



SIPCOT
Govt. of Tamilnadu



FORT
SIPCOT POWERED INNOVATION ECOSYSTEM

FORGE
Innovation & Ventures



INNOVATION PRACTICUM FOR INDUSTRIAL WORKFORCE

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Innovation Practicum for Industrial Workforce (IP-IW) is the umbrella talent transformation program offered by Forge to advance the skills and competencies of the industrial workforce for driving the adoption of advanced technologies for process improvements & new product development in industrial companies.

The IP-IW courses enrich awareness and impart skills in key emerging and futuristic technology areas that serve as building blocks for achieving transformation through innovation. The operators, engineers, and innovation managers that make up the talent core of industrial companies are offered an experiential learning process that combines technical lectures, lab tutorials, and prototyping projects. Apart from understanding the technology fundamentals they learn by doing the application of technology as tools to enhance industrial operations.

The Innovation Practicum for Industrial Workforce (IP-IW) equips industries with technological skills at all levels (trainees, operators, engineers). This structured program builds internal technological capabilities, enabling faster and better process/product development, ultimately driving sustained success and industry leadership.

#	Curriculum/ offering	Objective	Targeted Workforce	Proficiency level
1	Understanding and Utilizing Tools • Equip participants with a solid understanding of fundamental innovation tools and techniques. • Provide hands-on experience in using these tools to solve basic industrial problems.	To gain foundational skills to utilize tools through practical learning	Technical trainee	User/ Operator
2	Managing (Operating and Maintaining) Systems • Deepen participant understanding of how various systems within an industrial setting interact and influence innovation. • Develop skills for managing complex systems through systematic troubleshooting	To deepen understanding of systems to manage complexity and drive efficient innovation	User/ Operator	Engineer
3	Building and Engineering Systems • Empower participants to become active innovators by providing them with the skills to create, build, and deploy innovative solutions. • Equip participants with the ability to lead and manage innovation projects from ideation to implementation.	To become an innovation leader by creating, building, and deploying system-wide solutions for your organization	Engineer	Innovator

IMPLEMENTATION ROAD MAP

#	TOPICS	LEVEL 1	LEVEL 2	LEVEL 3
C1	Embedded Control Systems	Basic Electronics and Circuit Building	Embedded Hardware and software	Industrial Controller, Single-Board Computer (SBC), Linux for Embedded System
C2	Pneumatics and Automation	Pneumatic system	Programmable Logic Controller (PLC) and control System	Designing Innovative Solutions with Pneumatics & PLCs
C3	Mobile Robotics	Robotics and Programming	Mobile robot with SBC	Robotic Operating System
C4	System Design & Instrumentation	LabView and Data acquisition (DAQ)	LabView and Reconfigurable Input/Output (RIO) Architecture	LabView and Industrial RIO
C5	Industrial Robotics	Robotics and basic Programming	Advanced Programming	—

C1 EMBEDDED CONTROL SYSTEMS

LEVEL 1 Basic Electronics and Circuit Building

Day 1

- Introduction to Basic Electronics: Basic Concepts and Components
- Understanding the basic theorem
- Overview of Diode, Transistor

Day 2

- Resistor-Capacitor (RC), Resistor-Inductor (RL) and Resistor-Inductor-Capacitor (RLC) circuits
- Simulation of RC, RL and RLC circuits using appropriate tool
- Introduction to Operational amplifiers
- Design-Test-Measurement (DTM) equipments: Multimeter, Regulated Power Supply (RPS), Battery tester, Clamp meter

Day 3

- Open and closed loop amplifiers
- Differential amplifiers, Instrumentation Amplifiers
- Analog and Digital Sensor
- Signal Conditioning circuit design

Day 4

- Introduction to 555 timer
- Application of timer Integrated Circuits (ICs)
- Oscillators and Signal generators with Mixed Signal Oscilloscope (MSO) / Digital Storage Oscilloscope (DSO)

Day 5

- Basics of Digital Circuits
- Combinational and Sequential logic circuits
- Design circuits for various applications and use of tool to do simulation.

