

# Communication Engineering

Syllabus Number

4F301

Special Subjects

Elective 2 credit

MURO KOICHI

## 1. Course Description

The aim of this course is to help students acquire an understanding of the fundamental principles of communication engineering. It also enhances the development of student's skill in carrying out experiments on modulation systems. 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 microwave communication.
- be able to understand and explain the features of common multiple accesses.
- be able to understand and explain common modulation techniques.
- be able to understand and explain microwave relay systems.
- be able to understand and explain RADAR 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: 978-4274222566 (In Japanese)

(Text 2) ISBN-13: 978-4339007909 (In Japanese)

## 5. Requirements(Assignments)

This course will be taught in Japanese.

This course will be required the fundamental knowledge on physics.

## 6. Note

## 7. Schedule

- |      |   |
|------|---|
| [1]  | The Basics of Waves and Antenna Gain        |
| [2]  | Microwave Propagation                       |
| [3]  | An Overview of Analog Modulations           |
| [4]  | An Overview of Digital Modulation           |
| [5]  | The Features of PSKs                        |
| [6]  | PSK Demodulation                            |
| [7]  | Noise Figure                                |
| [8]  | Pulse Code Modulation                       |
| [9]  | Time Division Multiplexing (TDM)            |
| [10] | Code Division Multiplexing (CDM)            |
| [11] | Microwave Relay Systems                     |
| [12] | Satellite Communication Systems             |
| [13] | Radio Detection and Ranging (RADAR) Systems |
| [14] | Review 1: corrected assignments [A]         |
| [15] | Review 2: corrected assignments [B]         |