Digital Signal Processing

1. Course Description

In this course, we learn the digital signal processing to pick the purpose signal by measuring the analog signal, its digitalization and convert mathematically. First, we learn the signal type, continuous-time system, discrete time system and difference equation. Then, we lean the designing of the digital filter. This course is related to DP4E.

2. Course Objectives

(1) We will learn how to find differential equation form block diagram
(2) We will learn how to estimate and program property of digital filter

3. Grading Policy

Evaluation rate are Report 20 %, midterm exam 40%, final exam(40%).
All the reports should be submitted.

4. Textbook and Reference

Textbook
No textbook in this course, but we use LMS and handouts.

5. Requirements(Assignments)

Preparation for the class: 1.5 hours
Review of the class ：1.5 hours

6. Note

Course contents might be modified.

7. Schedule

[1]	Guidance
[2]	Signal and Systems (Continuous-time system and discrete time system)
[3]	Fourier Series and Laplace transform
[4]	Linear Time-invariant Discrete-time Systems 1: Time domain
[5]	Linear Time-invariant Discrete-time Systems 2: Frequency domain
[6]	Linear Time-invariant Continuous-time Systems (System representation in frequency domain and Laplace transform)
[7]	Midterm exam and review
[8]	Sampling theorem
[9]	Analog and Digital filter
[10]	Character of filters
[11]	Designing of filter 1: FIR filter
[12]	Designing of filter 2: IIR filter
[13]	Designing of filter 3: Comb filter
[14]	Designing of filter 4: Filter designing exercise
[15]	Final exam and review