

Electronics Equipment

for

Biomedical

Syllabus Number

3E344

Special Subjects

Elective 2 credit

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1. Course Description

Students can learn about biomedical equipment that are used in hospital. Basic principles of those are as the main topic of this course. The class is based on electronic engineering and mathematics. This course relates to DP4E.

2. Course Objectives

The aim of this course is the study of electronics in biomedical engineering field. Learners can obtain knowledge about practical examples of electronics for biomedical equipment. In this course, mathematics bases for electronics are also studied. Comprehension of those will be achieved.

3. Grading Policy

Little tests in classes (20%)

Final exam (80%)

4. Textbook and Reference

Textbook

Japanese textbook (ISBN: 978-4339072242) is used.

5. Requirements(Assignments)

Backup media should be prepared by students.

Also, function calculator must be prepared.

For preparation, 15 min are required for each class in standard. You should study again the field of mathematics instructed in classes (if you would not understand the field).

For review, 75 min are required for each class in standard. Practice questions for review will be distributed in class.

6. Note

Basis of mathematical analysis including 1st and 2nd order differential equation should be learnt before taking class.

7. Schedule

- [1] Introduction
- [2] Mathematics; Trigonometric function and Logarithm
- [3] Mathematics; Complex number
- [4] Electrical resistance and impedance
- [5] Input and Output impedance
- [6] Basic of operational amplifier
- [7] Exercises of operational amplifier
- [8] Diode circuits
- [9] Transistor circuits
- [10] Electro-Optical devices and circuits
- [11] Advanced topics of operational amplifier
- [12] Logic circuit
- [13] Sequential circuit
- [14] Modulation and medical telemetry
- [15] Hot-topics and summary of this course