Faculty of Engineering & Technology

PLC and Applications

Information :

Course Code :	EPR 473	Level	:	Undergraduate	Course Hours :	3.00- Hours

Department :	Specialization of Electrical Power Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Sameh Abdelhaleem Mohamed Abdelsalam	8
Assistant Lecturer	Mohamed Abdallah Mahmoud Shaheen	
Teaching Assistant	Shahd Muhammed Anwer Muhammed Hamed	2

Area Of Study :

Upon successful completion of the course, the student should be able to:
1. Determine the important factors to consider when selecting controller (PLC).
2. Write a PLC ladder diagram for different control systems.
3. Define sequential control and how to generate a ladder diagram from a sequential description of a sequential process.
4. Understand the behavior of different sensors.
5. Understand Micro processor control systems.

Description :

Logic Gates ; Types of control systems, Structure of programmable logic controllers., Basic set of instructions, Timers, Counters, Registers, Applications., Control systems using sequential PLC, Development of step programs, Controllers of displacement, Step function., Programming of different industrial control circuits., Input / Output data handling analysis., Sensors., Interfacing between controllers. Scada system.

Course outcomes :

a.Knowledge and Understanding: :

1 -	a1- Demonstrate knowledge and understanding of components and concepts for programmable logic controllers.
2 -	a2- Illustrate PLC programs of different control circuits for induction motors.
3 -	a3- Describe the step chain programming for writing PLC programs of industrial control system.

b.Intellectual Skills: :

1 -	b1- Express ideas in Combinational and Sequential Control Tasks so that PLC programs is facilitated.
2 -	b2- Ability to apply different alternative PLC programs solutions.
3 -	b3- Chose among different solution alternatives.

c.Professional and Practical Skills: :

1 -	c1- Testing different control circuits by using Tri-logic PLC software programming.
2 -	c2- Implementation for simple and complicated different control circuits.

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3 -	c3- Applying Combinational and Sequential Control solution techniques on simple industrial control circuits in the lab.
d.General and Transferable Skills: :	
1 -	Write technical reports in accordance with standard scientific guidelines.
2 -	Work in a self-directed manner.
3 -	Work coherently and successfully as a part of a team in the Lab.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Types of control systems, Structure of programmable logic controllers.	5	3	2
Basic set of instructions, Timers, Counters, Registers, Applications	15	9	6
Control systems using sequential PLC, Development of step programs, Controllers of displacement, Step function	15	9	6
Programming of different industrial control circuits.	10	6	4
Input / Output data handling analysis.	10	6	4
Sensors.	5	3	2
Interfacing between controllers	10	6	4
Scada system.	5	3	2

Teaching And Learning Methodologies :

Lectures
Tutorials
Laboratories

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
˝ƒFinal exam	40.00	15	to assess the comprehensive understanding of the scientific background of the course, to assess the ability of problem solving with different techniques studied
o In Class Quizzes	10.00		
o Lab	10.00		
o Mid-Term exams	30.00		
o Participations	10.00		

Recommended books :

(1) "Programmable Controllers Operations and Applications" Alan G.Warmock. Prentice Hall 1979

(2) "PIC Microcontroller and Embedded Systems" Muhammad Ali Mazidi, Danny Causey.2008 by Pearson Prentice Hall, Pearson International Edition.

(3) "Automating Manufacturing Systems with PLCs" Version 4.2, April 3, 2003 Copyright (c) 1993-2003 Hugh Jack.

(4) "Electrical Control For Machines" Third Edition, Kenneth B. Rexford, Delmar Publisher Inc.1987.

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