Outcomes

- Understand Basic Electronics concepts and theorems
- Apply the concepts of electronics components and basic circuits in real time application and demonstrate using appropriate tools.
- Explain the use of DTM equipments in various applications
- Understand the concepts of digital circuits and its applications.

Hardware and software included

- RLC components (Resistor, Inductor, Capacitor)
- Diode
- Transistor
- Power Amplifier
- 555 Timer
- DTM equipment: MSO (Mixed Signal Oscilloscope), DSO (Digital Storage Oscilloscope), Multimeter
- Breadboard
- MUX (Multiplexer)
- RPS (Regulated Power Supply)
- Toy Motor
- Digital Sensor (IR) and Analog Sensor (POT)
- Logic Gates

C1 EMBEDDED CONTROL SYSTEMS

LEVEL 2 Embedded Hardware and Software

Day 1

- Embedded Systems - Basics to Applications
- Hardware & Software of Embedded Systems
- Constraints & Development Tools

Day 2

- Microcontroller (MCU) Architecture
- Common Input/Output (I/O) Interfaces
- Interfacing with External Components
- Embedded System Development Boards

Day 3

- Introduction to C Programming for Embedded Systems
- Embedded C Programming Practices
- Embedded System Development Tools
- Code Structure for Embedded Systems

Day 4 & 5 (Hands-on Exercises)

- Arduino Integrated Development Environment (IDE): Getting Started
- Controlling Actuators
- Simple I/O Functionalities
- Interfacing with External Modules
- Sensor Data
- Debugging Techniques

Hardware & software included

- Arduino board
- Arduino IDE
- Stepper motor
- Servo motor
- Motor driver
- Digital sensors: Sound, Touch, Flex, Continuity, Moisture, PIR
- Analog sensors: Pressure, Thermocouple (Temperature), Accelerometer, Gas

Outcomes

- Understand the Concepts of Embedded systems.
- Elaborate various components in Micro controllers
- Gain practical understanding on Arduino based Integrated Development Environments

C1 EMBEDDED CONTROL SYSTEMS

LEVEL 3 Industrial Controllers and SBC

Day 1

- **Master Class #1** : Understand industrial controllers (PLCs, Programmable Automation Controllers (PACs), Distributed Control System (DCS).
- **Master Class #2** : Learn about common industrial communication protocols used with controllers.
- **Workshop #1** : Forge Innovation Handbook (FIH) Canvas
 - Challenge Curation
 - Problem validation & User discovery
 - Identifying pains & gains
 - Value proposition
 - Assignment : Challenge Curation , Problem Validation and Customer Discovery (PVCD)

Day 2

- **Master Class #3** : Understanding SBCs
- **Workshop #2** : Setting Up Your SBC
- **Hack Time #1** : Stage 1- Minimum Usable Prototype (MUP) concept design

Day 3

- **Master Class #4** : Linux Command Line Essentials
- **Master Class #5** : Package Management with apt/yum
- **Workshop #3** : Python Programming for Beginners
- **Hack Time #2** : Stage 2- Proof of Concept (PoC) exploration

Day 4

- **Master Class #6** : Sensor Interface with Raspberry Pi
- **Master Class #7** : IoT with Raspberry Pi
- **Hack Time #3** : Stage 3- Minimum Demonstrable Prototype (MDP) building

Day 5

- **Hack Time #4** : Stage 4 - MDP Validation
- Functional test and demonstration.

