

Exercises in Electric Circuits

Syllabus Number

3E107

Basic Major Subjects

Elective Requisites 1
credit

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1. Course Description

The aim of this course is to help students acquire an understanding of the fundamental principles of electric circuits. It also enhances the development of student's skill in designing simple electric circuits through some experiments. Specifically, we will acquire necessary skills and knowledge on DP4E.

2. Course Objectives

The goals of this course are to:

- be able to combine acquired knowledge and skills in mathematics and circuit analysis to analyze electrical circuits.
- be able to use basic circuit theory to solve problems in electronics and design simple circuits.

3. Grading Policy

Your overall grade in the class will be decided on the following:

- Mid-term examination: 40%
- Final examination: 40%
- A fraction of in-class contribution 20%

4. Textbook and Reference

Textbook

The handout of each chapter will be posted on the course website.

The slide-sheets of each chapter will be posted on the course website after the lecture.

5. Requirements(Assignments)

- This course will be taught in Japanese.
- This course will require the fundamental knowledge on electric circuit. In case of difficulties. It is recommended to ask any questions to instructor.

6. Note

7. Schedule

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| [1] | Guidance and Ohm's law |
| [2] | Kirchhoff's Current Law and Voltage Law |
| [3] | Thévenin's Theorem 1: Calculation of Current in Simple Electric Circuits |
| [4] | Thévenin's Theorem 2: Calculation of Current in a Wheatstone Bridge |
| [5] | Experiment 1: DC Circuits |
| [6] | Feedback of DC Circuit Theory |
| [7] | Mid-Term Examination and Summary |
| [8] | Complex Numbers and Calculations |
| [9] | Euler's Formula |
| [10] | Impedance, Resistance, Reactance |
| [11] | Effective Value (or Root Mean Square) |
| [12] | Phase |
| [13] | Experiment 2: AC Circuits |
| [14] | Feedback of AC Circuit Theory |
| [15] | Final Examination and Summary |