GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Engineering		Branch	ELECTRICAL ENGINEERING	
Semester	III		Version	1.0.0.0	
Effective from Academic Year	2019-20		Effective for the batch Admitted in	June 2018	
Subject code	1EE2303	Subject Name	ELECTRICAL POWER GENERATION		

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:
None

Course Learning Outcomes:
The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes: T1. To understand working of various power plant. T2. To apply new techniques for power generation. T3. To develop use of renewable sources for power generation. T4. To implement power station based on wind, solar, tidal , geo energy. T5. To Verify effect of various power plant on ecology/environment. The practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate course learning outcomes.

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
THERMAL POWER STATION	1a. Energy conversion process in thermal power plant by block diagram. 1b. Factor affecting the site selection of a TPS. 1c. Working of thermal power station (TPS) using single line Diagram. 1d. Functions of the major equipment and auxiliaries of TPS. 1e. Define load curve, load duration curve, base load and peak load and information available from it. 1f. Merits and demerits of TPS.	1.1 Basic energy conversion in TPS. 1.2 Key points for site selection of TPS. 1.3 Whole working of TPS by line diagram. 1.4 Various equipments in TPS 1.5 Load curve and load duration curve. 1.6 Peak load, base load. 1.7 Advantages and disadvantages of TPS	18	14

HYDRO POWER STATION	2a. 2b. 2c. 2d. 2e. 	Energy conversion process in hydro power plant by block diagram. Site selection factors for HPS. Types of hydro power plant. Different types of Hydro Turbines. State the critical safe practices to be complied with HPS	2.1 2.2 2.3 2.4 2.5 2.6 	Energy conversion in HPS. Factors of HPS and Main features of hydro power plant. Various hydro power plants –based on head, storage and pondage. Hydro turbines and its auxiliaries. Effect of hydro power plant on ecology/environment. Advantages and disadvantages of hydro power plant.	12	10
NUCLEAR POWER STATION	3a. 3b. 3c. 3d. 	Energy conversion process in Nuclear Power Plant by block diagram. Factors for site selection for a NPS. Working of Nuclear power station. Special precautions required for NPS.	3.1 3.2 3.3 3.4 3.5 3.6 	Nuclear Power System by block diagram. Selection factors for site of NPS. Nuclear fusion and Nuclear fission process. Working of Nuclear power plant. Special precautions for NPS and effect on environment. Merits and Demerits of NPS.	10	07
SOLAR AND WIND POWER STATION	4a. 4b. 4c. 4d. 4e. 4f. 4g. 	Various terms of solar energy for solar power plant. Solar Concentrated Power system. Principle of solar photovoltaic(PV) system. Basic energy conversion process in wind power plant. Concept of Horizontal Axis Wind Turbine(HAWT) and Vertical Axis Wind Turbine(VAWT). Concept of Downwind and Upwind wind turbine. Concept of Drag and Lift principle of wind turbine.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 	Solar constants, measurements of solar radiations. Construction of solar concentrated system. Working of solar PV system with its different parts. Working principle of wind power plant. HAWT and VAWT. Upwind and Downwind wind turbine. Drag and lift principle of rotation of wind turbine rotors.	10	08
CAPATIVE POWER PLANT AND OTHER RENEWABLE ENERGY SOURCE	5a. 5b. 5c. 	Energy conversion process in DG sets. Energy conversion process in gas-based power plants by single line diagram. Energy conversion process in biomass energy by single line diagram.	5.1 5.2 5.3 	Electrical energy conversion in DG sets and its merits-demerits. Electrical energy conversion in gas based power plant and its merits-demerits. Electrical energy conversion in biomass energy and its	10	06

	5d. Energy conversion process in ocean energy technology by single line diagram. 5e. Energy conversion process in geothermal energy by single line diagram.	merits-demerits. 5.4 Electrical energy conversion in ocean technologies-tidal, wave and ocean current etc. and its merits-demerits 5.5 Electrical energy conversion in geothermal energy, advantages and limitations		

List of Practical		
No.	Unit	Name of Practical
1	1	To study working about thermal power plant.
2	2	To study working about hydro power plant.
3	3	To study working about nuclear power plant.
4	1	To prepare report on any one thermal power plant of india.
5	2	To prepare report on any one hydro power plant of india.
6	3	To prepare report on any one nuclear power plant of india.
7	3	To prepare chart on various turbines of hydro power plant.
8	5	To prepare effect of various non-renewable sources on environment.
9	4	To prepare report on any one solar power plant.
10	4	To prepare report on any one wind power plant.
11	2	To prepare report on NHPL.
12	1	To prepare report on NTPC.

List of Instruments / Equipment / Trainer Board	
1	Demonstrated charts for TPS.
2	Demonstrated charts for HPS.
3	Demonstrated charts for NPS.
4	5kw solar PV system.
5	5kw DG system.

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Electrical power system	V.K.Mehta	S.chand Prakashan
2	Electrical power	S.L.Uppal	Khanna Publication
3	Renewble Energy Technology	Chetan S. Solanki	PHI Learning

Link of Learning Web Resource	
1	www.alternative-energy-tutorials.com
2	http://powergridindia.com
3	http://youtube.com/EnergyShouldBe