

Lesson Plan

Lesson Plan			
	Discipline: ETC	Semester-6th Summer-2025	Name of the Teaching 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:-04.02.2025 To date: 17.05.2025 (No of weeks: 15)
	Weeks/Months	Class Day	Topic
1	1st week 4th feb To 8th feb	1st	1. Fundamental of Control System 1.1 Classification of Control system
		2nd	1.2 Open loop system & Closed loop system and its
		3rd	1.3 Effects of Feed back
		4th	1.4 Standard test Signals(Step, Ramp, Parabolic,
2	2nd week 9th feb To 15th feb	1st	1.5 Servomechanism 1.6 Regulators (Regulating systems)
		2nd	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	3rd week 16th feb To 22th feb	1st	2.5 Simple problems of transfer function of network
		2nd	3.1 Components of Control System
		3rd	3.2 Potentiometer, Synchros, Diode modulator &
		4th	3.3 DC motors, AC Servomotorssystems)
4	4th week 23th feb To 1st march	1st	3.4 Modelling of Electrical Systems(R, L, C, Analogous
		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	1st week 2nd march To 8th 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	2nd week 9th march To 15th 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	3rd week 16th march To 22th march	1st	5.1 Definition of Time, Stability, steady-state response, accuracy, transient accuracy, In-sensitivity and robustness.
		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	4th week 23th march To 29th march	1st	5.5 Parameters of first order system & second-order systems
		2nd	5.6 Derivation of time response Specification (Delay time, Rise time, Peak time,Setting time,Peak over shoot)
		3rd	6. FeedbackCharacteristics of Control Systems
		4th	6.1 Effect of parameter variation in Open loop System & Closed loop Systems
		1st	6.2 Introduction to Basic control Action& Basic modes of feedback control:

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4th

9	1st week 1st april To 5th april	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
		1st	8. Frequency-response analysis&Bode Plot
10	2nd week 6th april To 12th april	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
		1st	8.4 Bodes plot & steps for Bode plots
11	3rd week 13th april To 19th april	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
		1st	9. State variable Analysis
12	4th week 20th april To 26th april	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:
		1st	7.1 Effect of location of poles on stability 7.2 RouthHurwitz stability criterion.
13	1st week 27th april To 3rd may	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
		1st	8.6 Nyquist plots. Nyquiststability criterion.ol).
14	2nd week 4th may To 10th may	2nd	6.2 Introduction to Basic control Action& Basic modes of feedback control: proportional, integral and derivative
		3rd	8.6 Nyquist plots. Nyquiststability criterion.ol).
		3rd	8.6 Nyquist plots. Nyquiststability criterion.ol).
		4th	8.6 Nyquist plots. Nyquiststability criterion.ol).
15	3rd week 11th may To 17th 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

