

Lesson Plan			
	Discipline:Electrical Engineering	Semester-6th Summer 2023-24	Name of the Teaching Faculty: B.SUBHALAXMI PANI
Sl. No.	Subject:-Control System Engineering	No. Of Days/Week class allotted:05	Semester From date: 16/01/2024 To date: 26/04/2024. No of weeks: 15
	Weeks/Mont	Class Day	Topic
1	1st Week	1st(16.01.2024)	<b>1. FUNDAMENTAL OF CONTROL SYSTEM</b> 1.1. Classification of Control system
		1st(17.01.2024)	1.2. Open loop system & Closed loop system and its comparison
		1st(18.01.2024)	1.3. Effects of Feed back
2	2nd Week	2nd(23.01.2024)	1.4. Standard test Signals(Step, Ramp, Parabolic, Impulse Functions)
		2nd(24.01.2024)	1.5. Servomechanism
		2nd(25.01.2024)	<b>2. MATHEMATICAL MODEL OF A SYSTEM</b> 2.1. Transfer Function & Impulse response
3	3rd Week	3rd(30.01.2024)	2.2. Properties, Advantages & Disadvantages of Transfer Function
		3rd(31.01.2024)	2.3. Poles & Zeroes of transfer Function
		3rd(01.02.2024)	2.4. Simple problems of transfer function of network 2.5. Mathematical modeling of Electrical Systems(R, L, C, Analogous system)
4	4th Week	4th(06.02.2024)	<b>3. CONTROL SYSTEM COMPONENTS</b> 3.1. Components of Control System
		4th(07.02.2024)	3.2. Gyroscope, Synchros, Tachometer, DC servomotors, Ac Servomotors.
		4th(08.02.2024)	<b>4. BLOCK DIAGRAM ALGEBRA &amp; SIGNAL FLOW GRAPHS</b> 4.1. Definition: Basic Elements of Block Diagram
5	5th Week	5th(13.02.2024)	4.2. Canonical Form of Closed loop Systems
		5th(15.02.2024)	4.3. Rules for Block diagram reduction 4.4. Procedure for of Reduction of Block Diagram
6	6th Week	6th(20.02.2024)	4.5. Simple Problem for equivalent transfer function 4.6. Basic Definition in Signal Flow Graph & properties
		6th(21.02.2024)	4.7. Construction of Signal Flow graph from Block diagram 4.8. Mason's Gain formula
		6th(22.02.2024)	4.9. Simple problems in Signal flow graph for network
		7th(27.02.2024)	<b>5. TIME RESPONSE ANALYSIS</b> 5 5.1. Time response of control system.

7	7th Week	7th(28.02.2024)	5 . 2 Standard Test signal. 5.2.1. Step signal, 5.2.2. Ramp Signal 5.2.3. Parabolic Signal 5.2.4. Impulse Signal
		7th(29.02.2024)	5 . 3 Time Response of first order system with: 5.3.1. Unit step response 5.3.2. Unit impulse response.
8	8th Week	8th(06.03.2024)	5 . 4 Time response of second order system to the unit step input.
		8th(07.03.2024)	5.4.1 Time Response Specification 5.4.2 Derivation Of Expression For Rise time, Peak time, Peak Overshoot, Settling time & Steady State Error
9	9th Week	9th(12.03.2024)	5.4.3 Steady State Error And Error constants
		9th(13.03.2024)	5 . 5 Types Of Control System.(Steady State Errors In Type-0, Type-1, Type-2 System)
		9th(14.03.2024)	5 . 6 Effect Of Adding Poles And Zeros to Transfer Function
10	10th Week	10th(19.03.2024)	5 . 7 Response with P , PI and PID controller
		10th(20.03.2024)	<b>6. ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE.</b> 6 . 1 Root locus concept.
		10th(21.03.2024)	6 . 2 Construction of root loci.
11	11th Week	11th(27.03.2024)	6 . 3 Rules for construction of the root locus. 6 . 4 Effect of adding poles and zeros to G(s) and H(s).
		11th(28.03.2024)	<b>7. FREQUENCY RESPONSE ANALYSIS.</b> 7 . 1 Correlation between time response and frequency
12	12th Week	12th(02.04.2024)	7 . 2 Polar plots
		12th(03.04.2024)	7 . 3 Bode plots.
		12th(04.04.2024)	7 . 4 All pass and minimum phase system. 7 . 5 Computation of Gain margin and phase margin.
13	13th Week	13th(09.04.2024)	7 . 6 Log magnitude versus phase plot
		13th(10.04.2024)	7 . 7 Closed loop frequency response.
14	14th week	14th(16.04.2024)	<b>8. NYQUIST PLOT</b>
		14th(18.04.2024)	8.1 Principle of argument. 8.2 Nyquist stability criterion.
15	15th Week	15th(23.04.2024)	8.3 Niquist stability criterion applied to inverse polar plot.
		15th(24.04.2024)	8.4 Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot. 8.5 Assessment of relative stability.
		15th(25.04.2024)	8.6 Constant M and N circle 8.7 Nicholas chart.