

## Medical and Biological Engineering

2 units (selection)

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**Target)** Various applications of electronic technologies to medical fields are described.

**Outline)** Fundamental approaches to apply engineering such as electronics to medical fields including diagnosis, treatment and alternative function are described in relation to life sciences such as physiology, biomechanics and so forth. Typical systems of medical instruments are introduced. The development of new technologies based on the intelligent functions of living bodies are presented. Functional characteristics of the nervous system and their application to information processing and control are discussed.

**Style)** Lecture in combination with Portfolio

**Goal)** 1 Biological signal measurement 2 Biological signal processing 3 Medical systems

**Schedule)**

1. Introduction of medical engineering
2. Introduction of measurement of biological signal
3. Electrical measurement methods
4. Magnetic measurement methods
5. Ultrasonic measurement methods
6. Other measurement methods
7. Biological signal processing methods
8. Examples of biological signal processing
9. Biological system identification
10. Measurement of brain functions
11. Measurement of other functions
12. Biological monitor
13. Analysis of electrical properties of tissue
14. Examples of medical diagnosis technology
15. Examples of medical treatment technology
16. Medical prosthesis technology

**Contents)** <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216558>

**Contact)**

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