Course Number
10SPS018

Course title
Fundamentals of Biomolecular Science

Course Coordinator
秋山修志 (AKIYAMA Shuji), 飯野亮太 (INO Ryota), 古賀信彦 (KOGA Nobuyasu)

Course Category
School of Physical Sciences > Common Subjects of Physical Sciences

Recommended grade
1年, 2年, 3年, 4年

Period
後学期 2nd semester

Credit
2

Outline
Core aspects of biophysical chemistry will be overviewed with the life-science student in mind. This course aims at cultivating the fundamentals necessary to complete the advanced courses of Structural Biomolecular Science and Functional Biomolecular Science. The lectures will be given with life-science examples using a textbook covering the laws of thermodynamics, biological standard state, chemical equilibrium and its temperature dependence, chemical kinetics, enzyme kinetics, and molecular dynamics.

Aim
Understand biological standard state in terms of laws of thermodynamics
Understand temperature dependence of chemical equilibrium, chemical kinetics, and diffusion
Understand enzyme kinetics and molecular dynamics

Grading criteria
Sufficient attendance to the lecture and a score of some reports
**Lecture plan**

**Schedule:** 10/15, 10/22, 10/29, 11/5, 11/12, 11/19, 11/26

**Contents:**
1. Laws of thermodynamics
2. Biological standard state
3. Chemical equilibrium and its temperature dependence
4. Chemical kinetics
5. Diffusion
6. Enzyme kinetics
7. Molecular dynamics

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**Location**

301, Myodaiji Campus, Research Facilities 3F, Room 301.

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**Language**

Japanese or English

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**Textbooks and references**

Physical Chemistry: Principles and Applications in Biological Science

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**Lecturer(s):**

Shuji Akiyama (phone 7363, akiyamas@ims.ac.jp, Myodaiji Campus, South Lab. Bldg., 3F)
Ryota Iino (phone 5230, iino@ims.ac.jp, Yamate Campus building 2 East, 4F)
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