

Bhubanananda Orissa School of Engineering

Lesson Plan

Discipline: AE&I	Semester: 5 th	Name of the Teaching Faculty: Sangram Kishore Mohanty
Subject: Process Instrumentation & Control	No of Days/per week class allotted:4	Semester from 01.07 2024 to 08.11.2024 No of weeks:19
Week No.	Class Day MON,TUES,WED, FRI	Theory Topics
1 st	01/07/2024	Syllabus discussion, mission vision PEO discussion
	02/07/2024	Chapter-1 Basic Concept of Control System :
	03/07/2024	1.1 Define of control system
	05/07/2024	1.2 Distinguish between open loop and closed loop system: 1.3 Explain stability of negative feedback in a close loop system.
2 nd	08/07/2024	1.4 Give some examples of an open loop and closed loop control system. 1.5 Distinguish between manual Automatic control system.
	09/07/2024	1.6 Explain the conversation from manual to Automatic operation. 1.7 Give introduction of cascaded feet forward and ratio type adaptive control system (only functions no mathematically derivation).
	10/07/2024	1.8 Explain with examples for controlling temperature and pressure by close loop control system. Chapter-2. Process Control:
	12/07/2024	2.1 Introduction 2.2 Principle of Process control 2.3 Types of control system and its applications
3 rd	15/07/2024	2.4 Elements of process control system 2.5 Properties of controller
	16/07/2024	2.6 Classification of controller 2.7 Analog controller
	19/07/2024	2.8 Pneumatic controller 2.9 Hydraulic controller.
4 th	22/07/2024	2.10 Electrical and Electronic controller 2.11 Digital controller.
	23/07/2024	Revision Class test-1
	24/07/2024	Chapter-3 Various Control Action: 3.1 Different type of control action.
	26/07/2024	3.2 Explain the principle of ON/OFF control action
6 th	29/07/2024	3.3 Explain the principle of proportional control action.
	30/07/2024	3.4 Explain the principle of integral control action.
	31/07/2024	3.5 Explain the principle of Derivative control action
	02/08/2024	3.6 Explain the principle of composite control action [P+I, P+D)
7 th	05/08/2024	3.6 Explain the principle of composite control action [P+I +D)
	06/08/2024	Problems on controller
	07/08/2024	3.7 Explain floating control.
	09/08/2024	3.8 Comparison of various control action.
8 th	12/08/2024	Chapter-4 Controllers: 4.1 Definition of Controllers.
	13/08/2024	4.2 Classification of controller (Pneumatic, Hydraulic, Electrical and Electronic control system).

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	14/08/2024	4.3 Flapper Nozzle system , Pneumatic Relay, Pneumatic ON/OFF.
	16/08/2024	4.4 Three mode (PID Pneumatic controller).
9 th	20/08/2024	4.5 Hydraulic Control system with Examples.
	21/08/2024	4.6 Hydraulic proportional, integral and Derivative controller. 4.7 Advantages and Disadvantage of Pneumatic and Hydraulic control system.
	23/08/2024	4.8 Advantages and Disadvantages of Pneumatic and Hydraulic control system.
10 th	27/08/2024	4.9 Electronic controller with example.
	28/08/2024	4.10 Realization of various control mode action using OP-AMP –ON/OFF ,Proportional ,integral, Two mode and three mode using OP-AMP.)
	30/08/2024	4.11 Gives some examples of Electronic controller
11 th	02/09/2024	4.12 Comparison of Pneumatic and Hydraulic and Electronic controller.
	03/09/2024	Chapter-5 Characteristics of Process Control: 5.1 Dynamic elements in control loop (negative feedback, Dead time capacitive characteristics of real process).
	04/09/2024	5.2 Analysis of self-operating proportional controller for Flow level.
	06/09/2024	5.3 Explain the idea about proportional Band Delay Dead in time).
12 th	09/09/2024	5.4 Explain the idea about proportional band, Delay Dead in time process, Transfer function, Bandwidth and Gain, Offset error.
	10/09/2024	Internal Assessment
	11/09/2024	Internal Assessment
	13/09/2024	5.5 Explain the characteristics of pneumatic PID Controller the pressure control application.
13 th	17/09/2024	Chapter-6 Concept of Digital control system: 6.1 Basic terminology of computer of computer based digital control system.
	18/09/2024	6.2 Overview classical approach to digital controller design vs Analog computer.
	20/09/2024	6.3 Basic Digital control scheme
14 th	23/09/2024	6.4 Models Digital control systems Z-domain description of sample continuous with dead time.
	24/09/2024	6.5 Implementation of digital co
	25/09/2024	6.6 Examples of digital Temperature and position control system.
	27/09/2024	Revision
15 th	30/09/2024	Class test-2
	01/10/2024	Chapter-7 Advance control System: 7.1 Computer control of process & its need
	04/10/2024	7.2 PLC Definition-Relay based and PLC based control panel.
16 th	14/10/2024	7.3 Programmable logic Controller (PLC). (i) Parts of PLC (II) Basic block diagram (iii) Principle of operation
	15/10/2024	7.3 Programmable logic Controller (PLC). (IV) PLC size, specification, work station and application (v). Basics of PLC Programming & types of PLC programming
	18/10/2024	7.4 Instruction sets-Ladder diagram for AND ,OR, NAND.NOR Relay

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		schematics
17 th	21/10/2024	7.5 Define supervisory control and data Acquisition system (SCADA).
	22/10/2024	7.6 Explain SCADA system with neat block diagram application.
	23/10/2024	7.7 Explain microcontroller or microcontroller application in control system.
	25/10/2024	7.8 Explain the concept of distributed control system and its advantage.
18 th	28/10/2024	7. 9 Define remote terminal unit (RTU) and Master terminal unit (MTU)
	29/10/2024	Revision on Chapter-1
	30/11/2024	Revision on Chapter-2
	01/11/2024	Revision on Chapter-3
19 th	04/11/2024	Revision on Chapter-4
	05/11/2024	Revision on Chapter-5
	06/11/2024	Revision on Chapter-6
	08/11/2024	Revision on Chapter-7

Signature of Faculty