



**Faculty of Engineering – Assiut University
Bachelor Degree**

Mechatronic Engineering Program

Dept. of Mechanical Engineering

Course specification

Programmable Logic Controllers E402

1. Course Aim

Main Aim	To teach the students the principals of PLC systems design and operation
Sub-Aims	<ul style="list-style-type: none">• Understand the characteristics of PLC systems and their components.• Understand the ladder logic.• Deign and test PLC programs for real industrial problems.• Understand the role of PLC in safely critical systems. <p>d3.2 Acquire good organization skills.</p>

2. Course Content

Overview of PLCs, Central Processing Unit, I/O system , Programming, Terminal and peripherals, Relay Logic, Ladder Logic, Timers, Counters, Sequencers, Data Transfer, Mathematical Functions, Numerical Systems and cods, Digital Logic.

(Reference: Faculty bylaw 2004 – program specification)

3. Course Topics		
	Topic	week
1st topic	Logic circuit review	1
2nd topic	Ladder diagram fundamentals & programming	2
3rd topic	Implementing combinational circuits using ladder diagrams	2^{1/2}
4th topic	Statement lists	1
5th topic	FBD	1
6th topic	Sequential logic	2^{1/2}
7th topic	Timers	2
8th topic	Counters	2

4. Grades Distribution			
Assesment Methods		Percentage	
Final Exam		67.66%	
Oral Final Exam			
Med term exam		%XX	
Assessments	Written Exam	15%	33.3%
	Oral Exam	-	
	Tutorial assessment	-	
	Project assessment	5%	
	Model assessment	-	
	Report assessment	-	
	Quiz assessment	6.67%	
	Presentation assessment	4.67%	
	Discussion	-	
	Laboratory test	-	
	Home Exam	-	
Monitoring	-		
Total		%100	

5. List of References	
Course notes	

Required books	<u><i>Programmable Logic Controllers: Theory and Implementation</i></u> by L. Bryan and E. Bryan, 1997, Industrial Text Publishing Company.
Recommended books	<u><i>Programmable Logic Controllers: Programming Methods and Applications</i></u> by John Hackworth and Frederick Hackworth, Prentice Hall
Periodicals, web sites.. etc.	