B. Tech. IV (EC) Semester VIII	L	T	P	C
EC 422: PROCESS INSTRUMENTATION	**3**	**0**	**0**	**3**

- **INTRODUCTION TO PROCESS CONTROL** **(04 hours)**
  Introduction to Process Control, Examples of Surge Tank, Shower, Use of Instrumentation in Process Control, Process Model and Dynamic Behaviour

- **INSTRUMENTATION SYSTEM** **(10 hours)**
  Introduction About Instrumentation System, Types Of Instrumentation System, Data Acquisition System And Its Uses In Intelligent Instrumentation System. Detail Study of Each Block Involved In Making of DAS, Signal Conditioners as DA, IA, Signal Converters (ADC), Sample and Hold. Designing Application for Pressure, Temperature Measurement System Using DAS, Data Logger

- **FEEDBACK CONTROL** **(08 hours)**
  Digital And Analog Controller (On–Off Control, Proportional, Integral And Derivative Control), Development Of Control System Block Diagram, Reason Of Set Point Changes, PID Controller Tuning Forms: Ziglar-Nichols Open Loop Method., Cohen-Coon Parameters

- **CASCADE AND FEED FORWARD CONTROL** **(10 hours)**
  Background, Introduction To Cascade Control, Cascade Control Analysis And Design, Feed Forward Control, Feed Forward Control Design And Examples Of Feed Forward Control

- **COMPLEX CONTROL SCHEMES** **(06 hours)**
  Ratio Control, Selective And Over Ride Control, Split -Range Control, Multivariable Control

- **INSTRUMENTATION FOR SPECIAL PROCESS** **(07 hours)**
  A Brief Study of Instrumentation and Control Relevant To Some of the Following Industries: Cement, Petrochemicals, Steel, Paper, Fertilizer and Power Plants

(Total Contact Time: 45 Hours)

BOOKS RECOMMENDED:

1. **Patranabis D.,** *"Principle Of Industrial Instrumentation"*, McGraw-Hill, 2nd Ed., 1999
2. **Bequette B. Wayne,** "*Process Control: Modelling Design And Simulation"*, PHI, 2003
3. **Johnson Curtis D.,** *"Process Control Instrumentation"*, Pearson Education, PHI, 2005
4. **Shawhney A. K.** *"Electrical And Electronics Measurements And Instrumentation"*, Dhanpat Rai & Sons, 1994
5. **Kant Krishna**, *"Computer Based Industrial Control"*, PHI, 2004