

Tsuyama College		Year	2020		Course Title	Design of Electrical and Electronic Machinery
Course Information						
Course Code	0076		Course Category	Specialized / Elective		
Class Format	Lecture		Credits	Academic Credit: 2		
Department	Department of Integrated Science and Technology Communication and Informations System Program		Student Grade	4th		
Term	Second Semester		Classes per Week	2		
Textbook and/or Teaching Materials	Textbooks : "Denki sekkei gairon", Hirose, Sumitani, (Denki Gakkai)					
Instructor	YAGI Hideyuki					
Course Objectives						
Learning purposes : Acquire basic design skills by understanding the basic concept of electrical and electronic equipment design.						
Course Objectives : 1. Understand the basic concept of electrical and electronic machinery design. 2. Explain knowledge (standards, electrical materials) related to electrical and electronic machinery design. 3. Explain the procedure of electrical and electronic machinery design and the matters to be considered in the design. 4. Explain the design factors and performance of electrical and electronic machinery.						
Rubric						
	Excellent		Good		Acceptable	Not acceptable
Achievement 1	The student can show the concept of machinery design and explain detailed design methods.		The student can understand the meaning of design and explain the basic design method.		The student can explain the basic design method.	The student will not try to explain the basic design method.
Achievement 2	The student are proficient in standards and material knowledge.		The student have a good understanding of basic standards and materials.		The student understand important standards and materials.	The student will not try to understand important standards and materials.
Achievement 3	The student understand detailed design procedures and empirical formulas.		The student understand basic design procedures and important matters.		The student understand the key points of basic design.	The student will not try to understand the key points of basic design.
Achievement 4	The student can explain design factors and performance in detail.		The student can fully explain the basics of design factors and performance.		The student can explain the basics of design factors and performance.	The student will not try to explain the basics of design factors and performance.
Assigned Department Objectives						
Teaching Method						
Outline	General or Specialized : Specialized Field of learning : Electrical and electronic engineering Required, Elective, etc. : Elective subjects Foundational academic disciplines : Power engineering / Electric and electronic materials / Electron device and electronic equipment Relationship with Educational Objectives : This class is equivalent to "(3) Acquire deep foundation knowledge of the major subject area". Relationship with JABEE programs : The main goals of learning / education in this class are "(A) ..., A-3: ...", also "D-2" is involved. Course outline : Acquire the comprehensive knowledge necessary for designing electrical equipment.					
Style	Course method : In this class, we will focus on writing on the board. In addition, exercises will be imposed every time outside class hours according to the progress of learning so that understanding can be deepened. Grade evaluation method : Exercise(40%) + Examinations(60%). When retesting, the retest result is included in the regular test result with an upper limit of 60 points.					
Notice	Precautions on the enrollment : This is a "class that requires study outside of class hours". Classes are offered for 15 hours per credit, but 30 credit hours are required in addition to this. Follow the instructions of your instructor for these studies. Course advice : Review Electromagnetism. Foundational subjects : Electrical and Electronic Circuit (2nd year), Electromagnetism I (3rd), Electronic Circuits I (3rd) Related subjects : Electronic Circuits II (4th year), Power Electronics (5th), Design of Electronic and Information Circuits (5th), Electrical and Electronic Materials (5th)					
Course Plan						
			Theme		Goals	
2nd Semester	3rd Quarter	1st	Guidance			
		2nd	Standards, specifications		Design standards and specifications	
		3rd	Electrical material		Conductive material, magnetic material, insulating material	
		4th	Thermal circuit calculation		Thermal circuit calculation	

		5th	Magnetic circuit calculation I	Basic calculation of magnetic circuit
		6th	Magnetic circuit calculation II	Magnetic circuit calculation with gap
		7th	Electromagnetic force application	Calculation of electromagnetic force utilization equipment
		8th	2nd semester mid-term exam	
	4th Quarter	9th	Return and commentary of exam answers	
		10th	Induced electromotive force	Basic formula of rotating machine and stationary equipment
		11th	Iron loss calculation	Design application by material, structure and frequency
		12th	Copper loss calculation	Design application by material, structure and frequency
		13th	Machinery heat calculation	Loss and temperature rise
		14th	Economic accounts	Economic design of machinery
		15th	(2nd semester final exam)	
		16th	Return and commentary of exam answers	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Exercise	Total
Subtotal	60	0	0	0	0	40	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	60	0	0	0	0	40	100
Cross Area Proficiency	0	0	0	0	0	0	0