Lab work 2 for Introduction Engineering

Basic Course Information			
Course Number	03005123	**Subject Category**	Compulsory (E)
Class Format	Experiment / Practical training	**Credit Type and Number of Credits**	1.5
Department	Electrical and Electronics	**Student Category**	Year 1
Period of Study	Semester 2	**Classes per Week**	1
Required Materials			
Instructor	Shinji Takeshita	Werachai Pattanapiboon	Thanadol Tiangthong

Course Objective

This course provides students with lab-work such as electrical and electronic measurements. Students will learn various measurement techniques and theoretical concepts by practical lab-work, and cultivate cooperation through group work

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 awareness	Proper safety precautions and awareness are consistently used	Proper safety precautions and awareness are generally used	Proper safety precautions arend awareness are missed

Relationship with Learning Outcomes
G(1) Wide knowledge on Science and Engineering and practical ability to apply them to solve problems in the society.
E(1) Ability to design, propose and develop electrical and electronic systems to solve specific problems.
Please change

Teaching Method	
Outline:	Students will conduct some measurements and assembling tester kits
Class Format:	Labwork
Please Note :	To follow safety rules. All materials will be posted on the Google classroom.

Course Plan

Semester 2	Contents and Method of Course	Goals	Related MOC
1st Week	Digital IC 1	Can explain and convert between Binary, Decimal and Hexadecimal numbers	
2nd Week	Digital IC 2	Can use Tinkercad and make simple electric circuit	VI-C 1 14
3rd Week	How to Use Oscilloscope	Can use Oscilloscope	VI-C 1 3
4th Week	Magnetic Field Observation (1) Wire	Can check and draw magnetic field around wire	VI-C 1 3
5th Week	Holiday		
6th Week	Magnetic Field Observation (2) Loop	Can check and draw magnetic field around loop	VI-C 1 3
7th Week	Measurement of Equipotential 1	Can understand and draw equipotential	VI-C 1 1
8th Week	Measurement of Equipotential 2	Can explain relationship between equipotential and electric line of force	VI-C 1 1
9th Week	Holiday		
10th Week	Midterm Exam		
11th Week	Observation of Serial Communication Data	Can observe serial data throughout oscilloscope	VI-C 1 3
12th Week	IC Amp	Can create amplification circuits using IC amplifiers	VI-C 1 15
13th Week	Emission characteristics of Diode	Explain the luminous characteristics and directivity of diodes in comparison with incandescent bulbs	VI-C 1 11
14th Week	Motor and Generator	Learn through experimentation that motors and generators are the same in principle.	VI-C 1 1
15th Week	Measurement of rotational speed for motor	Can understand the principle of IR sensor	
16th Week	Digital IC 3	Can design and make 7 segments circuit	VI-C 1 14
17th Week	Mechanical Relay 1	Understand the functions of switches, lamps, and electromagnetic relays and draw simple sequence diagrams.	
18th Week	Mechanical Relay 2	Can draw AND, OR, and self-holding circuits in ladder diagrams and build circuits.	
19th Week	Final Exam		
20th Week	Wrap Up		

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	Examination	Quiz	Mutual Evaluations between students	Report	Portfolio	Other
Basic Ability				80		
Technical Ability				20		
Interdisciplinary Ability						