KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.Chidambara Nadar - C.Nagammal Campus
S.P.G.C.Nagar, K.Vellakulam - 625 701, (Near Virudhunagar), Madurai District.

Department of Electrical and Electronics Engineering

(Accredited by NBA, New Delhi)

Syllabus Copy

INDWELL Automation
Workshop Of Automatic Systems
PLC, HMI, SCADA, DRIVES TRAINING & PROJECTS
(MSME Registered and ISO 9001-2015 certified)

Advanced Industrial Automation Training
Friendly and informative sessions

PLC: introduction, types, leading hardware and software, logic development, important instruction, Industrial real applications, Industrial I/Ps & O/Ps, PLC wiring & Industrial project development.

HMI / MMI: Introduction, interfacing with PLC, screen development, digital & analog data configuration, analog data scaling, password level, screen display & Industrial project development.

SCADA: Introduction, interfacing with PLC, screen development, digital & analog data configuration, analog data scaling, driver selection and configuration, tag creation and configuration & Industrial project development.

AC DRIVE: Introduction, hardware, parameter setting, speed, direction, acceleration and . deceleration time control of induction motor, interfacing with PLC, multispeed & multidirectional control project.

ANALOG: Introduction to analog signal, standard signal type, block diagram, ATD and DTA conversion program and wiring, Interface with SCADA.

INTERFACING PROJECT: Complete interface of PLC, HMI, SCADA, AC DRIVE, AC motor, Digital I/Os with a real Industrial application.

Duration: 6 Days.

	Before lunch	After lunch
DAY 1	Introduction to Automation, introduction to controller, micro controller vs PLC, PLC block diagram, Ladder Diagram programming language, basic instructions NO, NC, Coil. Basic programming tricks, basic programs based on truth table, Latch, Flag, examples and programming trick.	Practice of programs in Codesys software. Ladder simulation, Visualization.
DAY 2	Timer, timer-based examples and programming trick.	Practice of programs in Codesys software. Ladder simulation, Visualization.
DAY 3	Pulse instruction, Pulse based examples, Counter, counter-based examples.	Practice of programs in Codesys software. Ladder simulation, Visualization.
DAY 4	Introduction to digital inputs/ outputs, wiring concept, SINK/ SOURCE, real time wiring of PLC. Introduction to PLC hardware and software, MITSUBISHI PLC, GX Developer software,	Practice of programs in Codesys software. Ladder simulation, Visualization. Programming in GX Developer, communication, program upload/ download, troubleshooting, program modification, Online edit. Project development.
DAY 5	Introduction to HMI, interface with PLC, screen development, digital & analog data configuration, analog data scaling, password level, screen display & Industrial project development.	Introduction to SCADA, interfacing with PLC, screen development, digital & analog data configuration, analog data scaling, driver selection and configuration, tag creation and configuration & Industrial project development.
DAY 6	Introduction to AC Drive, hardware, parameter setting, speed, direction, acceleration and deceleration time control of induction motor, interfacing with PLC, multispeed & multidirectional control project. Introduction to Analog system, hardware, block diagram of ADC and DAC application, standard signal, channel selection, AD- DA start, scaling, TO FROM instruction, real time application. Monitored and controlled on SCADA.	Objective question test, Feedback and conclusion.

COURSE OUTCOME :

CO1: Demonstrate understanding of PLC architecture, types, hardware/software components, and develop basic to advanced ladder logic programs for industrial applications.

CO2: Design and configure Human/Machine Interface (HMI/MMI) screens, including digital/analog data management, password protection, and interfacing with PLCs for industrial project development.

CO3: Develop SCADA-based monitoring and control systems by performing PLC interfacing, driver configuration, tag creation, data scaling, and visualization of industrial processes.

CO4: Configure and operate AC drives for induction motor control by setting parameters for speed, direction, and acceleration/deceleration, and integrate drives with PLC for multi-speed and multi-directional control projects.

CO5: Analyze and interface analog input/output signals with PLC and SCADA systems using standard signal types, ATD/DTA conversion, and implement real-time data acquisition and control in industrial projects.

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Department of Electrical and Electronics Engineering
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Academic Year 2025 – 2026 ODD Semester
Value Added Course on " Advanced Industrial Automation Training" from 14-07-25 to 19-07-25

CO-PO-PSO Mapping

CO	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	Demonstrate understanding of PLC architecture, types, hardware/software components, and develop basic to advanced ladder logic programs for industrial applications.	H	H	H	H	M	-	-	H	H	H	H	H	M
CO2	Design and configure Human/Machine Interface (HMI/MMI) screens, including digital/analog data management, password protection, and interfacing with PLCs for industrial project development	H	H	H	H	H	M	-	H	H	H	H	H	H
CO3	Develop SCADA-based monitoring and control systems by performing PLC interfacing, driver configuration, tag creation, data scaling, and visualization of industrial processes.	H	H	H	H	H	M	-	H	H	M	H	H	H
CO4	Configure and operate AC drives for induction motor control by setting parameters for speed, direction, and acceleration/deceleration, and integrate drives with PLC for multi-speed and multi-directional control projects.	H	H	M	-	M	-	-	H	M	M	H	H	M
CO5	Analyze and interface analog input/output signals with PLC and SCADA systems using standard signal types, ATD/DTA conversion, and implement real-time data acquisition and control in industrial projects.	H	H	M	-	-	-	-	H	M	H	H	H	M

VAC Coordinator
S. RAMESH PRABHU

HoD/EEE

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SDG – CO Mapping

SDG	List of SDG	CO1	CO2	CO3	CO4	CO5
1	No Poverty					
2	Zero Hunger					
3	Good Health and Well-being					
4	Quality Education	✓	✓	✓	✓	✓
5	Gender Equality					
6	Clean Water and Sanitation					
7	Affordable and Clean Energy					
8	Decent Work and Economic Growth		✓			✓
9	Industry, Innovation and Infrastructure	✓	✓	✓	✓	✓
10	Reduced Inequality					
11	Sustainable Cities and Communities					
12	Responsible Consumption and Production					
13	Climate Action					
14	Life Below Water					
15	Life on Land					
16	Peace, Justice and Strong Institutions					
17	Partnerships for the Goals					

VAC Coordinator
S. Ramesh Prabin

HoD/EEE