Techno College of Engineering Agartala

An Engineering College Approved by AICTE, MHRD, Govt. of India
Affiliated to Tripura University (A Central University),
Department of Civil Engineering

List of Laboratory Experiments

Control System Engineering Lab							
Course Code	**Hours / Week**				**Maximum Marks**		
PC EC 508	L	T	P	C	**CIA**	**SEE**	**Total**
	0	0	2	1	40	60	100
Number of classes: 20-24 hours			**Prerequisites:** Basic Mathematics, Electrical circuits				
Branch: ECE			**Semester: V**				

Course overview:

The course provides practical exposure to essential field and laboratory tests used in circuit design and controlling purposes. Students gain hands-on experience in study of Characteristics of Synchro, determination of Transfer function of D.C. Servo Motor, position Control of DC Servomechanism, position control of D.C. Servo Mechanism using P, P+I, P+D, P+I+D Controllers, etc. Use of virtual labs is encouraged where applicable to supplement physical testing and enhance conceptual clarity.

Course objectives:

i. To familiarize students with study of characteristics of Synchro Transmitter, Receiver and differential Transducer (Transmitter)..
ii. To familiarize students with position control of second order DC Servomechanism and determination of Parameters of the System from the experimental Results.
iii. To enable students to understand the effect of Velocity feedback on Position control of DC Servomechanism and determination of Parameters due to velocity feedback at different values
iv. To promote students to understand the need of Position control of D.C. Servo Mechanism using P, P+I, P+D, P+I+D Controllers.

Course outcomes:

CO Number	CO Description	K-level
CO-1	Analyze the characteristics of Synchro Transmitter, Receiver and differential Transducer	K-4
CO-2	Solve transfer function of D.C. Servo Motor by applying Step input and verification from frequency response graph of D,C. Servomotor	K-3
CO-3	Examine the error / steady state error of DC Servomechanism due to Step, Ramp and Parabolic inputs	K-4
CO-4	Analyze the position Control of second order DC Servomechanism and determination of Parameters of the System from the experimental Results	K-4
CO-5	Experiment with Velocity feedback on Position control of DC Servomechanism and determination of Parameters due to velocity feedback at different values	K-3

CO-6	Analyze the control of D.C. Servo Mechanism using P, P+I, P+D, P+I+D Controllers to study the characteristics of second order System and indication of Position Control using Gray-coded disk	K-4
Sl. No.	**EXPERIMENT NAME**	**CO**
1.	To study the characteristics of Synchro Transmitter and Receiver	CO1
2.	To study the position control of DC servo motor	CO 4
3.	To study the speed-torque characteristics of DC servo motor	CO-2
4.	To study the speed-torque characteristics of AC servo motor	-
5.	To study the angular position control of DC servo motor trainer kit.	CO-4,5
6.	To study the characteristics of Stepper motor.	-
7.	To study the characteristics of TRIAC controlled single phase AC motor drive.	-
8.	To study the speed control of DC motor using Chopper.	-
9.	To study the speed control of D.C. Servo Mechanism using P, P+I, P+D, P+I+D Controllers.	CO-6