and work transfer across boundaries, Quasi-static processes	
3	Lecture-03	First Law of Thermodynamics :- First law for a closed system undergoing a cycle and undergoing a change of state,Internal energy as a system properties	
4	Lecture-04	Application of first law to different thermodynamic processes	
5	Lecture-05	Problem solving	
6	Lecture-06	Problem solving	
7	Lecture-07	First law applied to flow processes: Derivation of Steady Flow energy equation	
8	Lecture-08	Application of first law to Nozzles, turbines, heat exchangers, Throttling device etc.	
9	Lecture-09	Mass and energy balance in a simple flow processes	
10	Lecture-10	Variable flow process, discharging and charging of a tank	
11	Lecture-11	Problem Solving	
12	Lecture-12	Problem Solving	
MODULE -II			
13	Lecture-13	Second Law of Thermodynamics :- Statement of Second law,Refrigerator and heat pump, Reversible and irreversible processes,Carnot's theorem	
14	Lecture-14	Equivalence of Kelvin-Plank and Clausius statements	
15	Lecture-15	Carnot cycle and its efficiency, Inequality of Clausius	

16	Lecture-16	Change of entropy for various thermodynamic processes
17	Lecture-17	Problem Solving
18	Lecture-18	Problem Solving
19	Lecture-19	Available Energy, Availability And Irreversibility: Available energy
20	Lecture-20	Available energy referred to cycle
21	Lecture-21	Availability and Irreversibility, Quality of energy
22	Lecture-22	Maximum work in a reversible process
23	Lecture-23	Reversible work by an open system exchanging heat only with the surroundings
24	Lecture-24	Useful work
25	Lecture-25	Dead state and availability
26	Lecture-26	Problem Solving
27	Lecture-27	Steam And Steam Generator :- Properties of steam
28	Lecture-28	Properties of steam: T-h diagram, T-S, h-S diagram, P-V diagram etc., Steam table
29	Lecture-29	Determination of dryness fraction
30	Lecture-30	Problem Solving
31	Lecture-31	Classification of boilers, Comparison between water tube boiler and fire tube boiler
32	Lecture-32	Boiler mountings and accessories
33	Lecture-33	Description of water tube boiler and fire tube boiler
	Lecture-34	Description of Cochran, Babcock and Wilcox boilers
34		
35	Lecture-35	Air Standard Cycle ,Otto, diesel cycle
36	Lecture-36	Dual cycle and Comparison between the three cycles
37	Lecture-37	Problem Solving
38	Lecture -38	Description and operation of four and two stroke cycle engine, comparison of SI and CI engines
39	Lecture -39	Valve timing diagram
40	Lecture -40	Power output and efficiency calculation
41	Lecture -41	Reciprocating Air Compressor: Introduction, Effect of clearance volume on volumetric efficiency
42	Lecture -42	Work required for single and double stage air compressors
43	Lecture -43	Effect of intercooling, Optimum interstage pressure
44	Lecture -44	Problem Solving

Signature of Teacher