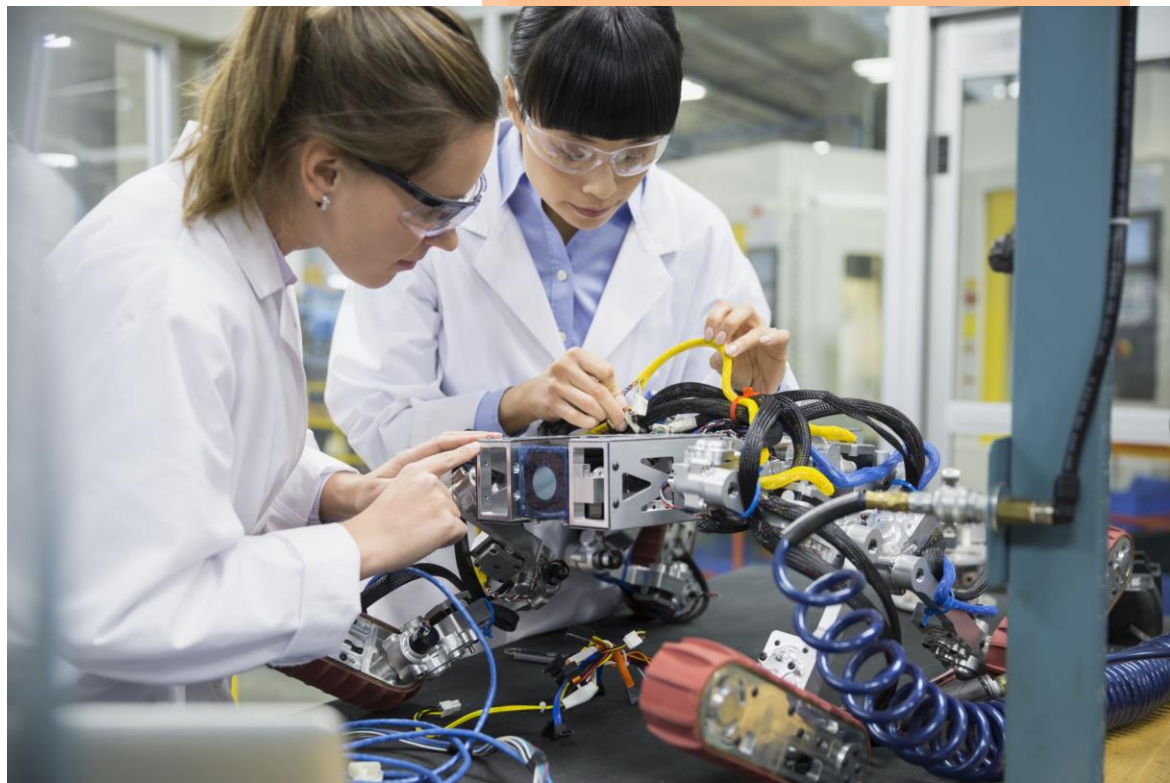




Industrial Automation Course Outline



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Industrial Automation - Certified PLC & HMI Programming Engineer

Course Outlines

The objective of Industrial Automation Course:

- The main objective of this course is to make the aspiring engineers acquainted with the conceptual as well as practical knowledge of the PLC programming & latest technologies being used to achieve PLC Industrial Automation. We provide top class plc & SCADA programming training with experienced trainers from an industrial background.

The outcome of PLC training Course:

- Qualified PLC/HMI programming engineers to meet the requirements of designing appropriate industrial automation systems.
- On completion of these modules, Engineers are ready to take on any Machine, Process or Plant Automation assignment.

Semester wise Schedule:

Semester 1:

Module	Details	Mode
1.Basic of Automation and Electricals and Instrumentation	Safety First & always. Electrical safety lesions. What are Automation & Types? Peripherals required in Automation systems Electrical devices and their connection to PLCs Instrumentation basics and its connection to PLCs	Demo thru online sessions. Demo of electrical & Instruments 12 Hours
2. PLC Programming Delta PLC Programming	Theory Of PLC Programming Ladder Logic Programming Download / upload / online edits Various instructions and its actual application	Demo thru online sessions. Programming sessions 12 Hours
3.Delta HMI programming	Communication to PLC Tags, Alarms, Trends, DataLog Screens, Animation. Download / upload Making Applications Download & Upload the Programs Creating Alarm Messages Communication with PLC Fault Finding and Trouble Shooting	Demo thru online sessions. Programming sessions 12 Hours

*On Completion of each module covered there will be an assessment to evaluate the student continuous progress

Semester 2:

