National Institute of Electronics and Information Technology, Aurangabad

COURSE PROSPECTUS

Name of the Group: Control & Instrumentation
Name of the Course: Certificate Course in Industrial Automation System Design
Starting Date: 1st April 2017
Duration: 4 Weeks(5 days a week) , 3 hours /week
Time :10.00am to 1pm

Preamble: Stiff competition, higher quality standards and growing concerns of safety & environmental damage have pushed the Industrial sector to adapt state-of-the-art automation Techniques for effective utilization of resources and optimized performance of the process plants. Recent trend of merging control systems associated with both factory and process automation demands knowledge from diverse fields. Automation applications span plant automation, discrete and batch process control, embedded machine control and manufacturing production line automation. The industrial automation applications include automation of time critical systems that demand precise real-time readings and control.

Objective of the Course: This course is aimed at equipping an Engineer /Diploma holder /M.Sc holder (in specific streams) with appropriate knowledge and skills required in configuring, programming and operating Industrial automation systems with the use of Industrial Field Instruments, PLCs, and Labview

Outcome of the Course :PLC/ /Labview Engineers to meet the requirements of configuring, programming, installing and operating of industrial automation systems.

Lab Facilities

- STEP-7 Professional V-13
- WinCC Advance V-13 6
- NI Academic Site License- LabVIEW
- Data acquisition systems with PCI, Ethernet Fieldpoint I/O
- NI Compact RIO
- Trainer kits(PLC Trainer S-1200 ,Sensor Technology Lab, P, Pl, PID Speed Controller , Pic-N-Place Robotic ARM and Electro Pneumatic Trainer with interface to PLC STEP-7 Professional V-13

Course Contents :

Measurements with Industrial Field Instruments, Data Acquisition Systems, Process Plant Control & Automation System Design, Programmable Automation Controllers (PAC),Automation System Integration &Engineering Concepts

• PC based hardware and software for Data Acquisition Systems (DAS) and Control
• Selection of sensors/transducers for Industrial application
• Signal conditioning requirements of common transducers
• Intelligent transmitters/sensors
• PC Based Data Acquisition System Design
• Graphical programming for data acquisition, signal processing, Control.
• Analysis & presentation using Measurement and Automation Software
• Developing data acquisition and instrument control applications using LabVIEW
• Design of Instrumentation Loops, ISA Symbols & Diagrams
• Data Acquisition & Control with RTOS (NI Fieldpoint I/O, cRIO)

PLC & PID Controllers & Industrial Networking
• Programmable Logic Controllers & PLC interfacing Techniques
• Programming of PLC using Ladder diagrams, Function Block diagram
• Troubleshooting and maintenance of PLC systems
• PLC programming SIEMENS SIMATIC S7 controllers (CPU S7-1214C)
• SIMATIC STEP 7 Professional programming Software
• System design with PLC
(Study of sensors : Limit Switches , Proxy Sensor, Displacement Sensor , Level Sensor , Temperature Sensor , Strain gauge / Load Cell, Pressure Sensor, Flow Sensor , Displacement Sensor ,Positioning Sensor transducers mounting with required signal conditioning & interfaces for PLC.
Study of PLC S-1200,Pic-N-Place Robotic ARM and Electro Pneumatic system along with interface to PLC STEP-7 Professional V-13)
• Fundamental process control techniques
• RS232-422-485 standards
• PLC to PC communication
• Foundation fieldbus

Project work:
In the project work, students will be guided to do project work in advanced technologies of Industrial control and instrumentation. Students will be given choice in selecting project among different projects available based on different technologies. Working/Sponsored candidates can opt to do their project work at the employed organization. The student has to submit project registration form, progress reports and project completion form duly signed from their project guide at the employed organization.

Course Structure:

S.No	*Modules*	*Duration*
1	*PLC*	2 weeks
2	Labview	1 week
3	Project work	1 week

Other Contents

a. **Course Fees**: 5,000/-
b. **Eligibility**: B.E/B.Tech/Diploma/M.Sc. in Mechanical, Production, Automobile, Tool & Die, Industrial engineering, Mechatronics, Electrical, Electronics and Allied branches (Final year students may also apply).
c. **Number of Seats** : 20
d. **Selection of candidates:** The selection of candidates is based on the qualification subject to eligibility and availability of seats.