Course code	Course name	L-T-P-Credits	Year of introduction
AE332	PROCESS CONTROL LAB	0-0-3-1	2016

Prerequisite : AE302 Process control

Course Objective

- To provide experience on control of various industrial processes using different control paradigms
- To provide experience in development of virtual instrumentation systems for industry applications
- To introduce few novel control strategies based on artificial neural networks, fuzzy logic, digital control algorithm, etc.

LIST OF EXPERIMENTS: (Minimum 12 experiments are to be done)

1 .ON-OFF controller with and without neutral zone-level control, flow control

2. Temperature control using P, PI, PD, and PID controllers–Study of output response

3. Flow control using P, PI, PD, and PID controllers–Study of output response

4. Liquid level control using P, PI, PD, and PID controllers–Study of output response

5. Pressure control using P, PI, PD, and PID controllers–Study of output response

6.Control valve characteristics

7. Controller tuning for various processes – using Ziegler-Nichols rule

8. Controller tuning for various processes – using Cohen and Coon rule

9.Controller Tuning – Simulation

10.Block diagram simulation of a complex control system

11Study of feed-forward, cascade, and ratio controls

12.Data Logger

13. PC based control of robotic actions

14. Simulation of Artificial Neural Networks –use any software

15.Simulation of Heat Exchanger Temperature Control

16. Interface of DCS with PLC/SCADA using protocol/fieldbus

Expected outcome

- The students will be familiar with the concept of process controllers