

Department of Electronics and Communication Engineering

Course Code	Course Name	L	T	P	C
Value Added Course	Advanced Trends in Industrial Automation using PLC	20	0	25	2

a. Preamble

This course provides a comprehensive and practical foundation in industrial automation through the use of Programmable Logic Controllers (PLCs). Beginning with a review of fundamental concepts, the curriculum advances to a detailed exploration of core programming elements such as timers, counters, and various data types. Students will gain hands-on experience by applying these principles to hardware using WPL and IPS software, before moving on to more complex functions like move, math, and comparison instructions. The course concludes with an in-depth study of advanced program controls, including jump, subroutine, Real-Time Clock (RTC), and scaling, ensuring students are well-equipped to design, implement, and troubleshoot robust PLC-based control systems for real-world industrial applications.

b. Course Outcome

Upon successful completion of the course, the students will be able to

Cos	Course Outcome	Knowledge Level
CO1	Grasp the core principles of Programmable Logic Controllers (PLCs), their basic architecture, and essential programming concepts.	K2
CO2	Learn to effectively use and apply key PLC instructions, including timers, counters, and various data types, to create logic for industrial processes.	K3
CO3	Gain hands-on experience by programming, simulating, and debugging PLC systems using industry-specific software like WPL and IPS, and integrate them with physical hardware.	K3
CO4	Develop proficiency in using instructions for move, math functions, and comparison to handle data and create more complex and dynamic control logic.	K4
CO5	Apply advanced programming controls such as jump, subroutines, Real-Time Clock (RTC), and scaling to design efficient and well-structured automation programs.	K3

Date	Session	Topics
29/07/2025	Forenoon	Basic Revision of PLC
	Afternoon	Basic Revision on Conditions
30/07/2025	Forenoon	Timer, Counter and Data Types
	Afternoon	Conditions of timer, Counter and Data Types with hardware using WPL, IPS software
31/07/2025	Forenoon	Move, Math Functions, Comparison
	Afternoon	Conditions Regarding move, math functions and comparison
01/08/2025	Forenoon	Program Controls (Jump, Subroutine), RTC and Scaling
	Afternoon	Conditions of Program Controls (Jump, Subroutine), RTC and Scaling
02/08/2025	Forenoon	Projects
	Afternoon	Evaluation of Course as MCQ, Feedback and Valedictory

SDG Mapping

CO's	SDG Mapping			
CO1	SDG – 09 Industrial Innovation and Infrastructure	SDG – 04 Quality Education		-
CO2	SDG – 09 Industrial Innovation and Infrastructure	SDG – 04 Quality Education	SDG 7: Affordable and Clean Energy	SDG – 13 Climate Action
CO3	SDG - 09 Industrial Innovation and Infrastructure	SDG – 04 Quality Education		
CO4	SDG – 09 Industrial Innovation and Infrastructure	SDG – 04 Quality Education	SDG 12: Responsible Consumption and Production	SDG – 06 Clean Water and Sanitation
CO5	SDG-09 Industrial Innovation and Infrastructure	SDG – 04 Quality Education	SDG – 11 Sustainable Cities and Communities	SDG 7: Affordable and Clean Energy