Digital Communication

Syllabus Number 4F302

Special Subjects
Elective 2 credit

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1. Course Description

The aim of this course is to help students acquire an understanding of the fundamental principles of digital communication. It also enhances the development of student's skill in carrying out experiments on digital signal processing. Specifically, we will acquire necessary skills and knowledge on DP2 and DP4.

2. Course Objectives

The goals of this course are to:
- be able to understand and explain the features of Fourier transform.
- be able to understand and explain digital modulation/demodulation techniques.
- be able to understand and explain fiber-optic communication systems.

3. Grading Policy

The students who submit all assignments are able to take the course evaluation test.
To receive credit for this course, you must earn a grade of at least 60% on the course evaluation test.

4. Textbook and Reference

Textbook
The study guide of the course will be posted on the course website.
(Text 1) ISBN-13: 978-4339012033 (In Japanese)
(Text 2) ISBN-13: 978-4339007909 (In Japanese)

5. Requirements(Assignments)

This course will be taught in Japanese.
This course requires the fundamental knowledge on calculus.

6. Note

7. Schedule

[1] Trigonometric Fourier Series
[2] Complex Fourier Series
[3] Fourier Transform
[4] Properties of Fourier Transform
[5] Exercises 1 (Chap. 3 [1], [2]) (Optional Experiment: SDR, See the study guide of the course)
[6] Exercises 2 (Chap. 3 [3], [4]) (Optional Experiment: SDR, See the study guide of the course)
[7] Pulse Code Modulation
[8] Over View of Phase Shift Keying
[9] Phase Shift Keying Modulation Circuit
[10] Phase Shift Keying Demodulation Circuit
[11] Optical Fibers for Communication
[12] Over View of Fiber-Optic Communication Systems
[13] Dispersion and Loss Limitations on the Performance of Fiber-Optic Communication Systems
[14] Review 1: corrected assignments [A]
[15] Review 2: corrected assignments [B]