Applied Mechanics

1. Course Description

In this course, exercises and lectures are given on the theme of rotational movement of a rigid body. Specifically, the following themes are taught.
Angular velocity, angular acceleration, kinetic energy of rotation, moment of inertia, torque and angular momentum, etc.
Related subjects: Materials, Vibration, Robotics, etc.
During lecture, students will acquire knowledge, technology, and ability of diploma policy 2 and 3.

2. Course Objectives

This course aims to conduct exercises in the fundamentals of the Mechanics of a rigid body, and practical problem solving skills.

3. Grading Policy

・Term-end examination : 65%
・Short examination : 20%
・Print and the problem to have let out while lecturing : 15%
Students will not be evaluated when they are not attending lectures more than 2/3. Small test will be returned after grading and will be explained during lecture. Answers will be upload to LMS.

4. Textbook and Reference

Textbook
R.A.Serway   Physics for scientists and engineers Ia dynamics, wave   Gakujyutsutosyo
ISBN978-4-87361-074-0

5. Requirements(Assignments)

The materials for each lesson will be uploaded on the LMS in advance, and the answers to the problem exercises performed during the lesson will be uploaded on the LMS until the next lesson.
Please prepare and review the lecture for about 3 hours each time.

6. Note

If you're absent from lecture, please study and revise the topics taught on that day.

7. Schedule

[1]   Rotation for rigid body, angular velocity and the angular acceleration
[2]   Rotational motion and translation
[3]   Rotational energy and moment of inertia
[4]   Calculation for moment of inertia
[5]   Center of gravity, parallel axis theorem, theorem of orthogonal axes
[6]   Relations of torque and angular acceleration
[7]   Work and energy in the rotational motion
[8]   Short examination, rolling motion of rigid body
[9]   Commentary of the short examination and summary of the first half
[10]   Angular momentum of particle
[11]   Rotation for rigid body about a fixed axis
[12]   Conservation of angular momentum
[13]   Gyroscope, Precession of coma
[14]   Summary of the second half
[15]   Term-end examination and summary