Lesson Plan of the 5th semester for session 2024-25

Name of the faculty:	Dr. Harish Kumar
Designation:	Guest Faculty
Discipline:	Electrical Engg.
Semester:	Vth Sem
Subject:	**POWER SYSTEM-1**
Subject Code:	PCC-EE-301G
Lesson Plan duration:	14 weeks
Work Load per week in hours:	Lectures- 03

Week	Lecture day	Topic (Including Assignment/Test)
		SECTION-A
1.	1	**Basic concepts:** Introduction, Review of Three-phase systems.
	2	Analysis of simple three-phase circuits.
	3	Single-phase representation of balance three-phase network, The one-line diagram and the impedance or reactance diagram
2.	4	Per unit (PU) system
	5	Complex power
	6	The steady state model of synchronous machine
3.	7	The steady state model of synchronous machine cont.
	8	Transmission of electric power, Representation of loads
	9	Revision
		SECTION-B
4.	10	**Fault Analysis:** Method of Symmetrical Components (positive, negative and zero sequences).
	11	Balanced and Unbalanced Faults
	12	Representation of generators, lines and transformers in sequence networks
5.	13	Computation of Fault Currents
	14	Computation of Fault Currents cont.
	15	Computation of Fault Currents cont.
6.	16	Neutral Grounding
	17	Revision
	18	Class Test
		SECTION-C
7.	19	**Switchgear and protection:** Types of Circuit Breakers
	20	Types of Circuit Breakers cont.
	21	Types of Circuit Breakers cont.
8.	22	Attributes of Protection schemes
	23	Back-up Protection
	24	Protection schemes, Over-current protection
9.	25	Directional, Distance protection

	26	Differential protection
	27	Protection schemes and their applications
10.	28	Protection schemes and their applications cont.
	29	Revision
	30	Class Test
SECTION-D		
11.	31	**Introduction to DC Transmission & Solar PV systems**: DC Transmission Systems
	32	Line- Commutated Converters (LCC)
	33	Voltage Source Converters (VSC)
12.	34	LCC and VSC based dc link
	35	Real Power Flow control in a dc link, Comparison of ac and dc transmission
	36	**Solar PV systems:** I-V and P-V characteristics of PV panels
13.	37	Power electronic interface of PV to the grid
	38	Wind Energy Systems: Power curve of wind turbine
	39	Fixed and variable speed turbines. Permanent Magnetic Synchronous Generators and Induction Generators.
14.	40	Class Test
	41	All syllabus revision
	42	All syllabus test

Lesson Planning

Name of the Institute : **CRSSIET SILANI-KESHO, JHAJJAR**
Name of the teacher : **Mr. SANDEEP YADAV**
Department : **Electrical**
Subject &Code : **Control System, PCC-EE-305G**
Branch/Semester : **EE 5th Semester**

Sr.No.	Chapter Covered	Topics
1.	Section-A	Industrial control examples,
2.	INTRODUCTI	Mathematical models of physical systems
3.	ON:	Control hardware and their models,
4.		Transfer function models of linear time-invariant systems.
5.		Feedback Control: Open-Loop and Closed-loop systems,
6.		benefits of feedback, block diagram algebra, signal flow graphs.
7.		Standard test signals.
8.		Time response of first and second order systems for standard test inputs.
9.		Application of initial and final value theorem
10.		Design specifications for second-order systems based on the time-response
11.		Concept of Stability Routh-Hurwitz Criteria. Relative Stability analysis.
12.		Root-Locus technique Construction of Root-loci
13.	Section–B:	Relationship between time and frequency response
14.		Polar plots
15.		Bode plots
16.		Nyquist stability criterion.
17.		Relative stability using Nyquist criterion
18.		gain and phase margin
19.		Closed-loop frequency response.

20.	Section-C	Stability, steady-state accuracy
21.		transient accuracy, disturbance rejection
22.		insensitivity and robustness of control systems
23.		Root-loci method of feedback controller design
24.		Design specifications in frequency-domain
25.		Frequency-domain methods of design.Application of 10 Proportional, Integral and Derivative Controllers
26.		Lead and Lag compensation in designs
27.		Analog and Digital implementation of controllers.
28.	Section D	Concepts of state variables
29.		State space model. Diagonalization of State Matrix
30.		Solution of state equations
31.		Eigenvalues and Stability Analysis
32.		Concept of controllability
33.		Concept observability.

