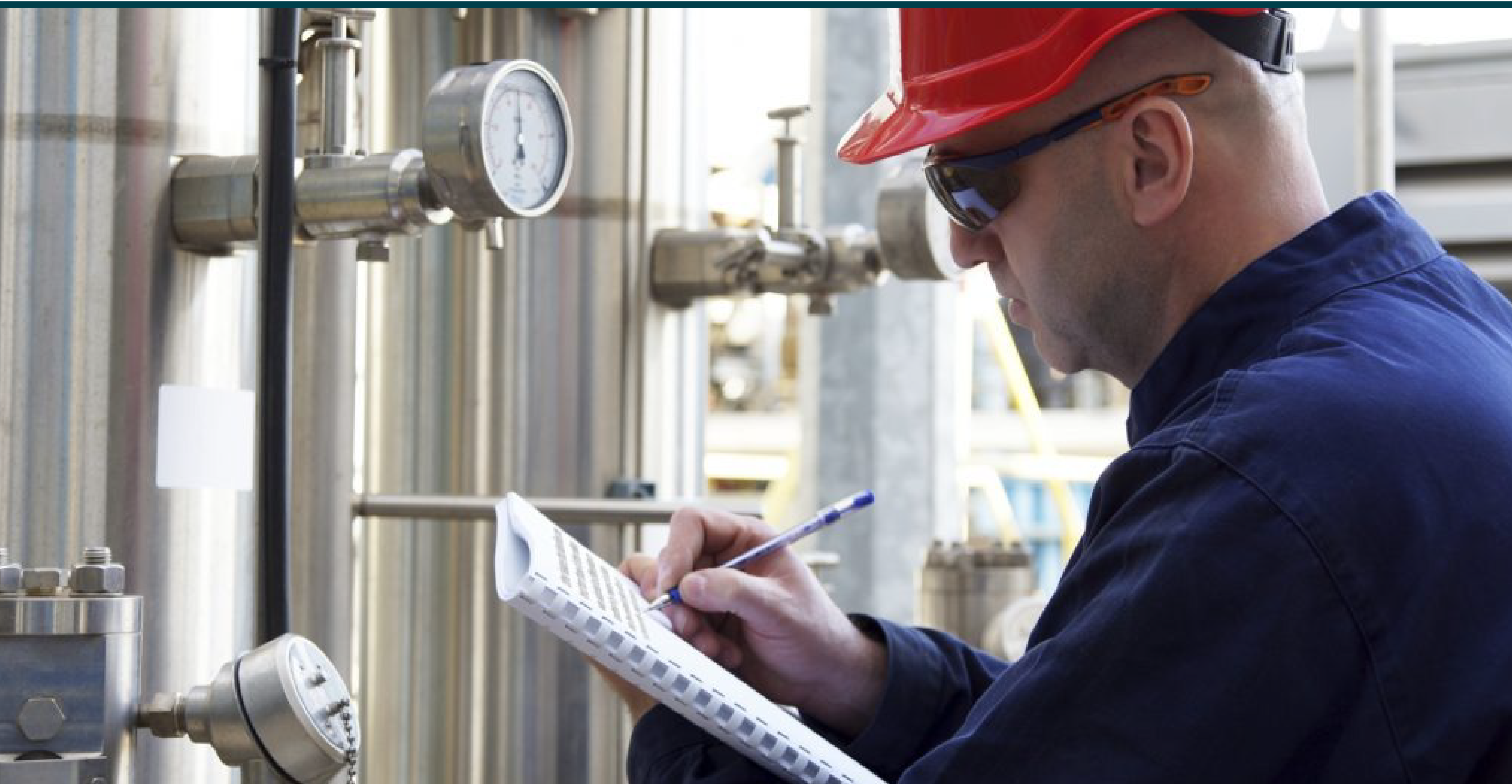


INSTRUMENTATION DESIGN ENGINEERING

This comprehensive course empowers Instrumentation Engineers with the specialized knowledge and skills to confidently address intricate, real-world engineering challenges. It emphasizes understanding the trade-offs inherent in engineering decisions and effectively contributing to multidisciplinary projects through informed decision-making



