

Toyama College		Year	2020		Course Title	Parameter Design	
Course Information							
Course Code	0029			Course Category	Specialized / Elective		
Class Format	Lecture			Credits	Academic Credit: 2		
Department	Control Information Systems Engineering Course			Student Grade	Adv. 2nd		
Term	First Semester			Classes per Week	2		
Textbook and/or Teaching Materials	Quality Engineering for Beginners -For Understanding the Technology- ©Koya Yano 2013 CORONA PUBLISHING CO.,LTD. ISBN978-4-339-02475-3						
Instructor	Mizutani Junnosuke						
Course Objectives							
Student understands the significance and basic function of Two-step optimization. Student be able to access a system based on the concept of Quality Engineering.							
Rubric							
		Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)		Unacceptable Level of Achievement (Fail)		
Evaluation 1		Student be able to propose an experiment of Assessment of Functionality perfromability.	Student understands the meaning of Two-step optimization.		Student not understands the meaning of Noise factor.		
Evaluation 2		Student be able to devise a basic function.	Student be able to calculate the S/N ratio of Dynamic characteristics.		Student not be able to calculate the S/N ratio of Static characteristics.		
Evaluation 3		Student be able to estimate the gain of S/N ratio under Optimum condition and normal condition.	Student be able to prepare a Graph of factorial effects.		Student not be able to plan an experiment from the level allocated on an Orthogonal array.		
Assigned Department Objectives							
Teaching Method							
Outline	1. This course explores the outline of Parameter design as one of the main methods in the realm of off-line Quality Engineering. 2. This course aims to provide the students with sufficient knowledge of Two-step optimization that characterizes Parameter designs through practical exercises. 3. Students are expected to become engineers capable of analyzing and evaluating the basic function of systems by acquiring the concept of Parameter design.						
Style	Lecture and exercise by an instructor.						
Notice	Lecture and exercise by lecturer Study based on example questions on text book and through exercise. The recognition of credit requires 60 points or more rating.						
Course Plan							
			Theme		Goals		
1st Semester	1st Quarter	1st	Explanation of Syllabus Background of Quality Engineering		Explanation of Syllabus Approach to Quality Engineering Robust parameter design (RPD) Two-step optimization		
		2nd	Approach to Parameter Design		S/N ratio: Meaning and calculation		
		3rd	Approach to Parameter Design		S/N ratio and Sensitivity: Meaning and calculation		
		4th	Knowledge required for Parameter Design		Control factor and Orthogonal array		
		5th	Knowledge required for Parameter Design		Noise factors and Compounded noise factors		
		6th	Exercise 1		Product development by Nominal-is-best response		
		7th	Knowledge required for Parameter Design		Approach to Dynamic characteristics and calculation of S/N ratio		
		8th	Knowledge required for Parameter Design		Product development by Dynamic characteristics		
	2nd Quarter	9th	Exercise 2		Product development by Dynamic characteristics		
		10th	Procedure for Parameter Design of Dynamic characteristics		Preparation of auxiliary table and response graph		
		11th	Procedure for Parameter Design of Dynamic characteristics		Estimation of gain and confirmation run		
		12th	Exercise 3		Parameter design of Dynamic characteristic		
		13th	Exercise 4		Parameter design of Dynamic characteristics		
		14th	Assessment of Functionality perfromability		Definition of Functionality perfromability Assessment procedure fo Functionality perfromability		
		15th	Term-end Examination		Approach to Parameter design Calculation exercise		
		16th	Review		Answers of examination Review of achievement Questionnaire on course		
Evaluation Method and Weight (%)							
	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	50	0	0	0	0	50	100

Basic Ability	0	0	0	0	0	0	0
Technical Ability	50	0	0	0	0	50	100
Interdisciplinary Ability	0	0	0	0	0	0	0