Outcomes

- Understand various Industrial Controllers
- Elaborate Single Board Computer and its evolution
- Learn to curate canvases from FIH for building MDP
- Design and Development of MDP for an industrial scenario

Hardware and software included

- Raspberry Pi
- SD Card & Reader
- Digital Sensors: Sound, Touch, Flex, Continuity, Moisture, PIR (Passive Infrared)
- Analog Sensors: Pressure, Temperature (Thermocouple), Accelerometer, Gas

C1 EMBEDDED CONTROL SYSTEMS

Program Commercials

• COURSE LEVELS • COHORT SIZE	COURSE FEE [PER PARTICIPANT]		
	Level 1	Level 2	Level 3
10	26,650/-	29,350/-	52,400/-
20	22,600/-	24,850/-	37,050/-
25	21,650/-	23,450/-	33,050/-

Terms & Conditions

- If the number of participants is fewer than the minimum cohort size of 10, the standard fixed prices of Rs. 2,66,500/-, Rs. 2,93,500/-, and Rs. 5,24,000/- will apply for Level 1, Level 2, and Level 3, respectively.
- If number of participants is above the standard cohort size then the Fees for the next higher cohort size shall be applicable only for the additional count.
 - E.g. If 13 participants, Fee/participant for Cohort size 10 shall be applicable for the First 10 Participants and Fee/Participant for Cohort size 20 shall be applicable for the additional 3 participants;
 - E.g. If 20 participants, then Fee/Participant for Cohort size 20 shall be applicable for all 20 participants;
- The quoted cost also includes Food & Beverages for the participants
- Payment is 100% in advance
- Consumables shall be billed based on actuals for Level 3, subject to prior approval of the uste cases

C2 PNEUMATICS AND AUTOMATION

LEVEL 1 Pneumatics System

Day 1

- Introduction to Pneumatics: Basic Concepts and Components
- Understanding the principles and applications of pneumatics
- Overview of pneumatic components and systems

Day 2

- Pneumatic Control Systems: Circuit Design and Analysis
- Pneumatic Actuators and Sensors
- Safety protocols and precautions in working with pneumatics

Day 3

- Overview of industrial automation and its applications.
- Basics of digital and analog I/O devices.
- Understanding common issues and challenges in PLC automation systems.

Day 4

- Techniques for troubleshooting PLC programs and hardware.
- Best practices for PLC maintenance and system reliability.

Day 5 (Hands-on Exercises)

- Testing and Application
- Practical exercises to apply pneumatic and PLC concept and assessments.

Hardware & software included

- Pneumatic Components (Janatics and Festo)
- Sensors & Actuators
- PLCs: Festo CPX Series, Siemens S7-1200 Series, Delta DVP Series, Fuji Electric NA Series, Mitsubishi FX Series
- PLC Software: Festo CoDiSis, Siemens TIA-Portal (V14.SP1, V15, V16), Delta ISP Soft, Fuji Electric SX Programmer, Mitsubishi GX Developer

Outcomes

- Understand pneumatics principles, components, and apply it in industrial applications.
- Interpret pneumatic systems and illustrate its safety protocols.
- Experiment PLCs in industrial automation applications.

C2 PNEUMATICS AND AUTOMATION

LEVEL 2 PLC and Control systems

Day 1

- Overview of pneumatic components and systems
- Pneumatic Control Systems: Circuit Design and Analysis
- Troubleshooting techniques for pneumatic systems
- Integration of electrical and pneumatic components
- Maintenance procedures for pneumatic systems

Day 2 (Hands-on Exercises)

- Overview of industrial automation and its applications.
- Hands-on exercises: Building simple ladder logic programs using simulation software.
- Understanding data types, variables, and memory organization in PLCs.
- Developing ladder logic for various industrial scenarios

Day 3 (Hands-on Exercises)

- Introduction to advanced programming concepts: timers, counters, arithmetic operations, and data manipulation.
- Overview of communication protocols commonly used in PLC automation (Modbus, Profibus, Ethernet Industrial Protocol (Ethernet/IP), etc.).
- Basic troubleshooting techniques on FESTO mobile workstation kit.

Day 4 (Hands-on Exercises)

- Configuring communication between PLCs and Human-Machine Interface (HMI)/ Supervisory Control And Data Acquisition (SCADA) systems.
- Techniques for troubleshooting PLC programs and hardware.
- Basic troubleshooting techniques on FESTO mobile workstation kit.

