Course Description Form

1. Course Name:
Programmable Logic Controller II

2. Course Code:
PLCO1340

3. Semester / Year:
2nd Semester

4. Description Preparation Date:
15/2/2024

5. Available Attendance Forms:
Personal

6. Number of Credit Hours (Total) / Number of Units (Total)
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	• **Writing PLC programs for advanced tasks to control complex applications.** • **Using program flow instructions and subroutines to simplify control of complex applications.** • **Handling mathematical and comparison function blocks and how use them in practical control systems.** • **Devising and writing user function blocks and save them in a user library for future use when required.** • **Dealing with Analog input/output signals, event and time interrupts.** • **Human Machine Interface (HMI): Principles, connecting and programming.**

9. Teaching and Learning Strategies

Strategy	1- **Explaining how the program flow instructions simplify complex applications control.** 2- **Practicing on using program flow instructions and subroutines in programing the PLC to control complex applications.** 3- **Explaining when and how to use Comparison and Mathematical Function Blocks via different control applications.** 4- **Explaining the advantage of writing, saving and using the user function blocks.** 5- **Teaching the students how to create, save and use the user function blocks later when they are needed, theoretically and practically.** 6- **Teaching the students how to deal with analog input/output signals theoretically and via examples of different practical applications.** 7- **Teaching the students the Human Machine Interface (HMI) Principles and how to connect and program the HMI.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	8		Program flow instructions and subroutines	Live presentation, discussion and homework	Discussing and evaluating report
5	2		Comparison and Mathematical Function Blocks	Live presentation, discussion	Discussing
6-9	8		Creating, saving and using user function blocks	Live presentation, discussion and homework	Written exam and evaluating report
10-14	10		Manipulating analog input/output signals via examples of different practical applications	Live presentation, discussion and homework	Written exam and evaluating report
15	2		HMI principles, connecting and programming	Live presentation, discussion	Discussing

11. Course Evaluation

20% documented exam
5% Quizes
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	