

# Digital Signal Processing2

Syllabus Number

4D302

Special Subjects

Elective 2 credit

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## 1. Course Description

This course is about theory of digital signal processing and its technique. Mainly, Fourier transform and techniques of transformation are discussed. For this, procedure of discrete Fourier transform (DFT) and also fast Fourier transform (FFT) are studied. By using a textbook, students will understand DFT, FFT and those implementation.

This course relates to DP2 and DP4.

## 2. Course Objectives

Main objectives of this course are as follows;

1. To know DFT, FFT and those difference.
2. To know calculation of DFT and FFT.
3. To know how to process FFT for digital data.

## 3. Grading Policy

Two reports (total 50%). Reports are reviewed when they are returned.

Final exam (50%)

## 4. Textbook and Reference

Textbook

Kiya Japanese textbook (ISBN: 978-4274216060) is used.; same text as "Digital Signal Processing 1."

Ohmsha, Ltd.

## 5. Requirements(Assignments)

For reporting, students will solve exercises in textbook. Students can access the solutions. However, you're required to understand them.

The exercises are MORE difficult than the course "Digital Signal Processing 1."

Mathematical bases of basic mathematical analysis and linear algebra are required.

## 6. Note

Reentry, many good contents of digital signal processing can be found in web. However, it could be difficult to find well-organized one. At first, you should try to study with the textbook for this class.

## 7. Schedule

- |      |                               |
|------|-------------------------------|
| [1]  | Textbook chapter 7.1          |
| [2]  | Textbook section 7.2          |
| [3]  | Textbook section 7.3 to 7.4   |
| [4]  | Textbook section 8.1          |
| [5]  | Textbook section 8.2 to 8.3   |
| [6]  | Textbook section 8.4          |
| [7]  | Textbook column F, G          |
| [8]  | Textbook section 9.1          |
| [9]  | Textbook section 9.2 to 9.3   |
| [10] | Textbook section 9.4          |
| [11] | Textbook section 10.1 to 10.2 |
| [12] | Textbook section 10.3         |
| [13] | Textbook section 10.4         |
| [14] | Textbook section 10.5         |
| [15] | Summary. Revision reports.    |