Bhubanananda Orissa School of Engineering
Lesson Plan

Discipline: ETC	Semester:6th	Name of the Teaching Faculty: Pradeep Kumar Dhal Samant, Lecturer in ETC
Subject: CONTROL SYSTEMS & COMPONENT	No of Days/per week class allotted: 4 (Mon, Wednes, Thurs & Saturday)	Semester from 14.02.2023 to 23.05.2023 No of weeks: 15
Week No.	Class Day	Theory Topics
1st	15-02-2023	**Unit 1. Fundamental of Control System** 1.1 Classification of Control system 1.2 Open loop system & Closed loop system and its comparison
	16-02-2023	1.3 Effects of Feed back 1.4 Standard test Signals (Step, Ramp, Parabolic, Impulse Functions)
2nd	20-02-2023	1.5 Servomechanism 1.6 Regulators (Regulating systems)
	22-02-2023	**Unit 2. Transfer Functions** 2.1 Transfer Function of a system & Impulse response.
	23-02-2023	2.2 Properties, advantages & disadvantages of Transfer function.
	25-02-2023	2.3 Poles & zeroes of Transfer function. 2.4 Representation of poles & Zero on the s-plane.
3rd	27-02-2023	2.5 Simple problems of transfer function of network.
	01-03-2023	**Unit 3. Control system Components & mathematical modelling of physical system** 3.1 Components of Control System 3.2 Potentiometer, Diode modulator & demodulator
	02-03-2023	3.2 Synchros
	04-03-2023	3.3 DC motors, AC Servomotors
4th	06-03-2023	3.4 Modelling of Electrical Systems (R, L, C, Analogous systems) **CLASS TEST I**
	09-03-2023	**Unit 4. Block Diagram & Signal Flow Graphs (SFG)** 4.1 Definition of Basic Elements of a Block Diagram 4.2 Canonical Form of Closed loop Systems
	11-03-2023	4.3 Rules for Block diagram Reduction
5th	13-03-2023	4.4 Procedure for of Reduction of Block Diagram
	15-03-2023	4.5 Simple Problem for equivalent transfer function
	16-03-2023	4.6 Basic Definition in SFG & properties 4.7 Mason's Gain formula
	18-03-2023	4.8 Steps for solving Signal flow Graph
6th	20-03-2023	4.9 Simple problems in Signal flow graph for network
	22-03-2023	**Unit 5. Time Domain Analysis of Control Systems** 5.1 Definition of Time, Stability, steady-state response, accuracy, transient accuracy, in-sensitivity and robustness.

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	23-03-2023	5.2 System Time Response
	25-03-2023	5.3 Analysis of Steady State Error
7th	27-03-2023	5.4 Types of Input & Steady state Error (Step)
	29-03-2023	5.4 Steady state Error (Ramp, Parabolic)
8th	03-04-2023	5.5 Parameters of first order system & second-order systems
	05-04-2023	5.6 Derivation of time response Specification (Delay time, Rise time, Peak time, Setting time, Peak over shoot) **CLASS TEST II**
	06-04-2023	**Unit 6. Feedback Characteristics of Control Systems** 6.1 Effect of parameter variation in open loop & closed loop systems.
	08-04-2023	6.2 Introduction to Basic control action & basic modes of feedback control (proportional, integral & derivative).
9th	10-04-2023	6.3 Effect of feedback on overall gain and stability.
	12-04-2023	6.4 Realisation of controller (P, PI) with OPAMP
	13-04-2023	6.4 Realisation of controller (PD, PID) with OPAMP
	15-04-2023	**Unit 7. Stability concept & Root locus Method** 7.1 Effect of location of poles on stability
10th	17-04-2023	**1st Internal Assessment**
	19-04-2023	7.2 Routh Hurwitz stability criterion
	20-04-2023	7.3 Steps for Root locus method
	22-04-2023	7.4 Root locus method of design (Simple problem)
11th	24-04-2023	7.4 Root locus method of design (Simple problem)
	26-04-2023	7.4 Root locus method of design (Simple problem)
	27-04-2023	**Unit 8. Frequency-response analysis &Bode Plot** 8.1 Frequency response, Relationship between time & frequency response 8.2 Methods of Frequency response
	29-04-2023	8.3 Polar plots & steps for polar plot, simple problems
12th	01-05-2023	8.3 Simple problems on Polar plots
	03-05-2023	8.4 Bodes plot & steps for Bode plots
	04-05-2023	8.4 Bodes plot & steps for Bode plots, simple problems
	06-05-2023	8.4 Simple problems on Bode Plot
13th	08-05-2023	8.5 Stability in frequency domain, Gain Margin & Phase margin
	10-05-2023	8.6 Nyquist plots. Nyquist stability criterion
	11-05-2023	8.7 Simple problems on Nyquist plots
	13-05-2023	8.7 Simple problems on Nyquist plots
14th	15-05-2023	**Unit 9. State variable Analysis** 9.1 Concepts of state, state variable, state model
	17-05-2023	9.2 State models for linear continuous time functions (simple)

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	18-05-2023	**2nd Internal Assessment**
	20-05-2023	OVERALL REVISION
15th	22-05-2023	OVERALL REVISION

13/2/2023

Signature of Faculty

Sr. Lecturer
Electronics & Telecomm. Engg.
BOSE, Cuttack

13/2/2023

Principal

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