Lesson Plan

Name of the Faculty : Mr.Raman Kumar (Theory and Practical)
Discipline : Mechatronics Engg.
Semester : 6th
Subject : Applications of Control (MT – 302)
Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

Work Load (Lecture/Practical) Per Week (in hours): Lecture - 03, Tutorial – 01, Practical –02

Week		Theory		Practical
	Lecture Day	Topic including Assignment/Test)	Practical Day	Topic
1	1	Concepts of Control Systems	1	plot second order response for step signal
	2	classification of control system		
	3	Example of control systems		
2	1	Modeling of servomechanism	2	Obtain the root locus of given function
	2	Modeling of typical elements		
	3	Block diagram reduction		
3	1	Block diagram reduction technique	3	Find Nyquist plot for given function
	2	Examples on BDR technique		
	3	Signal flow graph algebra.		
4	1	Numericals	4	Draw Bode plot of the controller
	2	Standard test signals		
	3	Time response of first order		
5	1	Time response of first order	5	Reduce the block diagram into single transfer function
	2	Time response of second order		
	3	Time response of second order		
6	1	Time response of second order	6	To study DC position control through potentiometer displacement
	2	steady state error		
	3	Error coefficients		
7	1	Proportional conrol	7	To study DC position control through contineous command
	2	Derivative control		
	3	Integral control		
8	1	PID control	8	To study DC position control through step command
	2	Effect of addition of pole and zero		
	3	Concept of stability		
9	1	Routh hurwitz criterion	9	To study synchro transmistter and reciver in terms of position
	2	Gain margin and Phase margin		
	3	Root Locus Technique:		
10	1	The root locus concept - construction of root loci-	10	Caliberation of PID control
	2	Numericals		

	3	Bode plots –		
11	1	GM and PM -Stability Analysis from Bode Plots.	11	To study PID controller with type 0 and type 1 system
	2	Numericals		
	3	Nyquist Plots		
12	1	Nyquist Stability Criterion	12	Study response of LEAD LAG Compensator
	2	Assessment of relative stability		
	3	Numericals		
13	1	Compensation technique-phase lead		Study response of LEAD LAG Compensator
	2	Phase lag compensation	13	
	3	feed back compensation(lead - lag)		
14	1	State space representation	14	Problem solving using MATLAB
	2	Concept of state and variables		
	3	State models		
15	1	Block diagram for state space equations	15	Internal Viva
	2	solution of state equations		
	3	Concept of controllabilty and observability		