

# System Sciences

Syllabus Number

4C308

Special Subjects

Elective 2 credit

YAMANE, Ken

## 1. Course Description

The main topics are as follows: systems approach, optimization, reliability, modeling and simulation, and control. This class also deals with academic fields related to systems science.

## 2. Course Objectives

This course aims at expanding students' knowledge in the field of systems engineering and systems science. Students will learn basic skills for developing complex engineering systems.

## 3. Grading Policy

Students are evaluated with a term exam.

## 4. Textbook and Reference

Textbook

A Japanese book (ISBN978-4-339-02383-1) is used.

## 5. Requirements(Assignments)

## 6. Note

## 7. Schedule

- |      |  |
|------|--|
| [1]  | Introduction   |
| [2]  | What is a system?  |
| [3]  | Systems approach   |
| [4]  | System design technique                                  |
| [5]  | System optimization                                      |
| [6]  | System reliability                                       |
| [7]  | System modeling and simulation                           |
| [8]  | System control   |
| [9]  | Summary, mid-term exam                                   |
| [10] | Intelligent system                                       |
| [11] | Complex system I: fractal, chaos, etc.                   |
| [12] | Complex system II: cellular automaton, percolation, etc. |
| [13] | Game theory  |
| [14] | System theory  |
| [15] | Summary, term exam                                       |