

Toyama College		Year	2022		Course Title	Control Engineering I
Course Information						
Course Code	0084			Course Category	Specialized / Elective	
Class Format	Lecture			Credits	School Credit: 1	
Department	Department of Electronics and Computer Engineering			Student Grade	4th	
Term	First Semester			Classes per Week	2	
Textbook and/or Teaching Materials						
Instructor	Oguma Hiroshi					
Course Objectives						
Electronics and Compter Engineering students are provided with fundamentals in classical control theory. While understanding the action of a system, I aim at understanding relevance with an electric circuit. Students can (1) master Laplace transform and the inverse Laplace transform which is the mathematics for analyzing classical control theory, (2)deduct a transfer function from the given block diagram, (3) understand the relationship of a fundamental electric circuit and block diagram.						
Rubric						
		Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)		Unacceptable Level of Achievement (Fail)	
Evaluation 1		Able to calculate Laplace transform and an inverse Laplace transform unrestrictedly	Able to Calculate Laplace transform and inverse Laplace transforms, such as a delta function, a unit function, trigonometric functions, and an exponential function.		Not able to calculate Laplace transform and inverse Laplace transforms, such as a delta function, a unit function, trigonometric functions, and an exponential function.	
Evaluation 2		Able to simplify the block diagram of feedback and feedforward, and derive a transfer functionun restrictedly.	Able to simplify the block diagram of feedback and feedforward, and derive a transfer function.		Not able to simplify the block diagram of feedback and feedforward, and derive a transfer function.	
Evaluation 3		Able to derive a block diagram and a transfer function from an electric circuit restrictedly.	Able to derive a block diagram and a transfer function from an electric circuit.		Not able to derive a block diagram and a transfer function from an electric circuit.	
Assigned Department Objectives						
JABEE B2 ディプロマポリシー 1						
Teaching Method						
Outline	Electronics and Compter Engineering students understands the contents of a lesson indicated to the syllabus, and they can perform explanation and calculation.					
Style	I aim at mastering of the contents of this course by lectures and drills.					
Notice	<Confirmation examination> I will carry out the confirmation examination, when evaluation requests and carries out to those who are less than 60 points and sufficient study is accepted.					
Characteristics of Class / Division in Learning						
<input checked="" 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	Guidance		
		2nd	Rudimentary mathematics for control engineering (1)	Impulse response, convolution		
		3rd	Rudimentary mathematics for control engineering (2)	Laplace transform		
		4th	Rudimentary mathematics for control engineering (3)	Inverse - Laplace transform		
		5th	Rudimentary mathematics for control engineering (4)	Partial fraction expansion		
		6th	Transfer function (1)	Time response and frequency response		
		7th	Transfer function (2)	Deduction of a transfer function		
		8th	Midterm exam			
	2nd Quarter	9th	System and control (1)	Feedback system		
		10th	System and control (2)	Simplification of block diagram		
		11th	Transient response (1)	Transient response of RC series circuit and RL series circuit		
		12th	Transient response (2)	Transient response of RL, RC, RCL circuit and LC circuit		
		13th	Electric circuit and block diagram	Deduction of block diagram on electric circuit		
		14th	Electric circuit block diagram, atransfer function, and step response	Deduction of step response of the block diagram drawn from the electric circuit		
		15th	Term-end examination			
		16th	Scholastic evaluation and check			
Evaluation Method and Weight (%)						

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Ability	20	0	0	0	0	0	20
Technical Ability	80	0	0	0	0	0	80
Interdisciplinary Ability	0	0	0	0	0	0	0