

Lab work 4 for Robotics

Basic Course Information		Subject Category	Compulsory IM
Course Number	31005124	Credit Type and Number of Credits	1
Class Format	Experiment / Practical training	Student Category	Year 2
Department	Mechatronics	Classes per Week	3
Period of Study	Semester 2		
Required Materials			
Instructor	Sant Teawchim		Amorn Sakonkankoonne

Course Objective
 This course covers the fundamental engineering lab work topics and activities such as basic electric measurements for general engineering as well as report writing. This course aims to build the strong foundation in lab work skills of students needed to formulate, to analyze, and to solve engineering problems. To develop general engineering skills and mechatronics knowledge.

Evaluation/Rubric	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
Following and Doing Procedure	Demonstrates very good knowledge of the lab procedures and principles	Demonstrates 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.	Some contents are not comprehensive or incomplete. Important points are addressed, but not well supported.	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 robotic/ mechatronic systems to solve specific problems
 - M(2) Ability to design, propose and develop electrical and electronic systems for robotics/ mechatronic systems
 - M(4) Ability to design and develop the software for control robotics/ mechatronic systems.

Teaching Method

Outline: Students will conduct experiment set and measurement result

Class Format: experiment

Please Note: Students are required to ask any questions after sufficient self-learning

Course Plan	Semester 2	Contents and Method of Course	Goals	Related MCC
week 1		Introduction Lab work/Bridge circuit (online)	Understanding principal of Bridge circuit	W-C 1 1 W-C 1 2
week 2		Strain gauge (online)	Understanding principal of strain gauge	W-C 1 1 W-C 1 2 W-C 1 3
week 3		Experimental of Bridge circuit and strain gauge	Understanding experimental of bridge circuit and strain gauge	W-C 1 1 W-C 1 2 W-C 1 3
week 4		Crank and Linear Motion Measurements	Understanding Crank and Linear Motion Measurements	W-C 1 1 W-C 1 3 V-A 2 25
week 5		Thermocouple and Temperature measurement	Understanding Thermocouple and Temperature measurement	W-A 1 12
week 6		Servo motor part 1	Understanding principal of servo motor	W-C 1 1 W-C 1 3
week 7		Servo motor part 2	Understanding principal of servo motor	W-C 1 1 W-C 1 3
week 8		Stepping motor	Understanding principal of stepping motor	W-C 1 1 W-C 1 3
week 9		Writing Report and Summarize	finish report before midterm exam	
week 10		Midterm exam		
week 11		Relay switch	Understanding principal of relay switch	W-C 1 1 W-C 1 3
week 12		Encoder	Understanding principal of Encoder	W-C 1 1 W-C 1 3
week 13		Analogue to Digital Conversion	Understanding principal of Analogue to Digital Conversion	W-C 1 1 W-C 1 3
week 14		Digital to Analogue Conversion	Understanding principal of Digital to Analogue Conversion	W-C 1 1 W-C 1 3
week 15		Kirchhoff's Law	Understanding principal of Kirchhoff's Law	W-C 1 1 W-C 1 2 W-C 1 3
week 16		Superposition Theorem	Understanding principal of Superposition Theorem	W-C 1 1 W-C 1 2 W-C 1 3
week 17		Ho-Thevin Theorem	Understanding principal of Ho-Thevin Theorem	W-C 1 1 W-C 1 2 W-C 1 3
week 18		Writing Report and Summarize	finish report before final exam	
week 19		Final Exam		
week 20		Wrap up	achieve all topic	

Do not

	Performance	Quiz	Midterm Evaluation between students	Report	Inherent	Other
Basic Ability	60			60	10	
Technical Ability						
Interdisciplinary Ability						