

Physics 1

Syllabus Number

1A102

Basic Major Subjects

Requisites 2 credit

AOKI, Akio

1. Course Description

The following contents will be learned.

- (1) Basic unit and assembly unit in SI unit
- (2) Synthesis of orthogonal components to orthogonal components and its application
- (3) Velocity, acceleration, and differentiation in motion
- (4) Law of force acting on an object, law of motion
- (5) Work and energy

In this lesson, knowledge, techniques, and attitudes regarding about DP 2 and DP 3 will be acquired.

Lessons are primarily lecture-style, but pair works will be carried out as appropriate according to the context of the each lesson.

2. Course Objectives

Students can apply the law of force and the law of motion.

3. Grading Policy

Your grade in the class will be decided on the final exam 100%. After the final exam, the contents of the exam will be explained.

4. Textbook and Reference

Textbook

HARA Yasuo 5th Edition Basic Physics Gakujutsu Tosho Shuppan-sha Co., Ltd.

5. Requirements(Assignments)

- (1) As preparations for next lesson, please check the meaning of the proper noun and the contents of the relationship shown in the contents of the lesson, and come to the class. (90 minutes)
- (2) As a review, please solve exercises applied to the items instructed during the lesson, so that you can cope with works in pair as appropriate in the next lesson. (90 minutes)

6. Note

Classes are conducted with a prerequisite that fully understanding the sine and cosine of trigonometric functions in mathematics.

7. Schedule

- [1] SI unit system and dimensions.
- [2] Synthesis and decomposition of vector and scalar and vector.
- [3] Time and position, time and speed, and time and acceleration.
- [4] Speed and acceleration in constant velocity linear motion, constant acceleration linear motion, and exercises in pairs.
- [5] Derivative of position function with respect to time (average speed and instantaneous speed).
- [6] Velocity and acceleration in horizontal motion.
- [7] Velocity and acceleration in vertical motion.
- [8] Speed and acceleration in parabolic movement and exercises in pairs.
- [9] Speed and acceleration in circular movement.
- [10] Law of force acting on an object.
- [11] Relationship between force and acceleration in law of motion.
- [12] Force acting on the object on the horizontal plane.
- [13] Force acting on the object on the slope and exercises in pairs.
- [14] Work and work rate.
- [15] Summary.