ELECTRICAL ENGINEERING

Industrial Instrumentation

Type of Course : Repurposed
Course Snapshot : Elective / UG/PG
: B.E/B.Tech,M.E/M.Tech
Course Duration : 30 hours / 12 weeks
Industry Support : Petrochemical, Steel, Pharmaceutical, Fertilizer industries

COURSE OUTLINE:

The main goal of an Industrial Instrumentation course for engineering students are shaped by a variety of applications including control, quality assurance, performance testing, design and research. In this course I have adopted two main objectives: 1) to provide a fundamental background in the theory of Industrial Instrumentation and measurement system performance and 2) to establish the physical principles and practical techniques used to measure those quantities most important for Instrumentation applications. This video course is structured such that the lessons are short and each deals with specific topic either measuring variables or device itself.

INSTRUCTOR:

Prof. Alok Barua
Department of Electrical Engineering,
IIT Khragpur

ABOUT INSTRUCTOR:

Prof. Alok Barua received a B.S. (Hons) in Physics (Calcutta University), a B. Tech in Instrumentation and Electronics Engineering and M.E.Tel.E. in Electronics and Telecommunication Engineering (Jadavpur University) and a Ph.D. (Indian Institute of Technology, Kharagpur) in 1973, 1977, 1980 and 1992 respectively. In 1985 he joined the Department of Electrical Engineering, IIT kharagpur, where is now a Professor.In his 32 years of teaching experience, his research has included instrumentation, image processing, testing and fault diagnosis of analog and mixed signal circuit.

COURSE PLAN:

Week 1 : Static and dynamic characteristics
Week 2 : Strain gauges and Load cells
Week 3 : Temperature measurements: RTD, Thermocouple and thermistor.
Week 4 : Flow measurements I
Week 5 : Flow measurements II
Week 6 : LVDT and capacitance sensors
Week 7 : Piezoelectric sensors
Week 8 : Pressure and Low pressure measurement
Week 9 : Opto electronic sensors
Week 10 : Flapper nozzle system
Week 11 : pH and viscosity measurement
Week 12 : Bioprocess Instrumentation and dissolved oxygen sensors