GOVERNMENT POLYTECHNIC, DHENKANAL
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGG.
LESSON PLAN SUMMER 2025

Subject:- Control Systems & Component (Th-2)	No of Days/per Week Class Allotted :- 4	Semester From:- :- 04.02.2025 To:- 17.05.2025 Name of the Faculty: Aishwarya Dash
Week	**Class Day**	**Theory**
1st	1st	**Fundamental of Control System,** Classification of Control system
	2nd	Open loop system & Closed loop system and its comparison
	3rd	Effects of Feed back
	4th	Standard test Signals(Step, Ramp, Parabolic, Impulse Functions
2nd	1st	Servomechanism ,Regulators (Regulating systems)
	2nd	Transfer Functions
	3rd	Transfer Function of a system & Impulse response,
	4th	Properties,Advantages& Disadvantages of Transfer Function
3rd	1st	Properties,Advantages& Disadvantages of Transfer Function
	2nd	Poles & Zeroes of transfer Function
	3rd	Representation of poles & Zero on the s-plane
	4th	Simple problems of transfer function of network
4th	1st	Control system Components & mathematical modelling of physical System
	2nd	Control system Components & mathematical modelling of physical System
	3rd	Components of Control System
	4th	Potentiometer, Synchros, Diode modulator & demodulator
5th	1st	DC motors, AC Servomotors
	2nd	Modelling of Electrical Systems(R, L, C, Analogous systems)
	3rd	**Block Diagram & Signal Flow Graphs(SFG),** Definition of Basic Elements of a Block Diagram
	4th	Canonical Form of Closed loop Systems
6th	1st	Rules for Block diagram Reduction
	2nd	Procedure for of Reduction of Block Diagram
	3rd	Simple Problem for equivalent transfer function
	4th	Basic Definition in SFG & properties, Mason's Gain formula
7th	1st	Steps for solving Signal flow Graph
	2nd	Simple problems in Signal flow graph for network
	3rd	Time Domain Analysis of Control Systems
	4th	Definition of Time, Stability, steady-state response, accuracy
8th	1st	transient accuracy, In-sensitivity and robustness.
	2nd	System Time Response
	3rd	Aalysis of Steady State Error
	4th	Types of Input & Steady state Error(Step ,Ramp, Parabolic)
9th	1st	Parameters of first order system & second-order systems
	2nd	Derivation of time response Specification (Delay time, Rise time, Peak time,Setting time,Peak over shoot)
	3rd	FeedbackCharacteristics of Control Systems
	4th	Effect of parameter variation in Open loop System & Closed loop Systems

10th	1st	Effect of parameter variation in Open loop System & Closed loop Systems
	2nd	Introduction to Basic control Action& Basic modes of feedback control: proportional, integral and derivative
	3rd	Effect of feedback on overall gain, Stability
	4th	Realisation of Controllers(P, PI,PD,PID) with OPAMP
11th	1st	Stability concept& Root locus Method
	2nd	Effect of location of poles on stability
	3rd	RouthHurwitz stability criterion
	4th	RouthHurwitz stability criterion
12th	1st	Steps for Root locus method
	2nd	Steps for Root locus method
	3rd	Root locus method of design(Simple problem)
	4th	Root locus method of design(Simple problem)
13th	1st	Frequency-response analysis&Bode Plot,Frequencyresponse,Relationship between time & frequency response
	2nd	Methods of Frequency response
	3rd	Polar plots & steps for polar plot
	4th	Bodes plot & steps for Bode plots
14th	1st	Stability in frequency domain, Gain Margin& Phase margin
	2nd	Nyquist plots. Nyquiststability criterion
	3rd	Simple problems as above
	4th	State variable Analysis
15th	1st	Concepts of state, state variable, state model
	2nd	Concepts of state, state variable, state model
	3rd	state models for linear continuous time functions(Simple)
	4th	state models for linear continuous time functions(Simple)

31.01.2025
Signature of Faculty

31/01/25
Signature of HOD