

GOVERNMENT POLYTECHNIC GARIYABAND
GARIYABAND (C.G.)

LESSON PLAN

SESSION – JAN-JUNE 2025

NAME OF FACULTY : Prakash Vibhor Baghel
COURSE :- Diploma in Engineering
SUBJECT :- Power Plant Engineering

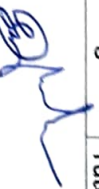
DESIGNATION : Lecturer (Mechanical)
DEPARTMENT : Mechanical Engineering
COURSE CODE : 2037672(037)

SEMESTER : VI

SESSION STARTS FROM : 06/01/2025

TOTAL CLASS PER WEEK:- 03

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
1	1	Unit 1.0 Steam Power Plant Power plant : General layout of modern thermal power plant, Site selection, Presents status of power generation in India, Elements of power plant, function of each element, steam condition and dryness fraction.	06/01/2025	06/01/25	
	2	Rankine cycle: Representation on PV, TS, HS plane, efficiency of Rankine cycle, Revision & improvement of thermal efficiency of Rankine cycle by lowering exhaust pressure, increasing boiler pressure and superheating of steam. Numerical problems.	08/01/2025	08/01/25	
	3	Numerical problems.	10/01/2025	10/01/25	
	4	Tutorial Class	15/01/2025	15/01/25	
	5	Reheat cycle- representation on T-Sand H-S Planes, flow diagram and advantages.	17/01/2025	17/01/25	
	6	Simple regenerating cycle Flow diagram, representation on T-Sand H-S plants, bleeding and feed power heating and pumping, advantages of regenerative cycle.	20/01/2025	20/01/25	
	7	Power station- Types of power station such as central power station, industrial power station, captive power station, advantages, and classification of power station on the basis of prime-movers.	22/01/2025	22/01/25	
	8	Tutorial Class	24/01/2025	24/01/25	


HOD
 Department of Mechanical Engg.
 Govt. Polytechnic Gariyaband (C.G.)

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
2	9	Unit2.0 Elements of power plant Steam Generators: Classification according to working pressure. (a)Low pressure boilers- Cocharrn, Lancashire and locomotive boilers	27/01/2025	27/01/25	
	10	(b) High pressure boilers in modern steam power plants such as Velox, Benson, Lamont, Leoffler, supercritical boilers.	29/01/2025	29/01/25	
	11	(a)Boiler mountings- Safety valves, water level indicator, pressure gauge, blow off cock etc. (b) Accessories – super heater, economizer, pre heater and draft equipment. Superheat control methods, Pulverized fuel and necessity, storing systems etc.	31/01/2025	29/01/25	
	12	Tutorial Class	03/02/2025	31/01/25	
	13	Steam Prime mover- Steam nozzle-types, Velocity of steam at outlet, Weight of discharge, Area of cross section at throat and outlet, Critical pressure ratio, Nozzle efficiency,	05/02/2025	03/02/25	
	14	Concept of prime mover, Steam turbine—working principle, method of compounding and governing, losses in steam turbines.	07/02/2025	05/02/25	
	15	Condensing Unit - Functions of Steam condenser and its type's jet and surface, Limitations and advantages of steam condenser, Elements of condensing unit, cooling towers.	10/02/2025	07/02/25	
	16	Tutorial Class	12/02/2025	14/02/25	

HOD

Department of Mechanical Engg.
Gand. Polytechnic Gairahand (C.G.)

