

STATE INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Electrical Engineering

LESSON PLAN

Faculty Name: Dr. Monika Gaba (Assistant Professor)

Subject Name:-Power System –I

Year:-3rd Year

Subject Code: B24-EE-309

Semester: 5th

Lecture No	Unit No	Topic	COs Covered
L 1	Unit-I	Typical power system, Modern trends in power system transmission. Single line diagram of a power system	CO1
L 2		Underground and overhead system, Effects of increase in Voltage on transmission line efficiency	
L 3		Radial distribution system	
L 4		Radial distribution system	
L 5		Ring main Distribution system	
L 6		Relative copper consumption in various systems. Conductor size and Kelvin's Law	
L 7		Numerical	
L 8		Revisions	
L 9	Unit-II	Introduction of transmission lines, Modelling of Short Transmission line	CO2, CO3
L 10		Modelling of Medium Transmission line	
L 11		Modelling of Long Transmission line	
L 12		Power Transfer through transmission lines	
L 13		Voltage profile and Reactive Power. Characteristics of transmission lines	
L 14		Surge Impedance Loading	
L 15		Series Compensation of transmission lines	
L 16		Shunt Compensation of transmission lines	
L 17		Travelling-wave Equations	
L18		Numerical	
L19		Revision	
L 20	Unit-III	Overhead Transmission Lines: Electrical and Magnetic Fields around conductors,	CO2
L 21		Skin Effect, Proximity Effect, Parameters of lines	
L 22		Inductance of single phase two wire overhead transmission lines	
L 23		Concept of GMD and GMR	

L 24	Unit-III	Inductance of three-phase balanced and unbalanced overhead transmission lines, Transposition of lines	CO2
L 25		Corona Loss and Bundled conductors	
L 26		Inductance of three-phase transmission lines – With Bundled Conductors	
L 27		Capacitance of single phase two wire overhead transmission lines	
L 28		Capacitance of three phase overhead transmission lines – Balanced and unbalanced configuration	
L 29		Capacitance of three-phase transmission lines – With Bundled Conductors	
L 30		Capacitance of Single and three-phase transmission lines in presence of ground	
L 31		Numerical	
L32		Revision	
L33	Unit-IV	Synchronous Machines: Steady-state performance characteristics	CO4
L34		Operation when connected to infinite bus	
L35		Steady state, transient and sub-transient equivalent circuits	
L36		Lightning Surges	
L 37		Switching surges	
		Protection against Over- voltages	
L 38		Insulation Coordination	
L 39		Propagation of Surges	
L 40		Voltages produced by traveling surges	
L 41		Numerical	
L 42		Revision	
L 43		Discussion of Previous Year Kuk Question papers	
L 44		Revision of Important topics	

Text Books:

1. B R Gupta, “Power System Analysis and Design”, S. Chand Publications.
2. Mehta VK and Mehta R, “Principles of Power Systems”, S. Chand Publications
3. Ashfaq, Hussain, "Electrical power systems", CBS Publications.
4. Hadi Saadat “ Power system analysis”, Tata McGraw Hill Publishing Company, New Delhi, 2002

References:

1. Elements of Power System Analysis by W.D. Stevenson.
2. I. J. Nagrath and D. P. Kothari, ‘Modern Power System Analysis’, Tata McGraw-Hill publishing company, New Delhi, 1990.

Web resources:

1. <https://nptel.ac.in/courses/117105140>
2. <https://www.nptelprep.in/courses/108105067/materials>