CH403 PROCESS INSTRUMENTATION AND CONTROL
Credits: 6 (L = 4, P = 4)
(Pre-requisite: None)

Course Details:

Detail 1:
Instrumentation- principle of measurement; error analysis and its calibration; static and dynamic characteristic of instrument; temperature, pressure, flow, liquid level measurement, measurement of specific gravity, humidity, pH, viscosity; recording, indicating and signaling instrument, transmission of instrument reading, instrument diagram.

Detail 2:
Process control- simple system analysis; dynamic behavior of simple process; Laplace transform; block diagram; transfer function; transient response of first; second and higher order system; transportation lag; lumped and distributed parameter system.

Detail 3: Process control hardware.

Detail 4:
Feedback control- control loop and its components; dynamic behavior of control process; Stability analysis- notion of stability, characteristic equation; Routh-Hurwitz stability criterion, Root- locus analysis.

Detail 5:
Frequency response analysis- frequency response characteristic of general linear system; Bode diagram and Nyquist plots and stability analysis.

Detail 6: Controllers adjustment.

Detail 7:
Elementary idea on Advance control system- feed-forward, cascade, ratio, inferential, adaptive control, DCS, PLC and safety interlock system.

Reference Books:

Chemical Process Control - An Introduction to Theory and Practice
PHI
George Stephanopoulos

Process System Analysis and Control:
Mc-Graw Hill
Donald R Coughanowr

Process Instrumentation:
Tata -McGraw Hill
Patranobish