

	GURGAON INSTITUTE OF TECHNOLOGY & MANAGEMENT	
	Department _____ MECHANICAL ENGINEERING _____	Session _____ JAN-2014 _____
Branch/Sem _____ 4 TH (A) _____		Subject Name & Code_ . STEAM & POWER GENERATION (ME-210-F)_
COURSE PLAN		TEACHER___ KULDEEP SINGH___

Books Referred:

- A. Thermodynamics and Heat Engines Vol II – R. Yadav, Central Publishing House
- B. Heat Engineering – V.P.Vasandani and D.S.Kumar, Metropolitan Book Co. Pvt. Ltd.
- C. Thermal Engineering - P.L.Balaney Khanna Publisher

Lecture No.	Topics to be Covered
1.	Introduction: Components of Steam Power System,
2.	Carnot Cycle, Rankine Cycle, Modified Rankine Cycle,
3.	p-v , h-s and T-s diagram for Rankine and Modified Rankine Cycle, Mollier's diagram, use of steam table
4.	Steam Generators: Purpose, Classification of boilers, Fire tube and water tube boilers, Mountings and accessories,
5.	description of Lancashire, Locomotive, Babcock Wilcox boilers,
6.	draught, design of natural draught chimney, artificial draught, mechanical draught,
7.	efficiency of boiler and heat balance.
8.	Steam Nozzles: Function of steam nozzles, shape of nozzles for subsonic and supersonic flow of steam
9.	Steady state energy equation, continuity equation, nozzle efficiency
10.	critical pressure ratio for max. Discharge, design of steam nozzle, problems.
11.	Steam Engine: Working of steam engine, single acting and double acting steam engine
12.	compounding of steam engine, ideal and actual indicator diagram
13.	mean effective pressure, diagram factor
14.	mechanical efficiency, thermal efficiency of steam engine.
15.	Steam Turbine: Classification of steam turbine,
16.	impulse turbine, working principle
17.	compounding of impulse turbine, velocity diagram
18.	power output and efficiency of a single stage impulse turbine
19.	reaction turbine, working principle, degree of reaction, velocity diagram, power output

20.	efficiency, condition for max. Efficiency, governing of steam turbines, problem.
21.	Improved Turbines: Back pressure and pass out turbines
22.	Regenerative feed heating cycle
23.	Binary vapour cycle.
24.	Steam Condensers: Classification of condensers
25.	sources of air leakage in condensers, effect of air leakage in condenser
26.	vacuum efficiency, condenser efficiency,
27.	air pumps, cooling water calculation, and problem.
28.	Fuel and Combustion
29.	Classification of fuels – solid, liquid and gaseous fuels
30.	calorific values of fuels
31.	stoichiometric air fuel ratio
32.	excess air requirement, analysis of exhaust gases