Course Description Form

1. Course Name:	
Programmable Logic Controller I	
2. Course Code:	
PLCO1332	
3. Semester / Year:	
1st Semester	
4. Description Preparation Date:	
15/2/2024	
5. Available Attendance Forms:	
Personal	
6. Number of Credit Hours (Total) / Number of Units (Total) 3/6	
30/	
7. Course administrator's name (mention all, if more than one name)	
Name: Ass. Lec. Amer Almesaody, Email: 60118@uotechnology.edu.iq	
8. Course Objectives	
Course Objectives	• **Programmable Logic Controllers (PLC) are introduced and their hardware and software are explained.** • **The students learn how to convert the conventional electrical and electronic control circuits to a PLC-based control systems which are more reliable, flexible, easy to troubleshoot, and often cheaper.** • **Common ladder programming techniques and PLC-based ON/OFF control system designs are learned and practiced via common practical applications.** • **using the state-based design method to devise the PLC ladder logic program that could be used to control the processes.**

9. Teaching and Learning Strategies

Strategy	1- The PLC hardware is presented in details at first lectures. 2- The PLC software, User-Program, Processing Methods and the Languages used to program the PLCs are explained. 3- Explain, why and when using the PLC is preferred in control systems by clarifying the similarities and differences between classic control systems and the PLC-based control systems. 4- Teach how to program the PLC using the Ladder Programming Language to control systems and how to convert the hardwired relay logic into a PLC Logic. 5- Teach the students how to use the state-based design method to devise the PLC ladder logic program that could be used to control the processes.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	4		**Introduction to PLCs and PLC hardware**	**Live presentation and discussion**	**Discussing**
3-4	4		**Introduction to PLC Software**	**Live presentation and discussion**	**Discussing**
5-6	4		**PLC Logic and Hardwired Relay Logic**	**Live presentation, discussion and homework**	**Written exam and report evaluation**
7-8	4		**Common Ladder Programming Techniques**	**Live presentation and discussion**	**Discussing**
9-11	6		**State-Based Design**	**Live presentation, discussion**	**Discussing**
12-15	8		**Processes Control Using State-Based Design**	**Live presentation, discussion and homework**	**Written exam and report evaluation**

11. Course Evaluation

20% documented exam
5% Quizzes
5% reports and homework

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1) Hugh Jack, "Automating Manufacturing Systems with PLCs", Version 5.0, 2007. 2) R. Bliesener, F.Ebel, C.Löffler, B. Plagemann, H. Regber, E.v.Terzi, A. Winter, "Programmable Logic Controllers", Festo Basic Level 1 (text Book), 08/2002. 3) LG Industrial Systems, "LG Programmable Logic Controllers, GLOFA GM6 Series", User's Manual. 4) L.A. Bryan and E.A. Bryan, "Programmable Controllers: Theory and Implementation",

	Second Edition, 1997 by Industrial Text Company. 5) W, Bolton, "Programmable Logic Controllers", Fifth Edition, 2009 USA, by Elsevier Newnes.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	