

Lab work 7 for Embedded System Design

Basic Course Information			
Course Number	2090127	Subject Category	Conculatory IM
Class Format	Lecture	Credit Type and Number of Credits	2
Department	Mechatronics	Student Category	Year 4
Period of Study	Semester 1	Classes per Week	4
Required Materials			
Instructor	Somood	Yamamoto	

Course Objective
The course provides students with lab-work relating to electrical components and mechanical components. At the end of this course, students integrate these components to build their own designed embedded systems.

Evaluation/Rubric	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
Following and Doing Procedure	Demonstrate very good knowledge of the lab procedures and principles	Demonstrate good knowledge of the lab procedures and principles	Lacks the appropriate knowledge of the lab procedures and principles
Data Collection	Measurements are both accurate and precise	Measurements are mostly accurate and precise	Measurements are incomplete, inaccurate and imprecise
Report writing	Content is comprehensive and accurate. Important points are stated clearly with supported data.	Content is comprehensive and accurate. Important points are stated clearly with supported data.	Most of the content is incomplete. Important points are addressed and/or inconsistent.
Safety	Proper safety precautions and awareness are consistently used	Proper safety precautions and awareness are generally used	Proper safety precautions and awareness are missed

Relationship with Learning Outcomes
M(1) Ability to design, propose and develop robotics/ mechatronic systems to solve specific problems
M(2) Ability to design, propose and develop electrical and electronic systems for robotics/ mechatronic systems
M(3) Ability to design, propose and develop mechanical solutions/ systems for robotics/ mechatronic systems

Teaching Method
Outline: The course provides students with lab-work that covered the tools of FA system and its control. Students learn the FX series PLC (Programmable Logic Controller) programming and its application for FA systems.
Class Format: Group work.
Please Note: Complying with safety rules. Lab work topics are subject to be changed due to the school schedule. All reports must be submitted and accepted to get the credit.

Course Plan	Semester 1	Contents and Method of Course	Goals	Related MOC
1st week		Guidance of course and Introduction to PLC	Explaining Guidance of course and Introduction to PLC	W-D 1 1
2nd week		Learn the FX Series PLC	Explaining Learn the FX Series PLC	W-D 1 10
3rd week		Let's Study the Basics (1)	Understanding the role and characteristics of FX series PLC	W-D 1 11
4th week		Let's Study the Basics (2)	Understanding the role and characteristics of FX series PLC	W-D 1 11
5th week		Holiday		
6th week		Beginner Challenge P1/2	Create a control program of PLC for beginners	W-D 1 9
7th week		Beginner Challenge P2/2	Create a control program of PLC for beginners	W-D 1 9
8th week		Wrap UP # 01	Review and summarize learning	
9th week		Midterm Exam week		
10th week		Midterm Exam week		
11th week		Intermediate Challenge P1/3	Create a control program of PLC for intermediate	W-D 1 10
12th week		Intermediate Challenge P2/3	Create a control program of PLC for intermediate	W-D 1 10
13th week		Intermediate Challenge P3/3	Create a control program of PLC for intermediate	W-D 1 10
14th week		Advanced Challenge P1/3	Create a control program of PLC for advanced challenge	W-D 1 10
15th week		Holiday		
16th week		Advanced Challenge P2/3	Create a control program of PLC for advanced challenge	W-D 1 10
17th week		Advanced Challenge P3/3	Create a control program of PLC for advanced challenge	W-D 1 10
18th week		Advanced Challenge Project	Create a simple automation system for advanced challenge	W-D 1 9
19th week		Advanced Challenge Project / Wrap UP # 02	Create a simple automation system for advanced challenge and review and summarize learning	W-D 1 9
20th week		Final Exam week		

	Examination	Quiz	Midterm Evaluation between students	Report	Portfolio	Other
Basic Ability						
Technical Ability						
Interdisciplinary Ability						