Lesson Plan of the 5th semester for session 2024-25

Name of the faculty: Ms. Neha Rani
Designation: Guest Faculty
Discipline: Electrical Engg.
Semester: 5th sem.
Subject: ELECTRICAL ENGINEERING MATERIALS
Subject Code: OEC-EE-14G
Lesson Plan duration: 15 weeks
Work Load per week in hours: Lectures- 03

Week	Lecture day	Topic (Including Assignment/Test)
Section -A		
1.	1	Conductivity of Metal: Introduction,
	2	Factors affecting the resistivity of electrical materials,
	3	Motion of an electron in an electric field,
2.	4	Equation of motion of an electron,
	5	Current carried by electrons, mobility, thermionic emission, photo electric emission
	6	Effect of temperature on electrical conductivity of metals,
3.	7	Electrical conducting materials
	8	Thermal properties
	9	Photoelectric emission
4.	10	Thermal conductivity of metals,
	11	Thermoelectric effects.
	12	Revision Unit 1
Section -B		
5.	13	Dielectric Properties: Introduction,
	14	Effect of a dielectric on the behavior of a capacitor, polarization
	15	Dielectric constant of monatomic gases,
6.	16	Dielectric losses, significance of the loss tangent
	17	Frequency and temperature dependence of the dielectric constant
	18	Dielectric properties of polymeric system,
7	19	Ionic conductivity in insulators,
	20	Insulating materials, ferroelectricity, piezoelectricity
	21	Ferroelectricity,
8.	22	Piezoelectricity
	23	Revision Unit-II
	24	Test
Section -C		
9.	25	Magnetic properties of Materials: Introduction,
	26	Classification of magnetic materials, diamagnetism, paramagnetism
	27	Ferromagnetism
10.	28	Revision
	29	Magnetization curve
	30	Hysteresis loop
	31	Factors affecting permeability and hysteresis loss,

11.	32	Test
	33	Common magnetic materials
12.	34	Magnetic resonance.
	35	Revision
	36	Test
Section -D		
13.	37	Semiconductors: energy band in solids, conductors, semiconductors and insulators,
	38	Type of semiconductor, Intrinsic semiconductors
	39	Impurity type semiconductor, diffusion,
14.	40	Einstein relation
	41	Hall effect
	42	Thermal conductivity of semiconductors,
15	43	Electrical conductivity of doped materials.
	44	Revision
	45	Test

Lesson Plan of the 5th semester for session 2024-25

Name of the faculty	**Ms. Nirdesh Singh (Guest Faculty EE)**			
Course Code	**PCC-EE-07G**			
Course Title	**High Voltage Engineering**			
Category	**Open Elective**			
Scheme and Credit	**L**	**T**	**P**	**Credits**
	3	**0**	**0**	**3**
Marks	**Class**	**Exam**	**Total**	
	25	**75**	**100**	
Discipline/ Semester	**Electrical Eng. /5th**			

SECTION - A CONDUCTION AND BREAKDOWN IN GASES, LIQUIDS AND SOLID DIELECTRICS		
week	Lec No.	Topics covered
1	1	Collision process, Ionization process
	2	Townsend's Current Growth Equation, Current Growth in the Presence of Secondary Processes
	3	Townsend's Criterion for Breakdown, Experimental Determination of Coefficients α and γ
2	4	Breakdown in Electronegative Gases, Time Lags for Breakdown, Streamer Theory of Breakdown in Gases
	5	Paschen's Law, Breakdown in Non-Uniform Fields and Corona Discharges.
	6	Problem class
3	***CONDUCTION AND BREAKDOWN IN LIQUID DIELECTRICS***	
	7	Liquids as Insulators, Pure Liquids and Commercial Liquids
	8	Conduction and Breakdown in Pure Liquids
	9	Conduction and Breakdown in Commercial Liquids.
4	***BREAKDOWN IN SOLID DIELECTRICS***	
	10	Introduction, Intrinsic Breakdown
	11	Electromechanical Breakdown
	12	Thermal Breakdown.
SECTION - B GENERATION OF HIGH VOLTAGE AND CURRENTS		
5	13	Generation of High Direct Current Voltages
	14	Generation of High Alternating Voltages
	15	Generation of impulse Voltages
6	16	Generation of impulse currents
	17	Tripping and control of impulse generators
	18	Problem class / class test
MEASUREMENT OF HIGH VOLTAGE AND CURRENTS		
7	19	Measurement of high dc voltage, current
	20	Measurement of high ac voltage, current
	21	Measurement of impulse voltage, current
8	22	Cathode Ray Oscillographs for Impulse Voltage and Current Measurements
	23	Class test

SEC– C OVERVOLTAGE PHENOMENON ANDINSULATION CORDINATION IN ELECTRIC POWER SYSTEM		
8	24	National Causes for Over voltages - Lightning Phenomenon
9	25	Overvoltage due to Switching Surges
	26	System Faults and Other Abnormal
	27	Principles of Insulation Coordination on High Voltage and Extra High Voltage Power Systems.
10	28	Principles of Insulation Coordination on High Voltage and Extra High Voltage Power Systems.
	29	Problem class
NON DESTRUCTIVE TESTING OF MATERIALS AND ELECTRICAL APPARATUS		
10	30	Introduction
11	31	Measurement of Dielectric Constant and Loss factor
	32	Partial Discharge Measurements.
	33	Problem class/ class test
SECTION - D HV TESTING OF ELECTRICAL APPARATUS		
12	34	Testing of insulators and bushings
	35	Testing of isolators and circuit breakers
	36	Testing of cables
13	37	Testing of transformers
	38	Testing of surge arrestors
	39	Radio interference measurements
14	40	Testing of HVDC valves and equipments
	41	Problem class
	42	Revision
	43	Revision