Oyama College	Year	2022	Course Title	Signal Processing

Course Information

Course Code	0107	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Department of Innovative Electrical and Electronic Engineering	Student Grade	5th
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Handouts		
Instructor	HIRATA Katsumi		

Course Objectives

1. To find the frequency response functions from the impulse response for basic linear shift-invariant systems.
2. To explain the sampling theorem and aliasing.
3. To find the discrete Fourier transforms for fundamental time series.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
1. Be able to find the frequency response functions from the impulse response for basic linear shift-invariant systems. (Evaluated using assignments and exams)	Very correctly	Almost correctly with few errors	Never or with many errors
2. Be able to explain the sampling theorem and aliasing. (Evaluated using assignments and exams)	Very correctly	Almost correctly with few errors	Never or with many errors
3. Be able to find the discrete Fourier transforms for fundamental time series.(Evaluated using assignments and exams)	Very correctly	Almost correctly with few errors	Never or with many errors

Assigned Department Objectives

学習・教育到達度目標 ④
JABEE (A) JABEE (d-1) JABEE (g)

Teaching Method

Outline	This course deals with the basic concepts and principles of sampling, frequency analyzing, and linear system which are essential on digital signal processing. Keywords: signal, linear shift-invariant system, Fourier transform, spectrum, DFT
Style	This course consists of lectures and exercises. Student have to prepare and review every classes.
Notice	Students have to submit report for each assignment written in Theme and Method, Course Plan by designated date. No less than a third of reports are required to be submitted to pass this course.

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Orientation	To understand the outline, the style, notices, and contents of this course.
		2nd	Signal and Systems <1> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about representation of discrete time signals.
		3rd	Signal and Systems <2> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about operations of discrete time signals.
		4th	Signal and Systems <3> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about operations of discrete time signals.
		5th	Fourier Analysis <1> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about frequency domain representation of discrete time signals.
		6th	Fourier Analysis <2> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about discrete time Fourire transform.
		7th	Fourier Analysis <3> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about discrete time Fourire transform.

		8th	Midterm exam Assignment: Review the contents for midterm exam.	
	2nd Quarter	9th	中間試験の解説、Sampling <1> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about signal sampling.
		10th	Sampling <2> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about quantization and conversion of sampling rate.
		11th	Sampling <3> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about quantization and conversion of sampling rate.
		12th	The DFT <1> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about the principle of DFT.
		13th	The DFT <2> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about properties of DFT.
		14th	The DFT <3> Assignment: Summarize the contents of the designated part of the handout in a page of A4 sheet.	To find fundamental solutions for problems about properties of DFT.
		15th	(Final exam)	
		16th	Review of the final exam Assignment: Summarize a digital signal processing applied technology in 2000 characters.	To explain a digital signal processing applied technology.

Evaluation Method and Weight (%)

	Mid-term exam	Final exam	Report	Total
Subtotal	30	30	40	100
基礎的能力	0	0	0	0
専門的能力	30	30	40	100
分野横断的能力	0	0	0	0