SCAN
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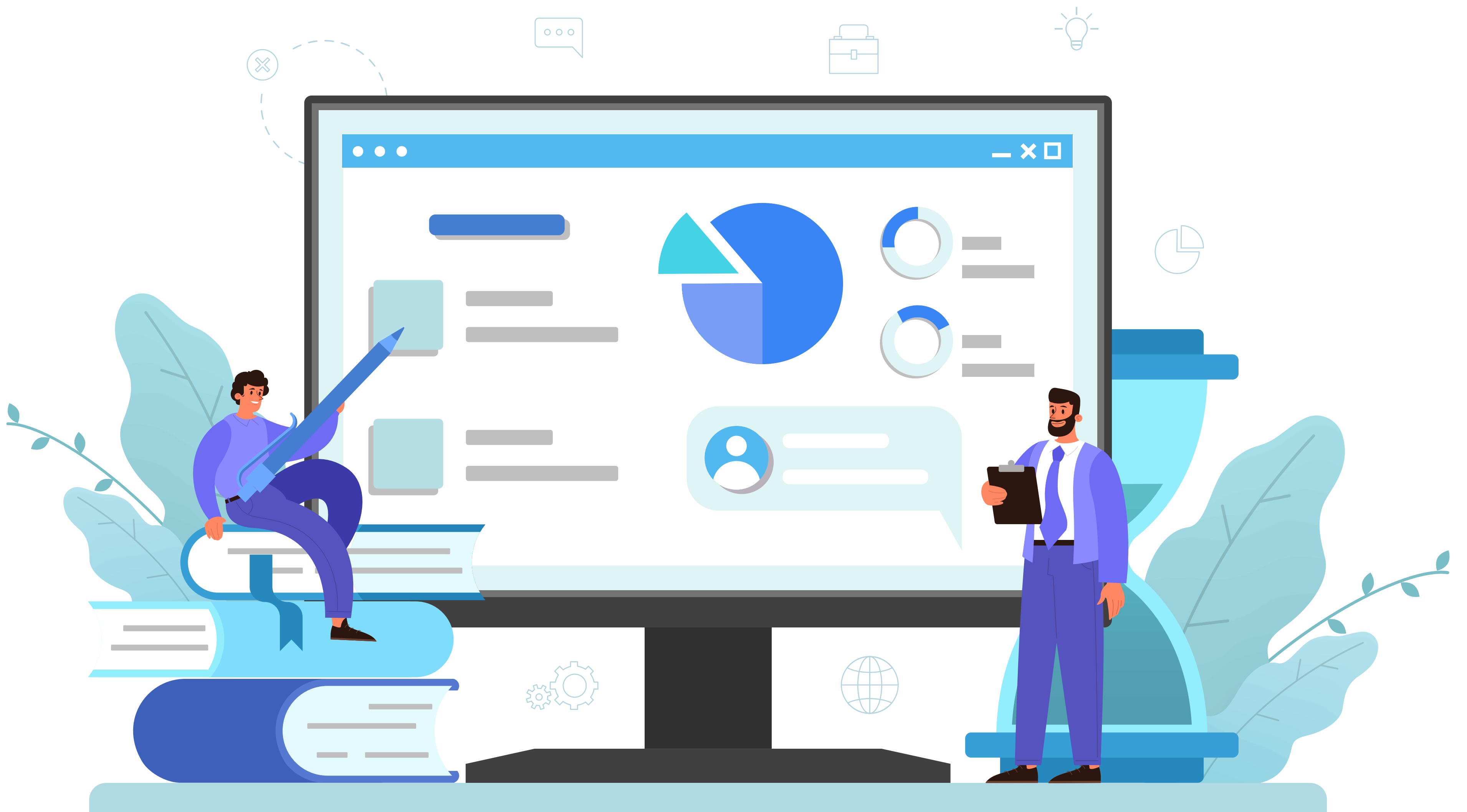
www.peassociations.com

ABOUT THE PROGRAM:

The objective of this course is to provide the candidates the Detail knowledge and skills in Instrumentation Design discipline to facilitate faster learning curves while on the job.

