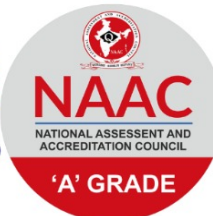




**VISAKHA**  
**INSTITUTE OF ENGINEERING & TECHNOLOGY**  
 Approved by AICTE NEW DELHI  
 (Affiliated to JNTUGV, VIZIANAGARAM)  
 88th Division, Narava, GVMC, Visakhapatnam-530027  
**DIPLOMA | ENGINEERING | MANAGEMENT**



**COLLEGE CODE**  
**VSPT**

## LECTURE SCHEDULE FOR POWER SYSTEMS-II

<b>NAME OF THE FACULTY:</b>	<b>Mr VARAPRASAD K S B</b>	<b>YEAR/SEM:</b>	<b>III/I</b>
<b>DESIGNATION:</b>	<b>ASSISTANT PROFESSOR</b>	<b>ACADEMIC</b>	<b>2023-24</b>
<b>BRANCH:</b>	<b>EEE</b>	<b>YEAR:</b>	
<b>DEPARTMENT:</b>	<b>ELECTRICAL AND ELECTRONICS ENGINEERING</b>	<b>REGULATION:</b>	<b>R-20</b>
		<b>SUBJECT</b>	
		<b>CODE:</b>	

### Course Outcomes:

Student should be able to:

CO1. Calculate parameters of transmission lines for different circuit configurations. **(K3)**

CO2. Determine the performance of short, medium and long transmission lines. **(K4)**

CO3. Analyze the effect of travelling waves on transmission lines. **(K4)**

CO4. Analyze the various voltage control methods and effect of corona. **(K4)**

CO5. Calculate sag/tension of transmission lines and performance of line insulators. **(K3)**

Unit No	Course outcomes	Name of the Topic	Text books/ Reference books	No. of periods required	Mode of Teaching
<b>Transmission Line Parameters</b>					
<b>I</b>	CO1: Calculate parameters of transmission lines for different circuit configurations.	Conductor materials – Types of conductors	<b>T1/T2</b>	1	<b>CHALK AND TALK</b>
		Calculation of resistance for solid conductors – Skin and Proximity effects		1	
		Calculation of inductance for Single-phase and Three-phase		3	
		Single and double circuit lines		1	
		Concept of GMR and GMD–Symmetrical and asymmetrical conductor configuration with and without transposition		2	
		Bundled conductors		1	
		Calculation of capacitance for 2 wire and 3 wire systems		2	
		Effect of ground on capacitance		1	
		Capacitance calculations for symmetrical and asymmetrical single and Three-phase		2	
		Single and double circuit lines without and with Bundled conductors.		2	
		<b>REVISION</b>		1	
<b>TOTAL</b>				<b>17</b>	
<b>Performance Analysis of Transmission Lines</b>					

<b>II</b>	<b>CO2:</b> Determine the performance of short, medium and long transmission lines.	Classification of Transmission Lines – Short, medium, long lines and their model representation	<b>T1/T2</b>	1	<b>CHALK AND TALK</b>
		Nominal-T, Nominal-Pie and A, B, C, D Constants for symmetrical and Asymmetrical Networks.		3	
		Rigorous Solution for long line equations		2	
		Representation of Long lines – Equivalent T and Equivalent Pie network models		1	
		Surge Impedance and Surge Impedance Loading (SIL) of Long Lines		1	
		Regulation and efficiency for all types of lines – Ferranti effect.		1	
		<b>NUMERICAL PROBLEMS</b>		2	
		<b>REVISION</b>		1	
<b>TOTAL</b>				<b>12</b>	
<b>Power System Transients</b>					
<b>III</b>	<b>CO3:</b> Analyze the effect of travelling waves on transmission lines.	Types of System Transients – Propagation of Surges	<b>T1/T2</b>	1	<b>CHALK AND TALK</b>
		Attenuation–Distortion– Reflection and Refraction Coefficients.		2	
		Termination of lines with different types of conditions.		1	
		Open Circuited Line–Short Circuited Line		2	
		TJunction– Lumped Reactive Junctions.		2	
		<b>REVISION</b>		1	
		<b>CLASS TEST</b>		1	
<b>TOTAL</b>				<b>10</b>	
<b>Corona</b>					
<b>IV</b>	<b>CO4:</b> Analyze the various voltage control methods and effect of corona.	Description of the phenomenon – Types of Corona	<b>T1/T2</b>	1	<b>CHALK AND TALK</b>
		critical voltages and power loss		2	
		Advantages and Disadvantages of Corona		1	
		Factors affecting corona		1	
		Radio Interference		1	
		<b>NUMERICAL PROBLEMS</b>		2	
		<b>REVISION</b>		1	
<b>TOTAL</b>				<b>9</b>	
<b>Sag and Tension Calculations and Overhead Line Insulators</b>					
<b>V</b>	<b>CO5:</b> Calculate sag/tension of transmission lines and performance of line insulators.	Sag and Tension calculations with equal and unequal heights of towers	<b>T1/T2</b>	2	<b>CHALK AND TALK</b>
		Effect of Wind and Ice on weight of Conductor		2	
		Stringing chart and sag template and its applications		1	

