Robotics

Syllabus Number 1H305
Basic Major Subjects
Elective Requisites 2 credit

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1. Course Description

In this course, students will learn the basics of robotics: mechanism, sensor, actuator, and kinematics. In addition, the latest robots will be introduced. (Related to DP2 and DP4)

2. Course Objectives

The aim of this course is to learn the basics of robotics, particularly the kinematics.

3. Grading Policy

Reports (20%) and final examination (80%)
Answer of reports will be explained in next lecture.

4. Textbook and Reference

Reference
Japanese book (ISBN: 978-4627913820)

5. Requirements(Assignments)

Teaching materials will be shown on LMS. Student must prepare for next lecture by it (1.5 hours).

6. Note

7. Schedule

[1] Introduction
[2] Robot sensor 1: Robot control and sensor
[3] Robot sensor 2: rotary angle sensors
[4] Robot sensor 3: Force sensors
[5] Robot sensor 4: gyro/acceleration sensors
[6] Robot actuator 1: classification and comparison of actuators
[7] Robot actuator 2: DC motor
[8] Robot actuator 3: gear reducer
[9] Robot actuator 4: other actuators
[10] Robot kinematics 1: mechanism of robot arm
[11] Robot kinematics 2: Forward kinematics
[12] Robot kinematics 3: Inverse kinematics
[13] Robot kinematics 4: Jacobian matrix and singularity
[14] Recent Topics
[15] Final examination and summary