Module	Details	Mode
1.Panel Designing	Introduction to Panel Designing Introduction to Switch Gear and Accessories Control and Power Drawings General Protections Load Management: Connected & Running Indications: Ammeter, Volt Meter, PF & KW etc. Preparation of General Arrangements Electrical Protection Power & Control Circuits •Wiring Guidelines	Demo thru online sessions. 06 Hours
2.Basic Auto Cad Electricals Programming	Making New drawing document Adding components Adding connections Tagging Wiring Schedules	Demo thru online sessions. Programming sessions 6 Hours
3.Process Field Instrumentations	Transmitters Sensors Temperature Measurements Flow Measurements Pressure Measurements Load Measurements Level Measurements Valves Different type of Transducer Instruments Transformers Process Control Basics	Demo thru online sessions. 4 Hours
4.Basics of Motion control systems & Robotics	DC Motors Stepper drives and motors Servo Drives and Motors Robo PLC Interface	02 Hours Presentations Demo of VFD, Stepper & Servo systems
5. Basics of Pneumatics & Hydraulics	As relevant for Automation systems. (Only aspects of control thru PLC will be covered) (Designing not in scope)	02 Hrs Presentation Interface with PLCs

6.Siemens TIA & HMI portal programming	Hardware & Architecture Source & Sink Concepts Wiring different field devices to PLC <ul style="list-style-type: none"> • PLC Programming Software • New Application Making & Addressing • Ladder Diagrams • Programming Instructions • Upload & Download • Monitoring • Forcing of I/Os • Fault Finding & Trouble Shooting • Communication with SCADA • Hands-on Practice 	Presentation Programming Sessions 16 Hrs
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*On completion of each module covered there will be an assessment to evaluate the student continuous progress

Semester 3:

Module	Details	Mode
1. Siemens TIA PORTAL RT ADV SCADA	Making New Projects Making & Editing New Graphic Display Attaching Controls to graphic objects Real-Time & Historical Trends Using Alarms and Events Application of scripts <ul style="list-style-type: none"> • Communication with PLC • Fault Finding & Trouble Shooting • Application of scripts • Communication with PLC 	Demo thru online sessions. Programming sessions 2 Hours
2. Indusoft SCADA Programming	<ul style="list-style-type: none"> • Making New Projects <ul style="list-style-type: none"> • Making & Editing New Graphic Display • Attaching Controls to graphic objects • Real-Time & Historical Trends • Using Alarms and Events • Application of scripts • Communication with PLC • Fault Finding & Trouble Shooting • Application of scripts • Communication with PLC 	Demo thru online sessions. Programming sessions 10 Hours

3. Mitsubishi PLC programming	<ul style="list-style-type: none"> • Hardware & Architecture • Source & Sink Concepts • Wiring different field devices to PLC • PLC Programming Software • New Application Making & Addressing • Ladder Diagrams • Programming Instructions • Upload & Download • Monitoring • Forcing of I/Os • Fault Finding & Trouble Shooting • Communication with SCADA • Hands on Practice 	<p>Demo thru online sessions . Programming sessions</p> <p>10 Hours</p>
4. DCS systems	<p>What is DCS</p> <p>Difference Between PLC, DCS and PAC</p>	<p>02 Hrs</p> <p>Presentations</p>

*On completion of each module covered there will be an assessment to evaluate the student continuous progress

Semester 4:

Major Projects.

- Some examples of Automation applied in Industry will be shown to participants.
- Teams formed can take up problem tasks and design a solution using the skill sets and expertise gained in previously conducted modules.
- PLC Hardware, Scada PC can be utilized for programming.
- If required hardware devices are procured they can demonstrate project physically. Or all project programming; operation can be demonstrated with suitable simulation.
- On completion of each module covered there will be an assessment to evaluate the student continuous progress
- There will be a final Assessment on completion of all modules.

List of Required resources for Training

SL.No	Description	Essential Qty	Available	Desired Qty For Lab at Institute
1	Laptop / PC	2	2	At least 12
2	Ethernet Sw	2	2	2
3	Power extension cords	2	2	10
4	AB Micrologix PLC	1	1	2
5	Mitsubishi FX PLC	1	1	2
6	Siemens 1200 PLC	1	1	2
7	Delta PLC	2	2	2
8	HMI 7"	1	1	2
9	HMI 7" Siemens	1	0	2
10	IO Simulation kits	1	1	4
11	PLC Training kits	2	0	4
12	Basic instruments kit			2
13	Basic electrical kit			1
14	Basic Pneumatic Trainer Kit			1
15	Basic Hydraulic Trainer kit			1
16	LCD Projector			1
17	PA system			1
18	Web Camera	1	1	1
19	Internet Dongle	1	1	4
20	Siemens PLC software	1	1	2
21	AB PLC Software	1	1	2
22	SCADA Software	1	1	2
23	Mitsubishi FX PLC software	1	1	2
24	Online Training software Platform			1