

Electromagnetism 2

Syllabus Number

3E212

Basic Major Subjects

Elective Requisites 2
credit

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1. Course Description

Students will learn both electric and magnetic fields from the basics. Electromagnetic fields exist in our daily life, including smartphones. Students will learn how to calculate many quantities regarding the electric field and the magnetic field. This subject is related to DP4E.

2. Course Objectives

Students will be able to calculate various physical quantities of electromagnetism necessary for other engineering courses.

3. Grading Policy

Evaluation will be based on small tests and reports (50%) and results of final exams (50%).

4. Textbook and Reference

Textbook

Hashimoto Junichiro 単位が取れる電磁気学ノート
Kodansha scientific Inc.

Reference

Hashimoto Junichiro 単位が取れる電磁気学演習帳 Kodansha scientific Inc.

5. Requirements(Assignments)

Please always prepare and review for the class by using textbook (about 1.5 hour each).
The contents of the class are in accordance with the chapters and contents of the textbook.

6. Note

Knowledge of differentiation and integration calculus is necessary for learning electromagnetics, so please attend classes of relevant math classes as much as possible.

7. Schedule

- [1] Dielectrics (1)
- [2] Dielectrics (2)
- [3] Stationary current and magnetic field (1)
- [4] Stationary current and magnetic field (2)
- [5] Stationary current and magnetic field (3)
- [6] Lorentz force (1)
- [7] Lorentz force (2)
- [8] Lorentz force (3)
- [9] Dynamical electromagnetic field - displacement current and electromagnetic induction (1)
- [10] Dynamical electromagnetic field - displacement current and electromagnetic induction (2)
- [11] Dynamical electromagnetic field - displacement current and electromagnetic induction (3)
- [12] Maxwell's equations and electromagnetic waves (1)
- [13] Maxwell's equations and electromagnetic waves (2)
- [14] Maxwell's equations and electromagnetic waves (3)
- [15] Summary and test

The above schedule may adjust slightly depending on progress.