Lesson Plan

Name of the Faculty : **Mr. Amit Kumar**

Discipline : **Electrical Engineering**

Semester : **5th Semester**

Subject : **POWER SYSTEM**

Lesson Plan Duration : **13-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Main resources of energy		
	2	Conventional and non-conventional		
	3	Different types of power stations, thermal, hydro, gas		
	4	Diesel and nuclear power stations		
	5, 6	Flow diagrams and brief details of their operation, Comparison of the generating stations on the basis of running cost, site, starting, maintenance		
	7	Importance of non-conventional sources of energy in the present scenario		
	8	Brief details of solar energy, bio-energy, wind energy		
	9	Fixed and running cost		
	10	Load estimation, load curves, demand factor		
	11	Load factor, diversity factor, power factor and their effect on cost of generation, simple problems there on		
	12, 13	Base load and peak load power stations, inter-connection of power stations and its advantages, concept of regional and national grid		
	14, 15	Layout of transmission system, selection of voltage for H.T and L.T lines, advantages of high voltage for Transmission of power in both AC and DC		
	16, 17	Comparison of different systems: AC versus DC for power transmission		
	18	Conductor material and sizes from standard tables		

	19	Types of supports, types of insulators		
	20	Types of conductors, Selection of insulators, conductors, earth wire and their accessories		
	21	Transposition of conductors and string efficiency of suspension type insulators, Bundle Conductors		
	22	Mechanical features of line: Importance of sag, calculation of sag		
	23, 24	Effects of wind and ice related problems; Indian electricity rules pertaining to clearance		
	25, 26,	Electrical features of line: Calculation of resistance inductance and capacitance without derivation in a.c. transmission line, voltage regulation, and concept of corona.		
	28	Effects of corona and remedial measures		
	29	Transmission Losses		
	30	Lay out of HT and LT distribution system		
	31	Constructional feature of distribution lines and their erection		
	32, 33	LT feeders and service mains; Simple problems on AC radial distribution system, determination of size of conductor		
	34	Preparation of estimates of HT and LT lines (OH and Cables).		
	35, 36	Constructional features of LT (400 V), HT (II kV) underground cables, advantages and disadvantages of underground system with respect to overhead system		
	37	Calculation of losses in distribution system		
	38, 39	Faults in underground cables-determine fault location by Murray Loop Test		
	40	Varley Loop Test		
	41, 42	Brief idea about substations; out door grid sub-station 220/132 KV, 66/33 KV outdoorsubstations		
	43	Pole mounted substations and indoor substation		
	44, 45, 46	Layout of 33/11 and kV/400V distribution substation and various auxiliaries and equipment associated with it		
	47	Concept of power factor Reasons and disadvantages of low power factor		

	48	Methods for improvement of power factor using capacitor banks, VAR Static Compensator (SVC)		
	49	Revision of Topics already covered		
	50	Class Test		
	51	Problems, Doubts & their solution		