

Tsuyama College		Year	2021	Course Title	Basic Electrical Controls
Course Information					
Course Code	0023	Course Category	Specialized / Compulsory		
Class Format	Lecture	Credits	School Credit: 1		
Department	Department of Integrated Science and Technology Electrical and Electronic Systems Program	Student Grade	2nd		
Term	Second Semester	Classes per Week	2		
Textbook and/or Teaching Materials	Textbooks : "Naruhodo Nattoku! Shiikensu Seigyo ga Wakaru Hon" (Ohm Shya)				
Instructor	MAEHARA Kenji				
Course Objectives					
<p>Learning purposes :</p> <p>To acquire the knowledge of the theory of sequence control and the sequence circuit diagram and how to compose of a concrete sequence circuit, to feed the basic abilities leading to engineering applications.</p> <p>Course Objectives :</p> <p>1. To understand the overview of overall control.</p> <p>2. To understand the constitution and appliances of control and learn how to draw relay sequence diagrams.</p> <p>3. To learn logic, and create various basic control circuits using relay sequences.</p>					
Rubric					
	Excellent	Good	Acceptable	Not acceptable	
Achievement 1	The student understands various terms and can reliably explain control.	The student understands basic terms and can reliably explain the basics of the control.	The student generally understands basic terms and can roughly explain control.	The student cannot understand basic terms and explain control.	
Achievement 2	The student understands the constitution and various appliances of control, and can draw appropriate relay sequence diagrams.	The student understands the constitution and main appliances of control, and can almost draw relay sequence diagrams.	The student generally understands the constitution and main appliances of control, and can draw a basic relay sequence diagram.	The student cannot understand the constitution and appliances of control, and draw a relay sequence diagram.	
Achievement 3	The student understands the relationship between logic and relay sequences, and can reliably create various control circuits.	The student understands the relationship between logic and relay sequences, and can reliably create basic control circuits.	The student generally understands the relationship between logic and relay sequences, and can roughly create basic control circuits.	The student cannot understand the relationship between logic and relay sequences, and create the learned control circuit.	
Assigned Department Objectives					
Teaching Method					
Outline	<p>General or Specialized : Specialized</p> <p>Field of learning : Information and Control</p> <p>Foundational academic disciplines : Electric electronics/Control, Systems engineering</p> <p>Relationship with Educational Objectives : This class is equivalent to "(3) Acquire deep foundation knowledge of the major subject area".</p> <p>Relationship with JABEE programs : The main goal of learning / education in this class is "(A), A-2".</p> <p>Course outline : In this subject, the student learns the basic matters of sequence control, which is one of the main technologies of Factory Automation technology, and the basic method of constructing a circuit of relay sequence.</p>				
Style	<p>Course method : This course is opened in the second semester for 2 credit hours(90 minutes) in a week. Class proceeds using a projector to explain following the contents of the textbook, the blackboard will also be used for items not included in the textbook. The student learns the basics of sequence control and advances to the concrete circuit. In addition, practice exercises will be assigned so that understanding deepens.</p> <p>Grade evaluation method : Regular exams (70%) + Practice (20%) + Portfolio (10%). Examinations will be conducted a total of 2 times, and the evaluation ratios will be the same. Students with poor results may be retested. The limit of the score after retest is 60 points.</p>				
Notice	<p>Precautions on the enrollment : Students must take this class (no more than one-third of the required number of class hours may be missed) in order to complete the 2nd year course.</p> <p>Course advice : The sequence control is applied widely in the industrial field, and the contents are extensive. Review the content learned in the class and understand it, and read the textbook for preparing next lesson, every time.</p> <p>Foundational subjects : Fundamentals of Integrated Science and Technology (1st year), Experimental Practice for Science and Engineering (1st) Related subjects : Electrical Apparatus I (2nd year)</p> <p>Attendance advice : If you are late for the start time, you will be treated as absent after 10 minutes.</p>				
Characteristics of Class / Division in Learning					
<input type="checkbox"/> Active Learning		<input type="checkbox"/> Aided by ICT		<input checked="" type="checkbox"/> Applicable to Remote Class	
				<input type="checkbox"/> Instructor Professionally Experienced	

Must complete subjects				
Course Plan				
			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance, Electric basic knowledge, Sequence control in surroundings.	Know about the general flow of the class. Understand basic knowledge of electric for control and a meaning of the sequence control.
		2nd	Kind of the sequence control, term of the control, sequence control appliances.	Learn a kind of the sequence control and understand a term and constitution of the control.
		3rd	Appliances used for the control (Switch, Relay, Indication appliance).	Know the appliances used for the control and understand the work.
		4th	Appliances used for the control (Detection appliance, Drive apparatus).	Know the appliances used for the control and understand the work.
		5th	Electrical symbols, Sequence control symbols, How to draw sequence diagram.	Learn symbols and letters used for sequence diagram, and how to draw sequence diagram.
		6th	A circuit example and it's sequence diagram.	Understand control of the circuit used make contact, breake contact and electromagnetic relays.
		7th	Binary signal, Truth table, Logic symbol, Basic logic circuit and the movement.	Understand the basic logic circuit and it's operation as the basics of the control.
		8th	2nd semester mid-term exam.	
	4th Quarter	9th	Return and commentary of exam answers. Prohibit input, Self-holding circuit.	Understand the insufficient point of own exam answer. Understand the prohibition movement by break contact and the self-holding circuit.
		10th	Basic control circuit (Interlock circuit, Priority circuit).	Understand the interlock control and various priority controls.
		11th	Basic control circuit (Priority circuit, Timer circuit).	Understand other priority controls and the control used timer.
		12th	Applied example of the relay sequence control (Quick press detection system, etc).	Understand the example of the practical sequence circuit.
		13th	Applied example of the relay sequence control (Driving control of the motor, etc).	Understand the example of the practical sequence circuit.
		14th	Summary.	Can explain various priority circuits and the motor driving circuit by practice.
		15th	(2nd semester final exam)	
		16th	Return and commentary of exam answers.	Understand the insufficient point of own exam answer.
Evaluation Method and Weight (%)				
	Examination	Portfolio	Practice	Total
Subtotal	60	20	20	100
Basic Proficiency	0	0	0	0
Specialized Proficiency	60	20	20	100
Cross Area Proficiency	0	0	0	0