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
2	17	Unit 3.0 Gas & Diesel Power Plants Gas Turbine Power Plants- Brayton cycle, classification of Brayton or Joule Cycle, Open and Close cycle, Representation of cycle on P.V. and T.S. diagram.	14/02/2025	18/02/25	
	18	Thermal efficiency in terms of terminal temperature and pressure, effect of pressure ratio on thermal efficiency, Advantages and disadvantages of open and close cycle gas turbines, Important components of gas turbine power plant,	17/02/2025	19/02/25	
	19	Methods of improving thermal efficiency, Essential auxiliaries and controls of a gas turbine power plants, Fuels for gas turbines.	19/02/2025	21/02/25	
	20	Tutorial Class	21/02/2025	24/02/25	
	21	Diesel Engine Power Plants- Diesel power plant layout, Functions & components of diesel power plant,	24/02/2025	25/02/25	
	22	Diesel power plant systems such as -Cooling and Lubrication system, fuel injection system,	28/02/2025	27/02/25	
	23	solid injection system – common rail system, individual pump system, distribution system, data recording.	03/03/2025	28/02/25	
	24	Tutorial Class	05/03/2025	03/03/25	

[Handwritten signature]

[Handwritten signature]

Department of Mechanical Engg.
Sree Polytechnic Ganiyaband (C.G.)

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
4	25	Unit4.0 Nuclear Power Station Evolution of nuclear energy from atoms by fission and fusion. Chain reactions, fission materials,	07/03/2025	05/03/25	
	26	types of reactors, gas cooled, boiling water liquid, metal cooled and fast reactor,	10/03/2025	07/03/25	
	27	Tutorial Class	12/03/2025	10/03/25	
	28	Arrangements of various elements in a nuclear power station,	17/03/2025	12/03/25	
	29	steam cycles and boilers coolant heat exchangers, Reactor control, Reactor shielding and safety methods.	19/03/2025	17.03.25	
	30	Tutorial Class	21/03/2025	21.03.25	
	31	Setting of Nuclear plants: Site evaluation Stages, Site Rejection Criteria, Earthquake, Geological criteria, Meteorological considerations,	24/03/2025	24/03/25	
	32	Flooding, Tsunami, Shore line erosion, chemical explosion, Radiological impact study, Radioactivity pathways to humans, environmental Impact study.	26/03/2025	26.03.25	
	33	Hazards in nuclear power station-units of radiations, safe and dangerous doses of radiations, safety precautions in nuclear power station, Nuclear Power plants in India	28/03/2025	28.03.25	
	34	Tutorial Class	02/04/2025	02/04/25	

HOD

Department of Mechanical Engg.
Govt. Polytechnic Garhvyaband (C.G.1)

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
5	35	Units.0HydroElectric Power Plants Potential power with reference to rain fall and catchments area, Water storage, element of hydro electric power stations.	04/04/2025	07/04/25	
	36	Characteristics of hydraulic turbines, Comparison of the factors governing the cost of hydro, steam and diesel power stations.	07/04/2025	09/04/25	
	37	Tutorial Classes	09/04/2025	16/04/25	
	38	Selection of prime mover, speed and pressure regulation, methods of governing,	11/04/2025	21/04/25	
	39	starting and stopping of water turbines, operation of hydro turbines. Maintenance of hydropower plants	16/04/2025	23/04/25	
	40	Tutorial Classes	21/04/2025	28/04/25	
6	41	Unit6.0 Steam Power station Control and Economics Effect of load variation on shaft speed, steam admission, valve opening, steam flow rate, steam pressure and combustion control system.	23/04/2025	30/04/25	
	42	Necessity of controlling factors in load variation, Control system (area system, centralized control system)	25/04/2025	02/05/25	
	43	Basic elements of control system, controls and instruments located in modern control station.	28/04/2025	05/05/25	
	44	Tutorial Classes	30/04/2025	07/05/25	
	45	Power plant economics- Concept of occurrence of fluctuating loads, Load curve and its significance,	02/05/2025	09/05/25	
	46	Definition and terminology of connected load, maximum demand, demand factor, average load, load factor, diversity factor, plant capacity factor, plant use factor,	05/05/2025	12/05/25	
	47	Effect of variable load and remedies.	07/05/2025	14/05/25	
	48	Tutorial Classes	09/05/2025		

Department of Mechanical Engg.
Rajeev Polytechnic Gariyaband (C.G.)