

Medical Instrumentation

Syllabus Number

3E341

Special Subjects

Elective 1 credit

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1. Course Description

We will learn the safety and effectiveness of living organisms necessary for using medical equipment, and how to use the equipment. After clarifying the clinical engineering of medical engineering and clinical application, medical engineering and clinical engineering of medical engineering, we will learn about safety, effectiveness, use of environment, use of condition, accident case and countermeasures as application to various kinds of medical equipment to the human body. It also explains the structure, principle and safety of biometric devices, medical treatment equipment, biological function surrogate devices and deepens their understanding.

Read the textbook before the lecture starts, ask the medical device you are interested in to summarize about one report sheet, and announce it at the time of the lecture. At that time, a brief discussion will be held. This will lead to a better understanding of the content of the lecture.

By taking this subject, the purpose is to learn the basic knowledge to engage in medical engineering related work. Also, this will help to take the 2nd ME skills test.

2. Course Objectives

Modern medicine has made rapid progress, treatment and examination which could not be done without extensive invasion to the living body, can now be carried out minimally invasively or non-invasively. By comprehensively learning medical equipment that keep pace with the modern world, we aim to acquire knowledge that can contribute to medical care from an engineering point of view.

3. Grading Policy

Students will be barred from taking exams if they do not meet the standard attendance of more than 2/3. There will be regular tests. Students must be aware that there is no retest.

As a feedback, we will conduct a quiz to confirm comprehension degree in the next lecture of each unit termination. The pre-learning report will be collected after the presentation and evaluated together with the presentation.

In principle, the comprehensive evaluation will be a breakdown to the following evaluation criteria:

Regular test evaluation: 60%, quizzes: 20%, pre-learning report: 20%

4. Textbook and Reference

Textbook

Distribution of materials for each lesson, (社) Japan Biomedical Engineering Association supervised by ME Technical Education Committee Basic knowledge and safety management of ME" 7th edition

Nankodo

Reference

Fujio Nakamura edited Master note of the 2nd kind ME skill test Magical View Company

5. Requirements(Assignments)

As a preparation, please read the textbook before the start of the first lecture.(8H)

Please summarize the specifications and safety measures of the medical device you are interested in in about 600 characters on one A4 size report sheet.(1H)

It will be collected at the beginning of the first lecture. Ask each person to announce the contents of the report at the beginning of the lecture on the relevant device.

6. Note

Nothing special

7. Schedule

General Overview Learn about the outline of medical equipment

Learn about the electrical characteristics and sterilization and disinfection of safe bodies of ME devices

Biometric Measurement System Learn about the device which obtains the electric signal of the living body

Image diagnostic equipment Learn about equipment for imaging non-invasively the living body

Therapy equipment Learn about equipment used in the operating room and intensive care room

Biological function surrogacy equipment - Ventilator -

Biological function surrogacy equipment - Heart-lung machine -

Biological function surrogacy equipment - Blood purification -

This course is not applicable

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