

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E - Instrumentation and Control Engineering

(Applied Instrumentation)

Semester: II

Subject Name: PROCESS CONTROL

Sr.No	Course content
1.	Process Characteristics: Process Variables, Process Degree of freedom, Characteristics of physical systems, Elements of process dynamics, liquid level processes, Flow processes, Thermal processes, Dead time.
2.	Controller Characteristics: The automatic controller, The P, I, PI, PD, PID control, Two position control, Multi position mode, Floating control.
3.	Closed loop in automatic control: Closing the loop, P, I, PI control, Use of derivative control, Comparison of proportional, integral and derivative control, Static error, Offset and velocity error, Two position control, single speed floating control, Electronic controller design, Ziegler-Nichols method P, PD, PI and two position control.
4.	Process Instrumentation: Effect of Measurement (Feedback lag), Process Disturbances, Magnitude of Process load, Batch process control, Continuous process control and Optimizing or computing machine control.
5.	Control loops: Cascade loops, Ratio control loops, Feedback and Feed forward control loops
6.	Distillation: Basic controls used in distillation control.
7.	Heat Exchanger, Condenser & Evaporation controls
8.	Boiler Control & Optimization

Reference Books:

1. " Automatic Process Control " by Donald Eckman - Wiley Eastern Ltd.
2. " Instrument engineers handbook-Process Control " by Bela Liptak
3. "Process Control Instrumentation Tech." - by C.D. Johnson - Prentice Hall of India Ltd.
4. Applied Instrumentation in Process industries vol.4 –Leslie Zoss.