This course is to provide knowledge and skills in this discipline of Instrumentation Design Engineering for Oil & Gas sector. This course will cover the fundamental principles and concepts used in Instrumentation Design & Detailing. Upon completion of this course, students will have a clear understanding of the design principles used in Instrumentation System Design for Oil & Gas Energy Sector.

The goal of this course is to provide delegates the Detail knowledge and skills into Design, Engineering, Construction, Commissioning operation & Maintenance in the field of Instrumentation Design Engineering for Oil & Energy Sector.



LEARNING OBJECTIVES:

- Overview of EPC Industry and Scope.
- Role of Instrumentation Engineer in various types of
- Knowing Client requirements and collection of specific data for projects.
- Relevant Codes & Standards.
- Basic Design requirement based on the type of plant g. Chemical,
- Petrochemical, Pharmaceutical Industrial, power plant etc.
- Selection of Instruments for Controlling Flow, Temperature, level and Pressure.
- Vendor's details and specification for all Instruments used to control
- Flow, Level, Temperature and
- Installation and maintenance Tips of all Instruments.
- Instrument Index, Instrument Location Plan Details
- Process Data sheets and Specifications, Instrument Data Sheets
- Instrument Wiring Layout, Logic Diagrams
- Loop Drawing, Loop Wiring Diagram, JB Layout
- Cable Schedule, Cable Tray Layout
- Hook-Up Drawing



WHO SHOULD JOIN?

Working professionals in Domains: Site Engineering, Construction & Commissioning operation & Maintenance, Technicians in Instrumentation Design Engineering Field.

Students (Instrumentation & Electronics Engineering, Diploma in Instrumentation & Electronics Engineering) who want to develop their career in Design Engineering.

TRAINING FEATURES



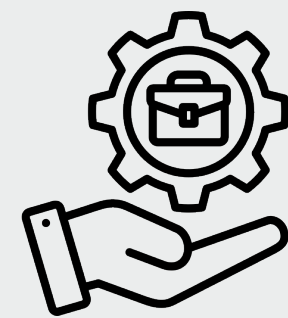
Assessment



Byte Size Learning



Assignments



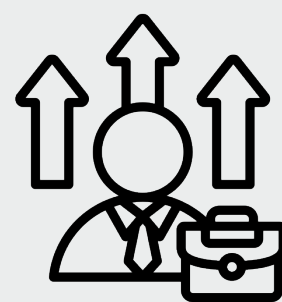
Projects



Industry Interaction



Case Study



360 Career Support



Discussion Forum

- Job Oriented Training Program based on current Industry Demand.
- EPC Project Based Training.
- Providing all Training Material and technical Drawing, documents and case study materials.
- Expert and Experienced Faculty from the Industry.
- Preparation for Interview and Mock Interview Sessions.

PROGRAM OBJECTIVE

Upon successful completion of this course, the delegates will be able to:

- To give an understanding of the principles and practice of Pressure Measurement, Level Measurement, Temperature Measurement, Flow Measurement, Control Valves.
- Enable the delegate to investigate the Operation of an instrumentation system through designing, building and Testing typical sensor combined with appropriate signal conditioning circuits.
- To allow the delegate to become familiar and confident with a range of measurement techniques.
- To understand the concepts of Process Control and acquire the knowledge relating to the characteristics and properties of a process variable being measured.
- To disseminate and share experience and knowledge with other delegates through open session discussions hence broadening the knowledge base of all.
- To become familiar and knowledgeable with PID control and develop the ability to 'tune' a process control system using PID control.
- To have the confidence and knowledge to apply the above techniques and principles to solve an unfamiliar and bespoke measurement situation in the workplace.



MODULE-1 INSTRUMENTATION DESIGN - AN INTRODUCTION

- Introduction to Instrumentation Design & Details Engineering
- Introduction about EPC Company
- The tender & procurement process
- How to do FEED Engineering
- Listing of all Instrumentation Deliverables.

