GOVERNMENT POLYTECHNIC, BALASORE
Government of Odisha
ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ୱର

LESSON PLAN (SUMMER-2024)		
Discipline: ELECTRONICS & TELECOMMUNICATION ENGINEERING	**Semester: 6th**	**Name of the Teaching Faculty: PRAKASH CHANDRA DAS**
Subject: Control Systems & Component	**No of Days /per week class allotted: 4**	**Semester From date: 16.01.2024 To date: 26.04.2024** **No of Weeks:15**
Week	**Class Day**	**Theory / Practical Topics**
1st	1st	1.1 Classification of Control system
	2nd	1.2 Open loop system & Closed loop system and its comparison
	3rd	1.3 Effects of Feed back
	4th	1.4 Standard test Signals(Step, Ramp, Parabolic, Impulse Functions)
2nd	1st	1.5 Servomechanism 1.6 Regulators (Regulating systems)
	2nd	2.1 Transfer Function of a system & Impulse response,
	3rd	2.1 Transfer Function of a system & Impulse response,
	4th	2.2 Properties,Advantages& Disadvantages of Transfer Function
3rd	1st	2.3 Poles & Zeroes of transfer Function
	2nd	2.4 Representation of poles & Zero on the s-plane
	3rd	2.4 Representation of poles & Zero on the s-plane
	4th	2.5 Simple problems of transfer function of network
4th	1st	2.5 Simple problems of transfer function of network
	2nd	3.1 Components of Control System
	3rd	3.2 Potentiometer, Synchros, Diode modulator & demodulator ,
	4th	3.3 DC motors, AC Servomotors
5th	1st	3.4 Modelling of Electrical Systems(R, L, C, Analogous systems)
	2nd	3.4 Modelling of Electrical Systems(R, L, C, Analogous systems)
	3rd	4.1 Definition of Basic Elements of a Block Diagram
	4th	4.2 Canonical Form of Closed loop Systems 4.3 Rules for Block diagram Reduction
6th	1st	4.4 Procedure for of Reduction of Block Diagram
	2nd	4.5 Simple Problem for equivalent transfer function
	3rd	4.6 Basic Definition in SFG & properties
	4th	4.7 Mason's Gain formula
7th	1st	4.8 Steps foe solving Signal flow Graph
	2nd	4.9 Simple problems in Signal flow graph for network
	3rd	5.1 Definition of Time, Stability, steady-state response, accuracy, transient accuracy, In-sensitivity and robustness.
	4th	5.2 System Time Response
8th	1st	5.3 Analysis of Steady State Error
	2nd	5.4 Types of Input & Steady state Error(Step ,Ramp, Parabolic)
	3rd	5.5 Parameters of first order system & second-order systems
	4th	5.5 Parameters of first order system & second-order systems

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9th	1st	5.6 Derivation of time response Specification ; Delay time, Rise time,
	2nd	Peak time,Setting time,Peak over shoot
	3rd	6.1 Effect of parameter variation in Open loop System & Closed loop Systems
	4th	6.2 Introduction to Basic control Action& Basic modes of feedback control:
10th	1st	proportional, integral and derivative
	2nd	6.3 Effect of feedback on overall gain, Stability
	3rd	6.4 Realisation of Controllers(P, PI,PD,PID) with OPAMP
	4th	6.4 Realisation of Controllers(P, PI,PD,PID) with OPAMP
11th	1st	7.1 Effect of location of poles on stability
	2nd	7.2 RouthHurwitz stability criterion.
	3rd	7.2 RouthHurwitz stability criterion.
	4th	7.3 Steps for Root locus method
12th	1st	7.3 Steps for Root locus method
	2nd	7.4 Root locus method of design(Simple problem)
	3rd	7.4 Root locus method of design(Simple problem)
	4th	7.4 Root locus method of design(Simple problem)
13th	1st	8.1 Frequencyresponse,Relationship between time & frequency response
	2nd	8.2 Methods of Frequency response
	3rd	8.3 Polar plots & steps for polar plot
	4th	8.4 Bodes plot & steps for Bode plots
14th	1st	8.5 Stability in frequency domain, Gain Margin& Phase margin
	2nd	8.6 Nyquist plots. Nyquiststability criterion.
	3rd	8.7 Simple problems as above
	4th	9.1 Concepts of state, state variable, state model,
15th	1st	9.1 Concepts of state, state variable, state model,
	2nd	9.2 state modelsfor linear continuous time functions(Simple)
	3rd	9.2 state modelsfor linear continuous time functions(Simple)
	4th	9.2 state modelsfor linear continuous time functions(Simple)

Faculty 16/11/2024

16/11/24
HOD

Principal