Day 5 (Hands-on Exercises)

- Troubleshooting PLC programs and diagnosing common faults in JANATICS Do It Yourself kit (DIY kit).

Outcomes

- Understand pneumatic system maintenance and safety protocols.
- Acquire PLC issue diagnosis skills and devise resolution strategies.
- Learn to optimize automation for improved productivity and efficiency in industry.

Hardware & software included

- Pneumatic Components (Janatics and Festo)
- Sensors & Actuators
- PLCs: Festo CPX Series, Siemens S7-1200 Series, Delta DVP Series, Fuji Electric NA Series, Mitsubishi FX Series
- PLC Software: Festo CoDySis, Siemens TIA-Portal (V14.SP1, V15, V16), Delta ISP Soft, Fuji Electric SX Programmer, Mitsubishi GX Developer
- HMI (Human-Machine Interface): Schneider Electric Pro-face GP-Pro
- SCADA Software: Siemens WinCC Basic

C2 PNEUMATICS AND AUTOMATION

LEVEL 3

Designing Innovative Solutions with Pneumatics & PLCs

Day 1

- **Master Class #1** : Overview of industrial automation and its applications.
- **Master Class #2** : Forge Innovation Handbook (FIH)
- **Workshop #1** : Forge Innovation Handbook (FIH) Canvas
 - Challenge Curation
 - Problem validation & User discovery
 - Identifying pains & gains
 - Value proposition
 - Assignment : Challenge Curation , PVCD

Day 2

- **Master Class #3** : Pneumatic Control Systems: Circuit Design and Analysis
- **Workshop #2** : Advanced programming techniques in ladder logic and function block diagrams.
- **Hack Time #1** : Stage 1-MUP concept design

Day 3

- **Master Class #4** : Overview of communication protocols commonly used in PLC automation (Modbus, Profibus, Ethernet/IP, etc.).
- **Hack Time #2** : Stage 2- PoC exploration

Day 4

- **Workshop # 3**: Setting up communication between PLCs and other devices (HMI, SCADA systems, sensors, etc.).
- **Hack Time #3**: Stage 3-MDP building

Day 5

- **Hack Time #4**: Stage 4 - MDP Validation
- Functional test and demonstration.

Outcomes

- Design, program, and troubleshoot the PLCs for industrial automation
- Develop the communication protocols to facilitate interaction between PLCs and other systems
- Learn to curate canvases from FIH for building MDP
- Design and Development of MDP for an industrial scenario

Hardware & software included

- Pneumatic Components (Janatics and Festo)
- Sensors & Actuators
- PLCs: Festo CPX Series, Siemens S7-1200 Series, Delta DVP Series, Fuji Electric NA Series, Mitsubishi FX Series
- PLC Software: Festo CoDySis, Siemens TIA-Portal (V14.SP1, V15, V16), Delta ISP Soft, Fuji Electric SX Programmer, Mitsubishi GX Developer
- HMI (Human-Machine Interface): Schneider Electric Pro-face GP-Pro
- SCADA Software: Siemens WinCC Basic
- Communication Protocols: Profinet, Profibus, Modbus

C2 PNEUMATICS AND AUTOMATION

Program Commercials

• COURSE LEVELS • COHORT SIZE	COURSE FEE [PER PARTICIPANT]		
	Level 1	Level 2	Level 3
06	31,400/-	35,600/-	56,500/-
09	24,950/-	28,700/-	42,850/-
12	21,450/-	25,500/-	39,950/-

Terms & Conditions

- If the number of participants is fewer than the minimum cohort size of 6, the standard fixed prices of Rs. 3,14,000/-, Rs. 3,56,000/-, and Rs. 5,65,000/- will apply for Level 1, Level 2, and Level 3, respectively.
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 - E.g. If 9 participants, then Fee/Participant for Cohort size 9 shall be applicable for all 9 participants;
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C3 MOBILE ROBOTICS

LEVEL 1 Robotics and Programming

Day 1

- C++ and Object-Oriented Programming System (OOPS)
- Concept to Practise on Objects, Classes, Inheritance, Encapsulation, Polymorphism
- Embedded Programming
- Arduino IDE and Programming

