FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

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 -	a3- Describe the step chain programming for writing PLC programs of industrial control system.
2 -	a2- Illustrate PLC programs of different control circuits for induction motors.
3 -	a1- Demonstrate knowledge and understanding of components and concepts for programmable logic controllers.
b.Intellectual Skills: :	
1 -	b3- Chose among different solution alternatives.
2 -	b2- Ability to apply different alternative PLC programs solutions.
3 -	b1- Express ideas in Combinational and Sequential Control Tasks so that PLC programs is facilitated.
c.Professional and Practical Skills: :	
1 -	c3- Applying Combinational and Sequential Control solution techniques on simple industrial control circuits in the lab.

2 -	c2- Implementation for simple and complicated different control circuits.
3 -	c1- Testing different control circuits by using Tri-logic PLC software programming.
d.General and Transferable Skills: :	
1 -	Work coherently and successfully as a part of a team in the Lab.
2 -	Work in a self-directed manner.
3 -	Write technical reports in accordance with standard scientific guidelines.

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
ÅFinal 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) ñProgrammable Controllers Operations and Applicationsò, Ian G.Warmock. Prentice Hall 1979
(2) ñPIC Microcontroller and Embedded Systemsò Muhammad Ali Mazidi, Danny Causey.2008 by Pearson Prentice Hall, Pearson International Edition.
(3) ñAutomating Manufacturing Systems with PLCsò, Version 4.2, April 3, 2003 Copyright (c) 1993-2003 Hugh Jack.
(4) ñElectrical Control For Machinesò Third Edition, Kenneth B. Rexford, Delmar Publisher Inc.1987.