



C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Technology & Engineering
DEPARTMENT OF: -Electrical Engineering
BRANCH:Electrical& Electronics Engineering
SEMESTER: VII
CODE: 4TE07IAA1
NAME –Industrial Automation& Applications

Teaching & Evaluation Scheme

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
4TE07IAA1	Industrial Automation & Applications	3	0	2	5	4	30	1.5	70	3	--	20	30	150

Objectives:

- To study about different PLC units and other interfacing devices to acquire knowledge about SCADA programming. To study about different industrial applications using PLC.

Prerequisites

- Basics of Control Systems and digital electronics.

Course Outlines

Sr. No.	Course Contents	Hours
1	General Concepts: General concepts of the industrial production. Concepts of production systems and production processes. Automation production systems and their classification.	08
2	Control Algorithms: Characteristic of different discontinuous controller mode, two position mode, multi position mode, floating control mode, Introduction of different continuous controller mode, proportional, integral, derivative, PI, PID controller mode	10
3	Process Control Loop and its Characteristic: Controlled variable, controlling parameters, process equation load, transient, Process, lag, self regulation, control lag, variable range, dead time,	06

	cycling.	
4	Programmable Logic Controller (PLC): Architecture by block diagram, I/O modules & programming criteria-discrete state process control, analog controller, digital controller, serial communication port. Memory and storage, programming language- ladder diagram and its application. Working with Industrial PLC.	12
5	Distributed Control System: Basic function of SCADA and application of Industrial Automation & Functional block diagram of DCS, architecture-hierarchical of DCS at function levels, Architecture of DDC.	10

Learning Outcomes:

The student will be able to Familiarity with common PLC components, their use, symbols, and mathematical models.

- Ability to formulate and analyze simple mathematical models of PLC circuits.
- Ability to design, analyze and implement simple control systems Industrial Applications using PLC circuits

Books Recommended

1. "Programmable Logic Controller", by Thomas Hughes, ISA Publication.
2. "SCADA supervisory control and data acquisition", by Stuart A. Boyer, ISA Publication.
3. "Safety Shutdown Systems" by Gruhn and Cheddie, ISA, 1998, 5. Poppovik Bhatkar,
4. "Distributed Computer Control for Industrial Automation", Dekkar Publication.
5. "Process Control Instrumentation Technology", by Johnson, C. D., Prentice Hall.
6. "Instrument Engineers – Handbook", by Liptak, B. G., (Vol. – II), CRC Press.
7. "Programmable Logic Controllers: Principles & Applications", by Webb, J. W., and Reis, R. A., Prentice Hall, (2002).