Day 2 (Hands-on Exercises)

- Arduino Uno , ESP32 Programming
- Basic Building Blocks
- Introduction to Sensors and Actuators
- Sensor and Actuator interface

Day 3 (Hands-on Exercises)

- Motors and Types
- Control system
- Proportional – Integral – Derivative (PID) controller
- Speed Control
- Interfacing

Day 4 & 5 (Hands-on Exercises)

- Power budget design
- Battery and rating
- Choosing the right Motor
- System Architecture
- Line Follower Robot

Hardware & software included

- Arduino
- ESP32
- L298 Motor Driver
- Servo Motor
- DC Motor
- PID Controller
- 12V, 7A Battery
- Line Follower Kit

Outcomes

- Define robots and explain their core functionalities.
- Identify different robot components and their roles.
- Understand basic robot motion concepts.
- Write simple robot control programs using C++ platform.
- Explain the role of sensors in robot perception.
- Gain expertise in C++ programming

C3 MOBILE ROBOTICS

LEVEL 2 Mobile Robot with SBC

Day 1 & 2

- Introduction to Python : Basics of python language
- Introduction to SBC and it type
- Introduction to communication protocols - I2C, SPI, UART
- Boot up Raspberry Pi
- Remote access
- Command Line Interface
- Run examples

Day 3 & 4

- Building a Control System
- Interfacing : Sensor , Actuators
- Implementing a SoftWare (SW) algorithm :Building python code using analog input, control algorithms, and analog output to create closed-loop control systems (demonstrations).
- Simple Mobile robot end to end development - Chassis design, Battery and Power Management, Differential Drive, Motor control systems

Day 5

- Robot vision
- Interfacing Camera with SBC
- Capture Image
- Image processing techniques
- Open CV

Hardware & software included

- Raspberry Pi
- Raspberry Pi I/O Expander
- Memory Card and Reader
- Differential Drive Robot Kit
- Raspberry Pi Camera
- Keyboard, Mouse, and Monitor
- Sensors and Actuators
- USB Camera

Outcomes

- Apply advanced motion planning algorithms for robot control.
- Utilize robot vision techniques for object detection and recognition.
- Select and integrate various sensors and actuators for specific robotic tasks.

C3 MOBILE ROBOTICS

LEVEL 3 Robotic Operating System

Day 1

- **Master Class #1** : Overview of Robotic Operating System
- **Master Class #2** : Forge Innovation Handbook (FIH)
- **Workshop #1** : Forge Innovation Handbook (FIH) Canvas
 - Challenge Curation
 - Problem validation & User discovery
 - Identifying pains & gains
 - Value proposition
 - Assignment : Challenge Curation , PVCD

Day 2

- **Master Class #3** : ROS 2 and Core Concepts
- **Workshop #2** : Workspace creation and Build System
- **Hack Time #1** : Stage 1-MUP concept design

Day 3

- **Master Class #4** : Simulation -TurtleSim
- **Hack Time #2** : Stage 2- PoC exploration

Day 4

- **Workshop # 3** : Introduction to Gazebo and Rviz
- **Hack Time #3** : Stage 3- Minimum Demonstrable Prototype building

Day 5

- **Hack Time #4**: Stage 4 - Minimum Demonstrable Prototype Validation
- Functional test and demonstration.

