

# Fundamentals of Biochemistry

Syllabus Number

5C222

Basic Major Subjects

Elective Requisites 2  
credit

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## 1. Course Description

Biochemistry is the science to understand life from the perspective of chemistry. There are a huge number of substances in a living organism and the life is maintained by many interactions of these substances. This course deals with the followings:

- (1) The properties and roles of the selected significant substances.
- (2) The process of energy production.
- (3) The metabolism of a varieties of compounds.

You can acquire knowledge and ability of DP1 and DP2.

## 2. Course Objectives

The goals of this course are to understand the followings:

- (1) The properties of carbohydrates, amino acids, lipids, nucleic acids, mineral, and vitamins.
- (2) The mechanism of energy production.
- (3) The metabolic pass ways of some important compounds.

## 3. Grading Policy

Grading will be decided based on term-end examination.

## 4. Textbook and Reference

Textbook

Hirasawa Eiji, "Hajimeteno Seikagaku" (in japanese) 2nd. Ed.  
Kagakudoujin (ISBN978-4-7598-1589-4)

## 5. Requirements(Assignments)

Nothing special.

## 6. Note

## 7. Schedule

- |      |  |
|------|--|
| [1]  | Stereochemistry of Biomolecules                              |
| [2]  | Succharides 1: gulcose and thier isomers                     |
| [3]  | Succharides 2: variouse sugars, disaccharide, polysccharides |
| [4]  | Amino Acids, Peptides and Proteins                           |
| [5]  | Lipids and Fatty Acids                                       |
| [6]  | Nucleic Acids  |
| [7]  | Vitamins, Coenzymes and Metal ions                           |
| [8]  | Energy Metabolism 1: TCA Cycle                               |
| [9]  | Energy Metabolism 2: Charge Relay System                     |
| [10] | Energy Metabolism 3: Glycolysis                              |
| [11] | Energy Metabolism 4: beta-oxidation of fatty acids           |
| [12] | Metabolism 1: Neoglycolysis                                  |
| [13] | Metabolism 2: Biosynthesis and degradation of amino acids    |
| [14] | Metabolism 3: Urea cycle                                     |
| [15] | Summary and Examination                                      |