MODULE-2 WORK CULTURE AND HOW TO START WORK IN EPC COMPANY

- Roles and responsibility of other discipline
- Various Input received from different department
- Instrument Design document flow
- Codes and Standards
- Discussion of Instrumentation Design Basis

MODULE-3 HAZARDOUS AREAS

- Definitions
- Different Zones as per IEC standards
- Different Division as per NEC standards
- Enclosure Protection class
- Ex-d, Ex-e, Ex-l, Intrinsic safety understanding
- Ingress Protection Rating (IP rating).
- Temperature Class details
- SIL Level Introduction

MODULE-4 PIPING & INSTRUMENTATION DIAGRAM

- P&ID - Introduction.
- Abbreviations, Symbols and Legends as per ISA standards
- Line number details description.
- Line Class (PMS).
- Close and Open Loops.
- Logics and Interlocks.
- Electrical and Pneumatic Signals.
- ESD/DCS/FGS Signals.

MODULE-5 START PREPARATION OF PROJECT DELIVERABLES

- Prepare and Review of Instrument Index
- Prepare and Review of Input/output (I/O) list

MODULE-6 STUDY OF PROCESS INSTRUMENTS

- Pressure Instruments
 - Preparation of Specification
 - Preparation of Datasheet
- Temperature Instruments
 - Preparation of Specification
 - Preparation of Datasheet
 - Thermowell U Length/ Insertion Length Calculation
 - Wake frequency Calculation
- Level Instruments
 - Preparation of Specification
 - Preparation of Datasheet
- Flow Instruments
 - Preparation of Specification
 - Preparation of Datasheet
- Pressure Safety Valve
 - Preparation of Specification
 - Preparation of Datasheet
 - PSV sizing calculation
- Control Valve/ ON-Off Valve/ Motor Operated Valve
 - Fundamentals and working principle
 - Control Valve Components
 - Selection of Control Valve Body/Materials
 - Preparation of Specification & Datasheet
 - Sizing calculation

MODULE-7 STUDY OF INSTRUMENTS WIRE AND CABLES

- Fundamentals of types of wires and its construction
- Specification of wire and cable
- Interconnection drawing/JB grouping
- Cable/Drum Schedules

MODULE-8 DETAILS DESIGN ENGINEERING

- Discussion about Overall Plot plan
- Cutting of sectional drawings
- Instrument Location Plan
- JB Location plan
- Field Instrument Wiring Layout
- Main Cable and Cable Tray Layout
- Field Instrument Air Piping and Tubing Layout
- FGS Instruments Basic discussion
- FGS Instrument Location Plan
- Level Sketch for Level Instruments

MODULE-9 HOOKUP DRAWINGS

- Pressure Instruments
- Temperature Instruments
- Flow Instruments
- Level Instruments

MODULE-10 PROCUREMENT SUPPORT

- Preparation of Material Requisition (MR)/Request for Quotation (RFQ)
- Technical Bid Evaluation (TBE)/Analysis (TBA)
- Vendor Document Review (VDR)/ Vendor Print Review

MODULE-11 MTO PREPARATION FOR COMPLETE PROJECT

- Open discussion and Feedback

METHODOLOGY

The methodology employed in the Instrumentation Design Engineering course involves a blend of techniques that contribute to a goal-centric and action-oriented learning experience. The key components of this methodology are:



This multifaceted approach aims to provide participants with a comprehensive understanding of instrumentation design engineering, enabling them to effectively address complex challenges in the field.

CAREER BENEFITS

- **Become Eligible** for Design & Engineering jobs in to Electrical Engineering demanding background.
- Open doors to **Job Opportunities Abroad** demanding specialization.
- Fill the void of thousands of untapped **High-Paying Jobs** in Design Engineering with **Talent Shortage**.
- **Get Promoted** in your current profile with most in- demand skill.
- Distinguish your profile from peers during **Job Interviews**.
- Earn a **Rewarding Global Certification**
- **Improve your CV & LinkedIn Profile** with professional development.

