

# Descriptive Geometry

Syllabus Number 1G101  
Basic Major Subjects  
Elective Requisites 2  
credit

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## 1. Course Description

In this course, students will study the projection of a point, line, plane, polyhedron and curved surface. Students learn the base of Descriptive Geometry through the accurate drawing work on paper. The classes are carried out by the drawing exercises for students to understand the contents and get interested in it. Students are expected to have a basic understanding of geometry. Descriptive Geometry is also the base for learning the Drawing for Mechanical Engineering. This course is carried out by flip teaching and students perform a group work. Also in this course, 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 DP6 through this course.

## 2. Course Objectives

Descriptive Geometry is a study that solves geometric problems graphically by converting a three-dimensional solid into a two-dimensional plane. Students develop the ability to grasp three-dimensional objects in space as a basic ability to correctly read and draw drawings. The goal is to be able to draw sketches that are the basis of design and drafting. Students will be able to acquire presentation skills based on presentations, become able to recognize space, and become interested in design and drafting.

## 3. Grading Policy

Students submit a report on the assignments set in each lesson. Grades will be evaluated based on the results of the submitted report (100%).

## 4. Textbook and Reference

Textbook

Textbook: 『Standard Course Descriptive Geometry』Satoru Ino et al; Kyoritsu Publishing Co., Ltd.

## 5. Requirements(Assignments)

Students are required to check the scope of the next lecture on the syllabus and read the textbook before class (1 hour). Students are also required to solve relevant textbook assignments after class (1.5 hours).

This course will be taught in Japanese.

## 6. Note

Students are requested to bring a set square and a compass. Students should also prepare a plain report sheet. Details will be announced on the LMS.

## 7. Schedule

- [1] Concept of Projection and Orthogonal Projection
- [2] Projection of Point
- [3] Projection of Line
- [4] Trace of Line and Projection of 2 Lines
- [5] Distance between 2 Lines and Perpendicular Lines
- [6] Summary of projection of Lines
- [7] Trace of Plane and Projection of Line & Point on Plane
- [8] Intersection of Planes
- [9] Auxiliary trace and Inclination angle of Plane and Parallel Planes
- [10] Intersection of Plane and Line
- [11] Plane and Normal
- [12] Intersection of Line & Plane and Inclination Angle of 2 Planes
- [13] Intersection of triangular pyramid and plane (Group work)
- [14] Intersection of regular polyhedron and plane (group work)
- [15] Summary