

## Lesson Plan

Name of the Faculty : Mr. MAHAVIR

Discipline : Electrical Engineering

Semester : 5th

Subject : Electrical Power-I

Lesson Plan duration : 15 weeks (07.09.2020 to 24.12.2020)

Work load per week : Lecture-04 and Practical-00

Week	Theory	
	Lecture day	Topic (including Assignments and Test)
1 <sup>st</sup>	1 <sup>st</sup>	Subject introduction and overview
	2 <sup>nd</sup>	<b>Unit-1 Power Generation:</b> Main resources of energy, conventional and Non-Conventional
	3 <sup>rd</sup>	Different types of power stations- Thermal Power plant, its construction and working, its advantages, disadvantage, selection of site
	4 <sup>th</sup>	Hydro Power plant, its construction and working, its advantages, disadvantage, selection of site
2 <sup>nd</sup>	5 <sup>th</sup>	Revision & discussion of above two plants
	6 <sup>th</sup>	Gas Power plant, its construction and working, its advantages, disadvantage, selection of site
	7 <sup>th</sup>	Diesel Power plant, its construction and working, its advantages, disadvantage, selection of site
	8 <sup>th</sup>	Continue the previous topic
3 <sup>rd</sup>	9 <sup>th</sup>	Nuclear Power plant, its construction and working, its advantages, disadvantage, selection of site
	10 <sup>th</sup>	Continue the previous topic & Comparison of different types of Plants
	11 <sup>th</sup>	Importance of non-conventional sources of energy in the present scenario. Brief details of solar energy, bio-energy, wind energy
	12 <sup>th</sup>	Revision and Assignment
4 <sup>th</sup>	13 <sup>th</sup>	<b>Unit-2 Economics of Generation:</b> Fixed and running cost, load estimation, load curves
	14 <sup>th</sup>	Demand factor, load factor, diversity factor
	15 <sup>th</sup>	Power factor and their effect on cost of generation & simple problems
	16 <sup>th</sup>	Base load and peak load power stations
5 <sup>th</sup>	17 <sup>th</sup>	Inter-connection of power stations and its advantages
	18 <sup>th</sup>	Concept of regional and national grid.
	19 <sup>th</sup>	Revision & Assignment
	20 <sup>th</sup>	<b>Unit-3 Transmission Systems:</b> Layout of transmission system
6 <sup>th</sup>	21 <sup>st</sup>	Selection of voltage for H.T and L.T lines
	22 <sup>nd</sup>	Advantages of high voltage for Transmission both AC and DC
	23 <sup>rd</sup>	AC versus DC for power transmission
	24 <sup>th</sup>	Conductor material and sizes from standard tables

7 <sup>th</sup>	25 <sup>th</sup>	Types of supports and types of insulators
	26 <sup>th</sup>	Types of conductors
	27 <sup>th</sup>	Selection of insulators, conductors, earth wire and their accessories
	28 <sup>th</sup>	Transposition of conductors
8 <sup>th</sup>	29 <sup>th</sup>	String efficiency of suspension type insulators, Bundle Conductors
	30 <sup>th</sup>	Revision & discussion
	31 <sup>st</sup>	Importance of sag and calculation of sag
	32 <sup>nd</sup>	Effects of wind and ice related problems
9 <sup>th</sup>	33 <sup>rd</sup>	Indian electricity rules pertaining to clearance
	34 <sup>th</sup>	Calculation of resistance, inductance and capacitance without derivation in a.c. transmission line
	35 <sup>th</sup>	Voltage regulation and concept of corona.
	36 <sup>th</sup>	Effects of corona and remedial measures
10 <sup>th</sup>	37 <sup>th</sup>	Transmission Losses
	38 <sup>th</sup>	Revision & Assignment
	39 <sup>th</sup>	<b>Unit-4 Distribution System:</b> Lay out of HT and LT distribution system
	40 <sup>th</sup>	Constructional feature of distribution lines and their erection.
11 <sup>th</sup>	41 <sup>st</sup>	LT feeders and service mains; Simple problems on AC radial distribution system
	42 <sup>nd</sup>	Determination of size of conductor
	43 <sup>rd</sup>	Preparation of estimates of HT and LT lines (OH and Cables).
	44 <sup>th</sup>	Constructional features of LT (400 V) and HT (11 kV) underground cables
12 <sup>th</sup>	45 <sup>th</sup>	advantages and disadvantages of underground system with respect to Overhead system.
	46 <sup>th</sup>	Losses in distribution system
	47 <sup>th</sup>	Faults in underground cables-determine fault location by Blavier Test
	48 <sup>th</sup>	Murray Loop Test, Varley Loop Test
13 <sup>th</sup>	49 <sup>th</sup>	Revision & Assignment
	50 <sup>th</sup>	<b>Unit-5 Substations:</b> Brief idea about substations; outdoor grid sub-station 220/132 KV
	51 <sup>st</sup>	66/33 KV outdoor substations
	52 <sup>nd</sup>	Pole mounted substations
14 <sup>th</sup>	53 <sup>rd</sup>	Indoor substation
	54 <sup>th</sup>	Layout of 33/11 kV/400V distribution substation
	55 <sup>th</sup>	Various auxiliaries and equipment associated with 33/11 kV/400V distribution substation
	56 <sup>th</sup>	Revision & Assignment
15 <sup>th</sup>	57 <sup>th</sup>	<b>Unit-6 Power Factor:</b> Concept of power factor and Reasons and disadvantages of low power factor
	58 <sup>th</sup>	Methods for improvement of power factor using capacitor banks, VAR
	59 <sup>th</sup>	Static Compensator (SVC)
	60 <sup>th</sup>	Revision & Assignment