

Anan College		Year	2024		Course Title	Electrical and Electronics Laboratory 3
Course Information						
Course Code		1314Q01		Course Category	Specialized / Compulsory	
Class Format		Experiment / Practical training		Credits	Academic Credit: 4	
Department		Course of Electrical Engineering		Student Grade	4th	
Term		Year-round		Classes per Week	前期:4 後期:4	
Textbook and/or Teaching Materials		Textbooks for the experiment will be distributed separately at the time of the experiment.				
Instructor		Kozai Takanori,Matsumoto Takashi,Park Youngsoo,Fujihara Takeshi				
Course Objectives						
1. to be able to work on experiments in cooperation with others 2. Understand the purpose and principles of experiments, and be able to carry out experiments according to correct procedures. 3. To be able to use measurement devices and electronic components correctly. 4. To be able to write a report on the results of the experiment and present it to others. 5. To fully understand the precautions for using various types of electrical equipment and to explain the methods to ensure safety.						
Rubric						
		Ideal Level		Standard Level		Minimum Level
Achievement Goal 1		Able to share roles within a group and cooperate with others in an experiment.		Able to work on experiments in cooperation with others.		Able to work on experiments.
Achievement Goal 2		Understand the purpose and principles of the experiment, and be able to select appropriate equipment and perform the experiment using correct procedures while asking questions of the instructor.		Understand the purpose and principles of the experiment and be able to carry out the experiment using correct procedures.		Perform the experiment according to the correct procedure based on the experiment manual.
Achievement Goal 3		Understand how to use measurement equipment and the basic characteristics of electronic components, and be able to use them correctly.		Correctly use measuring devices and electronic components.		Measuring devices and electronic components can be used.
Achievement Goal 4		To be able to organize and analyze the results of experiments objectively, and report and present them to others.		To be able to summarize the results of the experiment in a report and present it to others.		To be able to summarize experimental results in a report and present it to others.
Achievement Goal 5		Able to judge for oneself what precautions should be taken in the use of various types of electrical equipment and encourage others to use them safely.		Fully understand the precautions for the use of various types of electrical equipment and be able to explain how to ensure safety.		Able to Explain how to ensure safety.
Assigned Department Objectives						
学習・教育到達度目標 D-2 学習・教育到達度目標 D-3 学習・教育到達度目標 D-4 学習・教育到達度目標 E-1 学習・教育到達度目標 E-2						
Teaching Method						
Outline		Electric currents and voltages handled in electrical and electronic engineering are invisible to the eye. Therefore, there are cases in which the essence and specific phenomena cannot be understood even if they are learned in the classroom. The electrical and electronic engineering experiment is a subject in which students observe basic physical phenomena using measuring instruments, etc., to understand and consolidate the essence of what they have learned in the classroom. In addition, students are trained in the ability to organize data and communicate their understanding to others by writing reports on the results of experiments. In this course, instructors who have been in charge of design and maintenance of electrical equipment and mechanical and plant control design and maintenance at companies utilize their practical experience to conduct experiments and practical training.				
Style		Experiments will be conducted in groups or individually according to a schedule to be announced separately. Reports are to be prepared during self-study time. However, if the instructor gives you any other instructions, you must follow them. In addition, a written test on the content of the experiment will be given. In addition, the students will be required to start their own mock company as one of the themes of the experiment throughout the year to cultivate the abilities required for working adults. During the report week of the experiment, students will conduct actual work at a mock company, prepare a daily work report, and make presentations at a debriefing session. This course is for academic credit, so students will be required to write reports, etc. as part of their pre- and post-learning.				
Notice		Detailed instructions regarding the course will be communicated separately and must be observed.				
Characteristics of Class / Division in Learning						
<input type="checkbox"/> Active Learning		<input type="checkbox"/> Aided by ICT		<input type="checkbox"/> Applicable to Remote Class		<input checked="" type="checkbox"/> Instructor Professionally Experienced
Course Plan						
			Theme	Goals		
1st Semester r	1st Quarter	1st	Guidance and Exercises			
		2nd	Vector trajectory of an AC circuit	Able to Explain methods of analyzing AC circuits		
		3rd	Electrotechnical Innovation Practice	Able to work in groups using their own skills		
		4th	Transformer Characteristic Tests	Able to Explain the mechanism and characteristics of transformers		

2nd Semester		5th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		6th	Experiments on PLCs	Able to design sequence circuits using PLC
		7th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		8th	test	
	2nd Quarter	9th	Experiments on series resonance characteristics of RLC circuits	Able to Explain series resonance characteristics.
		10th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		11th	Characteristic Tests of DC Split Winding Motors and Generators	Able to explain the use of DC shunt motors and generators
		12th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		13th	LCM measurement with AC bridge	Explain how to measure each parameter such as resistance, inductance, capacitance, and impedance
		14th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		15th	test	
		16th		
	3rd Quarter	1st	Guidance and Exercises	
		2nd	Characteristic testing of photodiodes and solar cells	Able to measure electrical characteristics of semiconductor devices
		3rd	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		4th	Dielectric breakdown voltage measurement	Able to Explain material testing methods using high voltage
		5th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		6th	test	
		7th	Edge AI Embedded Device Control	Able to explain AI technology. Able to perform device control.
		8th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
	4th Quarter	9th	Operational amplifier Experiment 1	To be able to explain and design various types of amplification circuits
		10th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		11th	Operational amplifier Experiment 2	Ability to design various waveform generation circuits using semiconductor devices
		12th	test	
		13th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		14th	Programming with LabVIEW	Able to perform LabVIEW programming
		15th	Electrotechnical Innovation Practice	Able to work in groups using their own skills
		16th		

#### Evaluation Method and Weight (%)

	Midterm / Final exam	Quiz	Portfolio	Presentation / Attitude	other	Total
Subtotal	0	20	70	10	0	100
Basic Proficiency	0	0	0	0	0	0
Specialized Proficiency	0	20	70	10	0	100
Cross Area Proficiency	0	0	0	0	0	0