Hardware & software included

- Linux Ubuntu 22.04 LTS
- ROS 2 Humble
- Gazebo
- RViz
- Turtlesim

Outcomes

- Develop basic robot programs using ROS for communication and control.
- Simulate and test robot behavior using appropriate software tools.
- Learn to curate canvases from FIH for building MDP
- Design and Development of MDP for an industrial scenario

C3 MOBILE ROBOTICS

Program Commercials

• COURSE LEVELS • COHORT SIZE	COURSE FEE [PER PARTICIPANT]		
	Level 1	Level 2	Level 3
10	29,950/-	32,100/-	49,000/-
15	25,250/-	28,650/-	42,000/-
20	22,900/-	25,650/-	36,200/-

Terms & Conditions

- If the number of participants is fewer than the minimum cohort size of 10, the standard fixed prices of Rs. 2,99,500/-, Rs. 3,21,000/-, and Rs. 4,90,000/- will apply for Level 1, Level 2, and Level 3, respectively.
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 - E.g. If 15 participants, then Fee/Participant for Cohort size 15 shall be applicable for all 15 participants;
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C4 SYSTEM DESIGN & INSTRUMENTATION

LEVEL 1 LabVIEW and DAQ

Day 1

- LabVIEW & Instrumentations Fundamentals
- Basic Programming Concepts
- Design of Front Panel & SubVI

Day 2

- Overview of DAQ system
- Signal Types and DAQ Measurement
- Basic Data Acquisition in LabVIEW
- Create DAQmx Tasks

Day 3

- Data Acquiring & Processing
- Practical Applications and Projects
- Building a Temperature Monitoring System

Day 4

- Real-Time Data Display and Analysis
- Sensor and Actuator Integration
- Creating a Basic Data Logger

Day 5

- Basics of Control Systems with LabVIEW
- Design Custom DAQ System
- Exploring Additional LabVIEW Modules

Hardware & software included

- LabVIEW Professional Edition
- MyDAQ
- DAQmx and ELVISmx Toolkits
- MAX (Measurement and Automation Explorer) Software
- Embedded Sensors and Actuators: Indicators, Relay Module, Proximity Sensors

Outcomes

- Understand and use LabVIEW for basic programming & data flow
- Set up and configure DAQ devices in LabVIEW
- Perform Signal Processing, analysis and Data Logging
- Complete hands-on experiments and Real-time Data applications.

C4 SYSTEM DESIGN & INSTRUMENTATION

LEVEL 2 LabVIEW and RIO

Day 1

- Advanced VI Development
- Error Handling & Debugging Best Practices
- Modular Programming with SubVIs
- VI Performance Optimization

Day 2

- RIO Architecture
- Field Programmable Gate Array (FPGA), Real-Time Processing.
- Create and Deploy Projects for MyRIO
- Creating Real-Time Applications

Day 3

- Networking Basics
- Remote Monitoring and Control
- High-Speed Data Acquisition

Day 4

- Real-Time Environmental Monitoring System
- Wireless Data Transmission and Control

Day 5 (Hands-on Exercises)

- Building Autonomous Robot
- Multi-Sensor Data Fusion
- Custom Dashboard Development

Hardware & software included

- LabVIEW Professional Edition
- DAQmx Toolkit
- MyRIO
- MyRIO Toolkit
- DSC Toolkit
- LabVIEW FPGA Toolkit
- PID Control Toolkit
- MyRIO I/O Extension Board
- Xhub
- NI MAX (Measurement & Automation Explorer)

Outcomes

- Deepen the knowledge in advanced LabVIEW programming, including modular and real-time programming.
- Configure and program myRIO and RIO devices for various applications.
- Develop and integrate FPGA and real-time applications with RIO devices
- Design and implement intermediate-level projects with RIO systems, involving data acquisition and control systems.

C4 SYSTEM DESIGN & INSTRUMENTATION

LEVEL 3 LabVIEW and Industrial RIO

Day 1

- Advanced Data Structures and Architectures
- Performance Optimization and Best Practices
- Understanding CompactRIO (cRIO) Systems
- Real-Time and FPGA Configuration

Day 2

- In-Depth Study of cRIO Modular I/Os
- 24-bit Analog-to-Digital Converter (ADC) Modules: High-Resolution Data Acquisition
- Digital Input/Output Modules
- Specialized Modules

Day 3

- Real-Time and FPGA Programming for cRIO
- Real-Time Application Development
- FPGA Application Development
- Hybrid Programming

Day 4

- Advanced Control Systems
- Data Management and Analysis
- Project Planning and Design

