

# Physics 2

Syllabus Number 2G207  
Basic Major Subjects  
Requisites 2 credit  
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## 1. Course Description

In this course, students learn about work and energy, potential energy, preservation of the energy, preservation of momentum, rotary motion, law of conservation of angular momentum, the law of universal gravitation and planetary movement, dynamic waves such as the vibration of a string and sound wave.

## 2. Course Objectives

The aim of this course is understanding motion, work and energy, wave phenomenon and being able to solve problems which relate to these matters.

## 3. Grading Policy

Students will be evaluated based on periodic test (80%) and report assignment (20%). The submitted reports will be corrected and returned.

## 4. Textbook and Reference

Textbook

R. A. Serway Translated by Matsumura Physics for Scientists and Engineers I a Mechanics and Waves

Physics for Scientists and Engineers I b Mechanics and Waves

Gakujutsu-Tosho Shuppansha

## 5. Requirements(Assignments)

Since it is positioned as a higher subject of Physics 1, it is necessary to take the subject. It is important to understand the basic of calculus. The range of the class content is wide, please read the textbook about the topic of the next lesson place as described in the first lesson content, clarify the part which can not be understood (about 1 - 1.5 hours) and attend the lesson. After class, please review the theme that you learned, solve practice questions as instructed, and establish an understanding (about 1 - 2 hours). Please submit the assignment as a report at the beginning of the next lesson.

## 6. Note

Please bring a scientific calculator. Depending on the degree of comprehension, the progress may go back and forth. So we will instruct the review subject and the next preparatory range at the time of each lesson.

## 7. Schedule

- [1] Work and energy (1) (work done by force)  
[Preparation] To read through the textbook p. 159-168, clarify the points that can not be understood and to take classes.  
[Review] Solve the problems 1, 2, 3, 5, 7, 23 (p. 180 - ) and submit it as a report at the beginning of the next class.
- [2] Work and energy (2) (kinetic energy, power)
- [3] Potential energy and preservation of energy (1) (conservation and non-conservation force, conservation of energy)
- [4] Potential energy and preservation of energy (2) (various potential energy)
- [5] Momentum and collision (1) (momentum and impulse)
- [6] Momentum and Collision (2) (dynamics of collision)
- [7] Summary of work, energy, momentum  
[Practice] We ask the representative to write an answer of specified question on the blackboard and explain it.
- [8] Vibrational motion
- [9] Law of universal gravitation (1) (law of universal gravitation, gravity, weight)
- [10] Law of universal gravitation (2) (Kepler's law, planetary movement, gravity field)
- [11] Mechanical wave (1) (kind of wave, nature of traveling wave)
- [12] Mechanical wave (2) (wave velocity, harmonic wave)
- [13] Sonic and light waves
- [14] Superposition of waves and standing waves
- [15] Overall summary and review