GANPAT UNIVERSITY
B.TECH. SEM. VI – MECHANICAL ENGINEERING
ME – 604 POWER PLANT ENGINEERING

Teaching scheme (Hrs)			Examination scheme (Marks)							
			Theory				Practical			Grand Total
L	P	Total	Internal Asses.	Sem End		Total	Internal Asses.	Sem. End	Total	
				Marks	Hrs					
4	2	6	30	70	3	100	25	25	50	150

1. Modern Thermal Power Station and High Pressure Boilers:
Layout of Modern Thermal Power Station, Coal and ash circuit, Air and gas circuit, Water and steam Circuit, Cooling water circuit of Thermal Power Plant, Methods of water circulation – Furnace walls, furnace bottom. Description and working of La-mount, Benson, Loeffeler, Schmidt-Hartmann, Velox, Super-critical and super charged boilers.

2. Fuel and Ash Handling:
Fuels for thermal power plant, storing of fuel at plant site, Dead and Live storage, out plant and in plant handling of coal, unloading of coal, preparation and transfer of coal, different types of conveyors used, storing procedure, pulverized fuel handling systems, pulverizing mills, Ash handling systems – Mechanical, hydraulic, pneumatic and steam ash handling.

3. Fuel Feeding and Burning:
Different types of Liquid fuel burners such as evaporation type, rotating type, re-circulating type, and atomizing type, burners, pulverized fuel burners such as long flame, U – flame, stream lined, short flame, turbulent tangential, cyclone burners.

4.Pollution and its control:
Air pollution by thermal power plants, different pollutant and their effects, control of particulates cyclone & electromagnetic precipitators, control of So2, Nox, Fluidised bed combustion system, Control of atmospheric pollution, Noise pollution and its control.

5. Condensers, Cooling Tower and Heat Exchangers in Boilers:
Jet and Surface Condensers, Air leakages in condensers, Vacuum efficiency, Condenser water cooling systems, Various water cooling methods, Performance of condensers and cooling towers, Condensate pump, Principle of operation of economizers, air pre-heaters, super heaters, attemperator, and reheaters.

6. Feed Water treatment:
Different types of impurities in water, Effects of impurities, different methods of water treatment, internal boiler water treatment, External water treatment system, Sedimentation, Filtration, Removal of dissolved gases, Removal of solids, Hot – lime soda process, zeolite process catexer-nexer (Dimineralizing) process, and evaporating process.

7. Combined Cycle Co-generation Power Plant:
Definition of combined cycle and cogeneration power plants, their layout and principle of working, advantages over conventional gas turbine and steam turbine power plants, calculation of efficiency.

8. Nuclear Power Plant:
Principles of Nuclear Energy, types of reactors, fuels used, waste disposal, Nuclear Power Plants, typicality of nuclear turbines and comparison with working of conventional steam turbines.

- **Term work: -**
  The term work shall be based on experimental and analytical work on topics mentioned above

- **Practical & Oral: -**
  The candidate shall be examined orally / practically on the base of above term work.

BOOKS:

1. Power Plant Engg., By - (Domkundwar and Arora)
2. Power Plant Engg., By - (P.C. Sharma)
3. Power Plant Engg., By - (G.D. Rai)

REFERENCE BOOKS :

1. Power Plant Engineering By – R. Yadav