Lesson Plan			
	Discipline:Electrical Engineering	**Semester-6th Summer 2023 SEC-B**	**Name of the Teachng Faculty: Sri BISWAJIT SAHOO**
Sl. No.	**Subject:-Control System Engineering**	**No. Of Days/Week class alloted:05**	**Semester From date: 14/02/2023 To date: 23/05/2023. No of weeks: 15**
	Weeks/Months	**Class Day**	**Topic**
1	1st Week	1st(14.02.2023)	SIGNAL FLOW GRAPH. 1.1 Review of block diagrams and transfer functions of multivariable systems.
		2nd(15.02.2023)	1.1 Review of block diagrams and transfer functions of multivariable systems
		3rd(18.02.2023)	1.2 Construction of signal flow graph
2	2nd Week	1st(20.02.2023)	1.3 Basic properties of signal flow graph
		2nd(21.02.2023)	1.4 Signal flow graph algebra
		3rd(22.02.2023)	1.5 Construction of signal flow graph for control system
		4th(23.02.2023)	TIME RESPONSE ANALYSIS. 2 . 1 Time response of control system
3	3rd Week	1st(25.02.2023)	2 . 1 Time response of control system
		2nd(27.02.2023)	2 . 2 Standard Test signal. 2.2.1. Step signal, 2.2.2. Ramp Signal
		3rd(28.02.2023)	2.2.3. Parabolic Signal 2.2.4. Impulse Signal
		4th(01.03.2023)	2 . 3 Time Response of first order system with: 2.3.1. Unit step response
		5th(02.03.2023)	2.3.2. Unit impulse response
4	4th Week	1st(04.03.2023)	2 . 3 Time Response of first order system with: 2.3.1. Unit step response 2.3.2. Unit impulse response
		2nd(06.03.2023)	2 . 4 Time response of second order system to the unit step input. 2.4.1. Time response specification. 2.4.2. Derivation of expression for rise time, peak time, peak overshoot, settling time and steady state error. 2.4.3. Steady state error and error constants
		3rd(09.03.2023)	2 . 5 Types of control system.[Steady state errors in Type-0, Type-1, Type-2 system]
5	5th Week	1st(11.03.2023)	2. 6 Effect of adding poles and zero to transfer function.
		2nd(13.03.2023)	2. 6 Effect of adding poles and zero to transfer function.
		3rd(14.03.2023)	2 . 7 Response with P, PI, PD and PID controller
		4th(15.03.2023)	2 . 7 Response with P, PI, PD and PID controller
		5th(16.03.2023)	ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE. 3 . 1 Root locus concept.
6	6th Week	1st(18.03.2023)	3 . 1 Root locus concept
		2nd(20.03.2023)	3 . 1 Root locus concept
		3rd(21.03.2023)	3. 2 Construction of root loci
		4th(22.03.2023)	3. 2 Construction of root loci
7	7th Week	1st(23.03.2023)	3 . 3 Rules for construction of the root locus
		2nd(25.03.2023)	3 . 4 Effect of adding poles and zeros to G(s) and H(s
		3rd(27.03.2023)	FREQUENCY RESPONSE ANALYSIS. 4 . 1 Correlation between time response and frequency response
8	8th Week	1st(28.03.2023)	FREQUENCY RESPONSE ANALYSIS. 4 . 1 Correlation between time response and frequency response
		2nd(29.03.2023)	4 . 1 Correlation between time response and frequency response
		3rd(03.04.2023)	4 . 2 Polar plots

9	9th Week	1st(04.04.2023)	4 . 2 Polar plots
		2nd(05.04.2023)	4 . 3 Bode plots
		3rd(06.04.2023)	4 . 3 Bode plots
		4th(08.04.2023)	4 . 3 Bode plots
10	10th Week	1st(10.04.2023)	4 . 4 All pass and minimum phase system
		2nd(11.04.2023)	4 . 4 All pass and minimum phase system
		3rd(12.04.2023)	4 . 4 All pass and minimum phase system
		4th(13.04.2023)	4.5 bode plot problem
11	11th Week	1st(15.04.2023)	4.5 computation of gain cross over frequency
		2nd(17.04.2023)	4.5 computation of phase cross over frequency
		3rd(18.04.2023)	4 . 5 Computation of Gain margin and phase margin
		4th(19.04.2023)	4 . 5 Computation of Gain margin and phase margin
		5th(20.04.2023)	4 . 5 Computation of Gain margin and phase margin
12	12th Week	1st(22.04.2023)	4 . 6 Log magnitude versus phase plot
		2nd(24.04.2023)	4 . 6 Log magnitude versus phase plot
		3rd(25.04.2023)	4 . 6 Log magnitude versus phase plot
		4th(26.04.2023)	4 . 6 Log magnitude versus phase plot
13	13th Week	1st(27.04.2023)	4 . 7 Closed loop frequency response
		2nd(29.04.2023)	NYQUIST PLOT 5.1 Principle of argument.
		3rd(10.05.2023)	5.2 Nyquist stability criterion.
		4th(12.05.2023)	5.2 Nyquist stability criterion.
14	14th week	1st(15.05.2023)	5.4 Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist
		2nd(17.05.2023)	5.4 Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist
		3rd(18.05.2023)	5.5 Assessment of relative stability.
		4th(20.05.2023)	5.6Constant M and N circle
15	15th week	1st (22.05.2023)	5.6Constant M and N circle
		2nd(23.05.2023)	5.7 Nicholas chart