

LESSON PLAN FOR ACADEMIC SESSION: 2026-27(Winter)

Discipline: Electrical Engineering	Semester : 5th	Name of the Teaching Faculty: Pratima Bhoi (Sr. Lecturer, Electrical Engg.)
Subject : Industrial Automation and Drive	No. of days / week class allotted	Semester From : 1/07/2026 to 05/11/2026 Nos. of Weeks per semester : 15
Week	Class Day	Theory Topics
1ST	1st	Introduction to Industrial Drive Automation Need and benefits
	2nd	Continue.....
	3rd	Types of automation system : Fixed, Programmable, flexible
2ND	1st	Different system used for industrial automation PLC, HMI, SCADA, DCS, Drives
	2nd	PLC Fundamentals Building block Building blocks of PLC CPU, Memory organization, Input-output modules (discrete and analog),
	3rd	Specialty I/O Modules, Power supply
3RD	1st	Fixed and Modular PLC and their types, Redundancy in PLC module
	2nd	I/O module selection criteria
	3rd	Interfacing different I/O devices with appropriate I/O modules.
4TH	1st	PLC Programming and Applications PLC I/O addressing
	2nd	PLC programming Instructions: Relay type Instructions, Timer Instructions, on delay, off delay, retentive, Counter instructions:
	3rd	Counter instructions: Up, down, High speed, Logical instructions
5TH	1st	Comparison Instructions, Arithmetic instructions.
	2nd	PLC programming language: Functional Block Diagram (FBD), Instruction List. Structured text, Sequential Function Chart (SFC), Ladder Programming.
	3rd	Continue.....
6TH	1st	Simple Programming examples using ladder logic: 1 based on relay, timer counter, logical, comparison, arithmetic and data handling instructions.
	2nd	Continue.....
	3rd	PLC Based Applications: Motor sequence control, Traffic light control, Elevator control, Tank Level control, Conveyor system, Stepper motor control, Reactor Control Gate trigger circuits Resistance and Resistance-Capacitance circuits.
7TH	1st	Continue.....
	2nd	Electric Drives Fundamental Concept of Electric Drive Need of Electric Drives, Functional Block diagrams of an Electric Drives.
	3rd	Types and Functions
8TH	1st	Four Quadrant Operation of Motor Drive
	2nd	Electric Braking Electric Braking of DC motor during lowering of loads and Regenerative braking.

	3 rd	AC and DC rheostatic braking
9 TH	1 st	Selection of motor power rating
	2 nd	DC Motor Drives Single phase and three phases controlled DC drives, Dual converter control of DC drives.
	3 rd	Continue.....
10 TH	1 st	Chopper controlled DC Close loop control of DC drive Maintenance procedure.
	2 nd	Induction motor drive Stator voltage control ,V/f controller induction motors, Slip power recovery, direct torque control
	3 rd	Continue.....
11 TH	1 st	Introduction to Synchronous Motor Drives
	2 nd	Applications Speed control of AC motor/DC Motor,
	3 rd	Supervisory Control and Data Acquisition System (SCADA) Introduction to SCADA:
12 th	1 st	Typical SCADA architecture/block diagram, Benefits of SCADA
	2 nd	Various editors of SCADA
	3 rd	Interfacing SCADA system with PLC
13 th	1 st	Typical connection diagram,
	2 nd	Object linking and embedding for process control architecture
	3 rd	Step in creating SCADA Screen for simple object
14 th	1 st	Step for linking SCADA object (defining Tags and Items) with PLC ladder program using OPC
	2 nd	Continue.....
	3 rd	Application of SCADA: Traffic light control, water Distribution, pipeline control.
15 th	1 st	Continue.....
	2 nd	Question discussion
	3 rd	Question discussion


 Prepared by 20/6/26
 Pratima Bhoi
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