



Pravara Rural Education Society`s

PRAVARA RURAL ENGINEERING COLLEGE, LONI

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Department of Instrumentation and Control Engineering

Mathematical Methods in Instrumentation

CO-1	Students will be able to understand the basic of vector spaces and transformation
CO-2	Able to understand the Basic concept of Probability and its application
CO-3	Students will be able to understand the basic Mathematical expectations and its application in research.

Transducer Design

CO-1	To review and understand different sensors and transducers studies.
CO-2	To get knowledge of advanced sensors like Gas, Chemical Sensors, MEMS, Smart Sensors, Nano sensors, Bio Sensors
CO-3	To understand special applications of all above mentioned sensors.

Industrial Automation

CO-1	Ability to perform advanced PLC programming and its application to different systems.
CO-2	Ability to understand the concept of DCS and designing, analysis and application to different systems.
CO-3	Design and Interfacing of PLC to SCADA/DCS and Design, Installation, calibration, commissioning, of HART, Foundation Fieldbus & Profibus.
CO-4	Design, analysis and application of Process Safety Systems.

Research Methodology

CO-1	Carry out Literature Survey
CO-2	Identify appropriate topics for research work in process instrumentation
CO-3	Select and define appropriate research problem and parameters
CO-4	Design the use of major experimental methods for research in process instrumentation
CO-5	Become aware of the ethics in research, academic integrity and plagiarism
CO-6	Write a research report and thesis

Advanced Power Electronics

CO-1	Students will gain the knowledge of modern rectifiers and converters.
CO-2	Students will understand the applications of industrial drives for AC and DC motors.
CO-3	Students will gain the basic knowledge of multilevel inverters.
CO-4	Students will gain the basic knowledge of resonant converters and power supplies.
CO-5	Student will understand different renewable energy sources and energy conversion system.
CO-6	Students will be able to understand power conditioning and power transmission system.

Process Dynamics and Control

CO-1	Design, development and analysis of Process Models for dynamic processes.
CO-2	To understand, design, simulation and analysis of multi-loop controller.
CO-3	Design, analysis of Adaptive control and Advanced Controllers.
CO-4	Ability to understand the effect of interaction, design of decoupler and controller for multivariable systems and monitoring of processes.

Embedded System Design

CO-1	Students will understand the architectural and functional details and basic programming techniques of AVR microcontroller.
CO-2	Students will understand the architectural and functional details and basic programming techniques of ARM microcontroller.
CO-3	Students will be able to understand different communication protocols used in embedded system.
CO-4	Students will be able to design different embedded applications in instrumentation using basic microcontrollers.
CO-5	Students will be able to design different complete embedded system application in areas of digital consumer electronics, automotives and networking / communication using basic microcontrollers.

Control Systems

CO-1	To learn and understand nonlinear control systems.
CO-2	To understand stability analysis techniques for nonlinear control systems.
CO-3	To understand design different control strategies used for nonlinear system control.

Soft Computing

CO-1	Ability to elaborate basic concept of Fuzzy Logic
CO-2	Students will be able to understand construction of fuzzy controller
CO-3	Describe soft computing phenomena motivating students in designing algorithms
CO-4	Apply soft computing algorithms for optimization
CO-5	Select appropriate strategy or optimal solution based on soft computing algorithms
CO-6	Students will be able to understand hybrid neural network based Fuzzy controller

Advanced Signal Processing

CO-1	Able to design FIR and IIR filters.
CO-2	Able to design multi rate signal processing for various applications
CO-3	Able to apply various adaptive filtering techniques and homomorphic signal processing according to types of signals.
CO-4	Understand the fundamentals of frequency domain applications such as spectral density, period grams.
CO-5	Understand the innovations in stationary random processes.

Building Automation

CO-1	Students will gain the basic knowledge of fire alarm system & FAS Standard
CO-2	To design access control system for any one application
CO-3	Ability to understand the HVAC System and its Components
CO-4	Ability to understand the HVAC System and its Components
CO-5	Students will gain the basic knowledge of Integrated building management system and energy saving concept
CO-6	Ability to understand the Project Lifecycle Management

Fundamentals of Disaster Management

CO-1	Able to define disaster and its type
CO-2	Able to make analysis of earthquakes, floods and cyclones.
CO-3	Able to analyses and know the effects of human induced disasters
CO-4	Students will know responsibilities risk reduction during disaster
CO-5	To know the management concepts in disaster and recovery of disaster.
CO-6	To know the disaster in India and their effects on people.