	Types of Insulators – String efficiency and Methods for improvement	2
	Voltage distribution–Calculation of string efficiency	2
	Capacitance grading and Static Shielding	1
	<b>NUMERICAL PROBLEMS</b>	3
	<b>REVISION</b>	1
<b>TOTAL</b>		<b>14</b>
<b>GRAND TOTAL</b>		<b>62</b>

<b>Course-PO Attainment for Power systems-II</b>												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>CO1</b>	3	3	3	3	2	2	2	3	3	3	3	3
<b>CO2</b>	2	3	3	3	2	2	2		3		3	2
<b>CO3</b>	3	3	3	3	2	2	2		2		2	3
<b>CO4</b>	3	3	3	3	2	2	2		3	3	3	2
<b>CO5</b>	3	3	3	2	2	2	2		3	3	3	2

**K1: REMEMBERING**  
**K5: EVALUATING**

**K2: UNDERSTANDING**  
**K6: CREATING.**

**K3: APPLYING**

**K4: ANALYZING**

S.NO	GRADUATE ATTRIBUTION	ACTION VERBS	LEVEL
1	ENGINEERING KNOWLEDGE	APPLY	K3
2	PROBLEM ANALYSIS	ANALYZING	K4
3	DESIGN DEVELOPMENT OF SOLUTIONS	ANALYZING	K4
4	INVESTIGATION OF COMPLEX PROBLEMS	APPLY	K3
5	MODERN TOOL USAGE	UNDERSTANDING	K2
6	ENGINEER AND SOCIETY	UNDERSTANDING	K2
7	ENVIRONMENT AND SUSTAINABILITY	UNDERSTANDING	K2
8	ETHICS	REMEMBERING	K1
9	INDIVIDUALS AND TEAM WORK	APPLY	K3
10	COMMUNICATION	UNDERSTANDING	K2
11	PROJECT MANAGEMENT AND FINANCE	APPLY	K3
12	LIFE LONG LEARNING	ANALYZING	K4

**Text Books:**

1. Electrical power systems, C.L.Wadhwa, New Age International (P) Limited, 6th Edition, 2010, Reprint 2014.
2. A Text Book on Power System Engineering, M.L.Soni, P.V.Gupta, U.S.Bhatnagar and A.Chakrabarti, DhanpatRai& Co. Pvt. Ltd., 1999.

**Reference Books:**

1. Power System Engineering, D. P. Kothari and I. J. Nagrath, McGraw Hill Education (India) Pvt. Ltd., 2nd Edition, 2008, 23rd Reprint 2015.
2. Electric Power Transmission System Engineering: Analysis and Design, TuranGonen, 2nd Edition, CRC Press, Taylor & Francis group, 2009, 1st Indian Reprint 2010.

**Web Links:**

1. <https://nptel.ac.in/courses/108/102/108102047>
2. <https://nptel.ac.in/courses/108/105/108105058>

		<b>Name</b>	<b>Signature with Date</b>
i.	Faculty	Mr. VARAPRASAD K S B	
ii.	Course Coordinator		

**HOD****PRINCIPAL**