

22EE509	CONTROL AND INSTRUMENTATION LABORATORY	SEMESTER	V			
PREREQUISITIES		CATEGORY	PC	Credit		1.5
Control systems		Hours/Week	L	T	P	TH
		0	0	3	3	
Course Objectives:						
1.	To study the use of Transducer.					
2.	To measure the resistance, capacitance and inductance using bridges.					
3.	To calibrate voltage and current using measuring equipment.					
LIST OF EXPERIMENTS						
1.	Measurement of displacement using transducers.					
2.	Measurement of inductance by Maxwell's bridge.					
3.	Measurement of resistance by Wheatstone bridge.					
4.	Measurement of capacitance by Schering bridge.					
5.	Measurement of three phase power and power factor.					
6.	Instrumentation amplifiers.					
7.	A/D converters and D/A converters.					
8.	Design of Lag, Lead and Lag-Lead Compensators					
9.	Design of P, PI and PID controllers					
10.	Position Control Systems					
11.	Simulation of Control Systems by Mathematical development tools.					
12.	Transfer function of AC servo-motor.					
13.	Transfer function of separately excited DC motor.					
Total (0 + 45)= 45 Periods						

Reference Books:	
1	A. Anand Kumar, "Control Systems", PHI Learning Pvt. Ltd., New Delhi, 2 nd Edition, 2015.
2	I.J. Nagrath & M. Gopal, "Control Systems Engineering", New Age International Publishers, Delhi, 5 th Edition, 2015.
3	K. Ogata, "Modern Control Engineering", Pearson Education, New Delhi, 2010.
E -References	
1	https://nptel.ac.in/courses/108105064/
2	https://nptel.ac.in/courses/108106074/

Course Outcomes:		Bloom's Taxonomy Mapped
Upon completion of this course, the students will be able to:		
CO1	: Measure power in AC circuits	L2:Understanding
CO2	: Calculate R,L,C using various bridges.	L5:Evaluating
CO3	: Design of controllers and compensators	L3:Applying
CO4	: Study the position control system	L2:Understanding
CO5	: Determine the transfer function of AC and DC motors.	L5:Evaluating

COURSE ARTICULATION MATRIX

COs/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	3	3	3	3	2	1	3	1	2		1		2	2	1
CO2	3	3	3	2	2	1	1	2	1		1		2	2	1
CO3	3	3	3	1	1	1	2	2	1		1		2	2	1
CO4	2	3	2	3	1	1	1	3	1		1		2	2	1
CO5	3	2	3	3	3	1	1	1	1		1		2	2	1
Avg	3	2.8	2.8	2.4	1.8	1	1.6	1.8	1.2	0	1	0	2	2	1

3/2/1-indicates strength of correlation (3- High, 2-Medium, 1- Low)