

# Physics 1

Syllabus Number

5B112

Basic Major Subjects

Elective Requisites 2  
credit

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## 1. Course Description

Learn about stationary dynamics, Newton's law of movement, action / reaction, speed and speed, free fall and parabolic movement, momentum, energy, work and work rate.

By following the textbook, I will explain the details and show concrete calculations. Do exercises every time and increase your understanding. The exercise is active learning, so students can consult with each other and discuss to solve them.

Each lecture will be given by chalk talks for the first hour or so and exercises for the rest of the time.

In this lesson, you will acquire knowledge about DP1 and 2.

## 2. Course Objectives

The objective of this course is to be able to understand the field of physics mechanics. We will learn about the position, velocity, acceleration of objects, and exercise when the force is applied to objects.

## 3. Grading Policy

Grades will be evaluated only by the results of the final exams. However, when exercises are given as supplements etc., report points may be added to the submitter.

Each exercise and answer will be posted on the homepage. By reviewing each page on the homepage, you can feed back your learning outcomes.

## 4. Textbook and Reference

Textbook

Yasuo Hara Basic Physics Academic Book Publisher, ISBN 978-4-7806-0660-7

Another textbook can be used equivalent to "Basic Physics".

## 5. Requirements(Assignments)

Please read the dynamics, rotational motion, rigid body parts of the specified textbook (or equivalent textbook) in advance about 1.5 hours as preliminary study. Master the math necessary for understanding.

As a review, for 1.5 hours, please answer every exercise question and study further about the related part of the textbook.

## 6. Note

Please bring a scientific calculator every time for exercises.

In some cases, OHP, VTR, DVD, etc. will be used in combination.

We will use the homepage by placing exercises. <http://www.ase.teikyo-u.ac.jp/faculty/nakamura/>

## 7. Schedule

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|------|--|
| [1]  | Vector (1) Cartesian coordinate system and vector                    |
| [2]  | Vector (2) Scalar product, vector product                            |
| [3]  | Basic of mechanics (1) Force   |
| [4]  | Basic of mechanics (2) How to express movement                       |
| [5]  | Basic of dynamics (3) Free falling movement and vertical throwing up |
| [6]  | Basic of dynamics (4) Law of movement                                |
| [7]  | Basic of mechanics (5) Constant velocity circular motion             |
| [8]  | Force and motion (1) Parabolic movement                              |
| [9]  | Force and motion (2) Fall of raindrops                               |
| [10] | Force and motion (3) Single vibration                                |
| [11] | Force and motion (4) Single pendulum                                 |
| [12] | Force and motion (5) Work and energy                                 |
| [13] | Force and motion (6) Momentum  |
| [14] | Force and motion (7) Inertial force                                  |
| [15] | Final exams, summary   |