

# Robot Engineering

Special Subjects  
Elective 2 credit

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## 1. Course Description

In this course, students will learn the basics of robotics: mechanism, kinematics, and dynamics. In addition, the latest robots will be introduced (Related to DP1).

## 2. Course Objectives

The aim of this course is to learn the technologies of robotics, particularly kinematics and dynamics.

## 3. Grading Policy

Grading is determined comprehensively with the final examination (or report).

## 4. Textbook and Reference

## 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

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|------|--|
| [1]  | Introduction                             |
| [2]  | Kinematics: Mechanism of robot arm       |
| [3]  | Kinematics: Coordinate transformation    |
| [4]  | Kinematics: Link coordinate system       |
| [5]  | Kinematics: Forward kinematics           |
| [6]  | Kinematics: Jacobian matrix              |
| [7]  | Kinematics: Singularity of a manipulator |
| [8]  | Statics                                  |
| [9]  | Dynamics: Newton-Euler method            |
| [10] | Dynamics: Lagrangian method              |
| [11] | Dynamics Simulation                      |
| [12] | Control: Modeling                        |
| [13] | Control: Transfer Function               |
| [14] | Control: Feedback control                |
| [15] | Summary lecture                          |