

# Exercises in Principle of Electricity

Syllabus Number

1H205

Special Subjects

Elective 1 credit

AOKI, Akio

## 1. Course Description

Exercises on the following contents will be learned.

(1) Basic electrical quantity, basic properties of circuit elements, type of power supply, DC circuits, and AC circuits

(2) Single phase AC, symmetric three phase AC, and AC power

(3) Magnetic circuits, electromagnetic induction law and electromagnetic coupling circuits

In this lesson, knowledge, techniques, and attitudes regarding DP 2, DP 3 and DP 4 will be acquired.

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

## 2. Course Objectives

Students can apply electrical basic knowledge of direct current, alternating current, and magnetic basic knowledge to concrete cases in automobiles and others.

## 3. Grading Policy

Your grade in the class will be decided on the evaluate with 80% of the result of the final exam and 20% of the result of the report on the assignment. An explanation will be given after the end of the final exam.

## 4. Textbook and Reference

Textbook

NISIMAKI Masao, MORI Takeaki, ARAI Toshihiko Electric circuit fundamentals 3rd edition Morikita Publishing Co., Ltd. ISBN978-4-627-73253-7

## 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 planned based on the understanding of the contents of Principle of Electricity. Therefore, you must ensure that you have taken the Principle of Electricity at the same time or have taken the classes in the prior year.

## 7. Schedule

- [1] Exercises in pairs on electric circuits and circuit elements.
- [2] Exercises in pairs on DC circuits.
- [3] Exercises in pairs on DC network.
- [4] Exercises in pairs on the method of analysis of Kirchhoff's law.
- [5] Exercises in pairs on the method of analysis of DC circuits by electric current law of Kirchhoff's law.
- [6] Exercises in pairs on the method of analysis of DC circuits by voltage law of Kirchhoff's law.
- [7] Exercises in pairs work on AC circuits.
- [8] Exercises in pairs on sinusoidal alternating current (single phase, three phases).
- [9] Exercises in pairs on impedance.
- [10] Exercises in pairs on complex number display.
- [11] Exercises in pairs on complex number display in AC circuits.
- [12] Exercises in pairs on AC circuits analysis method.
- [13] Exercises in pairs on electromagnetic induction law.
- [14] Exercises in pairs on electromagnetic coupling circuits.
- [15] Final exam and summary.