



**CENTRE OF EXCELLENCE IN MANUFACTURING  
NATIONAL INSTITUTE OF TECHNOLOGY,  
TIRUCHIRAPPALLI**

**Automation Lab**

**Industrial Automation**

**Duration: 40 Hours**

**PREREQUISITES**

Basic knowledge in PLC

**WHO SHOULD ATTEND**

Students, Engineers, Managers who need to manage and use PLC for Automation.

**SYSTEMS OVERVIEW**

**3 Hours**

Positioning of the Modular S7 Controllers – Available Central Modules – Available Signal Modules – **SIMATIC S7 – 1200**: Modular Mini-PLC – Modules – Installation and Mounting Positions – Signal, communication and Battery Board – **SIMATIC S7 1500**: Modular Controller – Modules – Installation and Mounting Positions – Connection Technology – CPU Display – Technology functions – memory cards – **Distributed I/O Systems**: Signal modules – I/O system – Configuration

**ENGINEERING SOFTWARE**

**3 Hours**

Central Engineering Framework – Scope of the Products – Range – Licensing – Installation – operating systems – Virtualization - **TIA PORTAL**: Portal view and Project view – Settings – Project tree – Task card – Inspector window – Saving Projects – Libraries – Project Migration – Help functions

**TRAINING DEVICES**

**1 Hour**

Training area setup – Configuration – Operating and Display elements – Setup and connection of other equipment – Networking and IP Addresses of Modules

**DEVICES AND NETWORKS**

**3 Hours**

Online tools – configuration- parameterizing the hardware – IP address and subnet mask – Establishing connection – online access – CPU modes – Memory concept – SIMATIC card reader – hardware configuration – set point configuration – changing modules – CPU Properties

**PROGRAM BLOCKS**

**25 Hours**

Types of program blocks – Organization blocks – Function Block – Function – Data Blocks – Block properties – Block networks – block programming – block groups – compiling downloading and monitoring – comparing blocks – Binary operation – tags – digital operations – data blocks – local – global data blocks

**DISTRIBUTED I/O PROFIBUS AND PROFINET**

**2 Hours**

ET200 SP – Fieldbus overview – PROFIBUS – PROFINET – identification – Device types – configuration

**TROUBLESHOOTING**

**3 Hours**

Categories of errors – Test functions – system diagnostics – hardware diagnostics – online diagnostics – diagnostics buffer – Comparing online and offline