

# Design and Drawing 1

Syllabus Number

1G302

Basic Major Subjects

Elective Requisites 2  
credit

INOUE HIDEAKI

## 1. Course Description

Understanding of Design and Drawing is deepened by studying and learning the basics of machine design, strength and stiffness of materials, and accuracy and precision of machines. Students will learn the design skills and methods for five basic machine elements, namely, screw, shaft, bearing, gear and spring, and exercise designing of them. By the end of the course, the design calculation and design drawings for the above five elements will be completed. In this course, and students perform a group work and students make a presentation of their solution for task in front of other students. Students can acquire the knowledge, skill and behavior for DP2 to DP4.

## 2. Course Objectives

It's so important to have skill and knowledge of basic Design and Drawing if one is to pursue a career in Product Engineering (MONOZUKURI).

In this course, students will learn the basic design of machines, design concepts, material strength and stiffness, machine accuracy and precision, and international standards for machines. Another purpose of this course is to learn the design and drawing methods for five element components of machine, namely, screw, shaft, bearing, gear and spring. Objective of this course is acquiring the fundamental knowledge and skills for the Design and Drawing for Product Engineering. And students will have a presentation skill through this course. So, students can discuss about drawings based on their learning of this course.

## 3. Grading Policy

Evaluation will be made based on the calculation documents and the design drawings (50%) for exercises 1 and 2, as well as the results of exercises and reports (50%).

## 4. Textbook and Reference

Textbook

Textbook:『Mechanical Design Method(the third Edition)』:Tadao Tsukada ;Morikita Publishing Co., Ltd.

Reference book:『Main Theory Mechanical Drawing』:Kiyoshi Onishi;Ohmusha Publishing Co., Ltd.

『Basic of Mechanical Design and Drawing(the second Edition)』: Surikogaku Publishing Co., Ltd.

## 5. Requirements(Assignments)

Students have to prepare and bring a compass, triangle and ruler in addition to the scientific calculator. The Exchange report of reflection is carried out in every class in this course, in order to communicate with teacher.

This course will be taught in Japanese.

## 6. Note

## 7. Schedule

- [1] Basic of Mechanical Design
- [2] Strength and Rigidity of Material
- [3] Accuracy of Machine
- [4] Design of Screw
- [5] Group Work and Presentation regarding Design of Screw
- [6] Design of Shaft
- [7] Group Work and Presentation regarding Design of Shaft
- [8] Design of Bearing
- [9] Group Work and Presentation regarding Design of Bearing
- [10] Design of Gear
- [11] Group Work and Presentation regarding Design of Gear
- [12] Design of Spring
- [13] Group Work and Presentation regarding Design of Spring
- [14] Exercise of Task 1 : Group Work (Accuracy of Machine, Design of Screw and Shaft)
- [15] Exercise of Task 2 : Group Work (Design of Bearing, Gear and Spring)