Robot Control

Syllabus Number 3E333
Special Subjects
Elective 2 credit
FUKUSHIMA YUTA

1. Course Description

We learn behavior of dynamical systems with inputs, how their behavior is modified by feed back and mathematical tools such as Laplace transform, etc.
This course is related to DP4

2. Course Objectives

(1) We will learn how to draw block diagram of dynamic system
(2) We will learn how to model continuous system
(3) We will learn how to analyze dynamic system using frequency response
(4) We will learn how to analyze stability of dynamic system

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
We also 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] Introduction of Control System
[2] Types of robot and its construction
[3] Drive system of the robot and control
[4] Embedded software
[5] Mechanics required to control robots
[6] Mathematics required to control robots
[7] Calculation of hand position of 2-axis arm robot
[8] Midterm exam and review
[9] Control design exercise 1-1: Position control of the 1-axis arm robot (Modeling)
[10] Control design exercise 1-2: Position control of the 1-axis arm robot (Equivalent circuit and parameter estimation)
[11] Control design exercise 1-3: Control of the 1-axis arm robot (Control system design and simulation)
[12] Control design exercise 2-1: Position control of the wagon (Modeling)
[13] Control design exercise 2-2: Position control of the wagon (Equivalent circuit and parameter estimation)
[14] Control design exercise 2-3: Position control of the wagon (Control system design and simulation)
[15] Final exam and review