

# EZENITH EDUCATION INTERNSHIPS



IATI

INDUSTRIAL AUTOMATION  
TRAINING INTERNSHIP

# Ezenith Education Internships

India's Biggest Internships  
60 Hours of Extensive Knowledge Transfer  
Learn from the best R&D Experts in the Industry  
Minimum 20 Hrs of Practical Experience

## Day 1

### Theory

- Introduction to Automation.
- Relay Logic & Evolution of PLC.
- Architecture & Types of a PLC.
- The Vehicle Motion Equation- Traction equation, various resistances etc.
- PLC Rack & Power Supply
- PLC CPU, I/O Modules, Wiring & Functions
- Communication & Spl Modules
- PLC Selection Case study

### Practical's:

- Relay Terminals and Wiring.
- Module Identification.
- Rack Assembly & Wiring .
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- BOM preparation & Selection.

## Day 2

### Theory

- Introduction to PLC software
- Software Installation
- Project Creation & Config.
- Memory Map in a CPU
- IEC 61131-3 Standards
- Address,IO list & Writing Prgms
- Download-Upload of PLC prgrm
- Cold and Warm Restarts
- Online Functions,PLC scan Cycle
- Ladder Programming Case study

### Practical's:

- Controls Systems in an IC Engine- ECU Architecture, Sensors Actuators etc.
- Function of Control System in HEVs and EVs
- Control Theory
- Hybrid ECU
- CAN bus
- Control Variables
- Control System Case Illustration

## Day 3

### Theory

- Bits, Bytes, Word Control
- Data Type & Logical Programming
- Introduction to Instruction Set
- Introduction to Instruction Set
- Data Movement
- Maths Instructions
- Troubleshooting Manuals
- Diagnostic Functions (Power flow, Watchdog timer, Status bar, data logger)
- Fuel Cell

### Practical's:

- Use of Data Types
- Various types of Program Creation: Simple Boolean Logic, Timer & RTC, Counter, Data Move Maths Instruction & Interrupt.
- Technologies for Thermal management- Air cooling, liquid cooling, Direct Refrigerant Cooling, thermos electric module etc.
- Checking Diagnostic Functions.

## Day 4

### Theory:

- Analog, Scaling & PID control
- Orientation on Structured Text
- Debugging the program, Fault detection & Replacement of Faulty Modules
- Hardware and Software Troubleshooting
- Case Study : Analog / PID control & Hardware/Software Faults

### Practical's:

- Analog Value Read/Write in PLC.
- Analog Value Read/Write in PLC
- Program on Structured Text
- Error Tracking using Diagnostic Functions

## Day 5

### Theory:

- Peer to Peer & OSI Model of Communication
- Port, Protocol and Media
- Industrial Bus Protocols
- Redundancy and Hot Swapping of Modules
- Recent trends in Automation
- Application Development I & II

### Practicals:

- Start to End Application Development

## Day 6

### Theory

- Role of HMI and its architecture
- HMI Software & Project Development in a HMI
- Developing, Testing, Download and Upload of Screens
- Communicating with a PLC
- Screen Components- Buttons, Lamps, Number Input, Alarms, Trends & Screen Change
- Introduction to SCADA & Role of SCADA in Industrial Automation
- Types of SCADA Packages & Licensing Pattern

### Practicals:

- Developing HMI project Preparing Screens & Simulation, Download & Backup of Screens, Bit Control, Word Control & Alarms and Trends
- SCADA software overview

## Day 7

### Theory:

- Creating a Project, Tag database & Pages / Windows.
- Digital Data Entry & Logging
- Analog Entries
- Creating and Accessing Trends
- Alarms, Events & Scripts
- Communication with PLC, via OPC server & MS Excel
- Developing a real life Application & Troubleshooting Practices

### Practicals:

- Creating a Scada Project Digital & Analog Entries, Creating Graphics, Plotting Trends, Generating Alarms, Setting up communication with devices & SCADA Application Development
- Career Orientation Session
- Award Ceremony- Best Performing Teams and Individuals.

# ezenith

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