Day 5

- Industrial Automation System Implementation and Testing

Hardware & software included

- LabVIEW Professional Edition
- niMAX
- cRIO
- cRIO Toolkit
- Modular I/O: 16-bit ADC Module, 24-bit ADC Module, DIO Module, TTL Module, Thermocouple Module
- Embedded sensors (Analog and Digital) and actuators
- DSC Toolkit
- LabVIEW FPGA Toolkit

Outcomes

- Master advanced programming techniques and hybrid real-time/FPGA development.
- Understand and program cRIO systems and modular I/Os.
- Implement high-resolution DAQ and advanced control systems.
- Complete a comprehensive project using cRIO devices.

C4 SYSTEM DESIGN & INSTRUMENTATION

Program Commercials

• COURSE LEVELS • COHORT SIZE	COURSE FEE [PER PARTICIPANT]		
	Level 1	Level 2	Level 3
10	23,500/-	31,700/-	42,350/-
12	20,950/-	30,500/-	41,450/-
15	18,300/-	28,050/-	37,150/-

Terms & Conditions

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C5 INDUSTRIAL ROBOTICS

LEVEL 1

Robotics and basic Programming

Day 1

- Introduction to Industrial Robotics
- Kinematics Introduction
- Simulation software setup

Day 2

- User Interface
- Environment Creation
- Robot & Tools Selection
- Global & Local Reference Points

Day 3

- Program Creation
- Move J
- Move L
- Move C

Day 4

- Welding Simulation

Day 5

- Painting Simulation

Hardware & software included

- RoboDK Simulation Software

Outcomes

- Understand industrial robotics fundamentals: kinematics, key components, and robot types.
- Set up and use robotic simulation software.
- Program basic and advanced robotic movements.
- Apply skills to optimize robotic processes, enhancing productivity and reducing downtime.

C5 INDUSTRIAL ROBOTICS

LEVEL 2 Advanced Programming

Day 1

- Teach Pendant Purpose & Functionalities
- Home Position Creation
- Hands-On with Teach Pendant Functionalities

Day 2

- Programming Robot Using Cartesian Coordinates
- Move J, Move L, Move C
- Creation & Execution of Welding Motion

Day 3

- Creation & Execution of Painting Motion Path Planning
- Creation & Execution of Pick & Place

Day 4

- Common Errors in Robot Programming
- Troubleshooting Techniques
- Creation/Modification of Master Program

Day 5

- Program Call Instruction with Interlocks from Multiple PLCs

Hardware & software included

- YASKAWA GP12 robot

Outcomes

- Gain proficiency in setting up industrial robots, including power-on procedures and home positions.
- Program robots using Cartesian coordinates for precise movements.
- Create and execute welding and painting path programming on a actual robot
- Integrate robotic programs for multiple objects with collision avoidance for safe, efficient operations.

C5 INDUSTRIAL ROBOTICS

Program Commercials

• COURSE LEVELS • COHORT SIZE	COURSE FEE [PER PARTICIPANT]	
	Level 1	Level 2
06	36,550/-	40,500/-
09	29,650/-	32,550/-
12	26,200/-	28,550/-

Terms & Conditions

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 - E.g. If 9 participants, then Fee/Participant for Cohort size 9 shall be applicable for all 9 participants;
- The quoted cost does not include Food & Beverages
- Payment 100% in advance
- Consumables shall be billed based on actuals for Level 3, subject to prior approval of the use cases



FORT.Chennai

SIPCOT Industrial Innovation Centre,
Plot No. AM-1, (Near HP Petrol bunk at
NH-4), SIPCOT Industrial Park,
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Sriperumbudur, Kancheepuram
District, Tamil Nadu - 602 106.

 Viswanath S +91 95974 35508

FORT.Hosur

SIPCOT Industrial Innovation Centre,
Plot No. CP-3 & CP 4,
(Near TVS Academy),
SIPCOT Industrial Complex, Phase - II,
Moranapalli, Hosur,
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