

# Course Outline

## INSTRUMENTATION DESIGN ENGINEERING

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### Introduction to Instrumentation Design

- Introduction
- Overview of an Engineering Organization
- Role of a Process Engineer
- Project Documentation

### Basic Engineering Package:

- Overview of Basic Engineering Package.
- Relevant Codes & Standards.
- Basic Design requirement based on the type of plant e.g. chemical, Petrochemical, Pharmaceutical Industrial and power plant etc.
- Selection of Instruments for Controlling Flow, Temperature, level and Pressure.
- Sizing and Selection of Control Valve
- Introduction to DCS

### Detail Engineering:

- Instrument Index
- Instrument Location Plan
- Process Data sheets and Specifications
- Instrument Wiring Layout
- Instrument Air Routing Layout
- Loop Drawing
- JB Layout
- Cable Schedule
- Cable Tray Layout
- Hook Up

### Control & Automation:

- Introduction to PLC
- PLC logic, PLC architecture.
- I/O configuration & Memory Mapping
- Programms & Ladder diagrams
- Instruction Set
- Communications & fault finding

### HMI

- Introduction to HMI and its need
- Pperation details and fundamentals of HMI,
- Fault display in HMI

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- Timer counter setting from HMI.
- Interfacing with PLC.

### SCADA

- Introduction to SCADA
- Configuration of different drivers gateway.
- Database of tags and its use.
- Interfacing with PLC and simulation of PLC application in SCADA.

### AC Drive

- Fundamentals of AC Drive
- Block diagram of AC drive
- Configuration of different drives.
- Control of drive with and without PLC.
- Various applications of AC Drive.