Lesson Plan

	Discipline: ETC	Semester-6th Summer-2023	Name of the Teachng Faculty: Sri.Rabindra kumar satapathy(Lect. ETC Engg)	
Sl. No.	Subject-Th.2. (CONTROL SYSTEMS &COMPONENT)	No. Of Days/Week class alloted:04	Semester From date: 13.02.2023 To date: 23.05.2023 (No of weeks: 15)	
	Weeks/Months	Class/ Day	Topic	
1	2nd week 13 feb To 18 feb	1st	1. Fundamental of Control System 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)	
2	3th week 20 feb. To 25 feb	1st	1.5 Servomechanism 1.6 Regulators (Regulating systems)	
		2nd	2. Transfer Functions 2.1 Transfer Function of a system & Impulse response	
		3rd	2.3 Poles & Zeroes of transfer Function	
		4th	2.4 Representation of poles & Zero on the s-plane	
3	4th week 27feb. To 04 th March	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 Servomotorssystems)	
4	1st week 06th March To11th March	1st	3.4 Modelling of Electrical Systems(R, L, C,	
		2nd	4. Block Diagram & Signal Flow Graphs(SFG)	
		3rd	4.1 Definition of Basic Elements of a Block Diagram	
		4th	4.2 Canonical Form of Closed loop Systems	
5	2nd week 13th March To18th March	1st	4.3 Rules for Block diagram Reduction)	
		2nd	4.4 Procedure for of Reduction of Block Diagram	
		3rd	4.5 Simple Problem for equivalent transfer function	
		4th	4.6 Basic Definition in SFG & properties	
6	3th week 20th March To25 th March	1st	4.7 Mason's Gain formula	
		3rd	4.8 Steps foe solving Signal flow Graph	
		3rd	4.9 Simple problems in Signal flow graph for network	
		4th	5. Time Domain Analysis of Control Systems	

7	4th week 27th March To31th March	1st	5.1 Definition of Time, Stability, steady-state response, accuracy, transient accuracy,
		2nd	5.2 System Time Response
		3rd	5.3 Analysis of Steady State Error.
		4th	5.4 Types of Input & Steady state Error (Step ,Ramp, Parabolic)
8	1st week 1st April to 08 April	1st	5.5 Parameters of first order system & second-order systems
		2nd	5.6 Derivation of time response Specification (Delay time, Rise time, Peak
		3rd	6. FeedbackCharacteristics of Control Systems
		4th	6.1 Effect of parameter variation in Open loop System & Closed loop Systems
9	2nd week 10th April to 15 April	1st	6.2 Introduction to Basic control Action& Basic modes of feedback control:
		2nd	6.3 Effect of feedback on overall gain, Stability
		3rd	6.4 Realisation of Controllers(P, PI,PD,PID) with OPAMP
		4th	7. Stability concept& Root locus Method
10	3rd week 17th April to 22 April	1st	8. Frequency-response analysis&Bode Plot
		2nd	8.1 Frequencyresponse,Relationship between time & frequency response
		3rd	8.2 Methods of Frequency response
		4th	8.3 Polar plots & steps for polar plot
11	4th week 24th April to 29 April	1st	8.4 Bodes plot & steps for Bode plots
		2nd	8.5 Stability in frequency domain, Gain Margin& Phase margin
		3rd	8.6 Nyquist plots. Nyquiststability criterion.ol).
		4th	8.7 Simple problems as above
12	1st week 01 May To 06 May	1st	9. State variable Analysis
		2nd	9.1 Concepts of state, state variable, state model,
		3rd	9.2 state modelsfor linear continuous time functions(Simple)
		4th	6.2 Introduction to Basic control Action& Basic modes of feedback control:
13	2nd week 08May. To 13 May	1st	7.1 Effect of location of poles on stability 7.2 RouthHurwitz stability criterion.
		2nd	5.4 Applications of PLC
		3rd	7.1 Effect of location of poles on stability 7.2 RouthHurwitz stability criterion.
		4th	5.6 Description of contacts and coils in the following states i)Normally open ii) Normally closed iii) Energized output iv)latched Output v) branching
14	3rd week 15 May. To 20 May	1st	8.6 Nyquist plots. Nyquiststability criterion.ol).

		2nd	6.2 Introduction to Basic control Action& Basic modes of feedback control:
		3rd	8.6 Nyquist plots. Nyquiststability criterion.ol).
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		4th	8.6 Nyquist plots. Nyquiststability criterion.ol).
15	4th week 22 May. To 23 May	1st	8.4 Bodes plot & steps for Bode plots
		2nd	8.4 Bodes plot & steps for Bode plots
		3rd	8.7Special control systems Basics DCS & SCADA systems
		3rd	8.1 Frequencyresponse,Relationship between time & frequency response
		4th	8.1 Frequencyresponse,Relationship between time & frequency responsey)

Signature of the Teacher