Course number	U-LAS13 10002 LE60		
Course title (and course title in English)	Essentials of Basic Physical Chemistry-E2 Essentials of Basic Physical Chemistry-E2	Instructor's name, job title, and department of affiliation	Institute of Advanced Energy Senior Lecturer,ARIVAZHAGAN RAJENDRAN
Group	Natural Sciences	Field(Classification)	Chemistry(Foundations)
Language of instruction	English	Old group	Group B
Number of credits	2		
Number of weekly time blocks	1	Class style	Lecture (Face-to-face course)
Year/semesters	2024 • First semester		
Days and periods	Mon.2	Target year	Mainly 1st & 2nd year students
Eligible students	For science students		

[Overview and purpose of the course]

We learn about the structure, properties and reactions of matters for the base of physical chemistry. Contents are covered by following fields of the structure and properties of the atom and molecules, quantum chemistry, thermodynamics, and chemical reactions. Aim of this course is the understanding of these concepts.

[Course objectives]

The aim of this class is to understand the basic principles of physical chemistry for beginners.

[Course schedule and contents)]

1. Basics and units of chemistry
2. Structure and property of the atom: Bohr's atomic model
3. Structure and property of the atom: Electronic waviness and orbit function
4. Structure and property of the atom: Electron configuration and periodic table
5. Structure and property of the atom: Ionization energy and electron affinity
6. Molecules: Covalent bonds (s and p-bonds), hybrid orbitals
7. Molecules: Coordinate bond
8. Molecules: Ionic bonds, van der Waals force, and hydrogen bond
9. Thermodynamics: 1st & 2nd law of thermodynamics and phase diagram
10. Chemical equilibrium: Equilibrium constant and Le Chatelier's principle
11. Chemical equilibrium: A rate equation and reaction mechanism
12. Oxidation and reduction: Oxidation state and battery
13. Acid and base: Definition and dissociation equilibrium
14. Acid and base: Neutralization titration, hydrolysis, and buffer solution
15. Term examination

[Course requirements]

None

[Evaluation methods and policy]

Results will be evaluated by the submission of homework written in English (30%), attendance and discipline (20%), and assignment (50%).

Continue to Essentials of Basic Physical Chemistry-E2(2)↓↓↓

Essentials of Basic Physical Chemistry-E2(2)

[Textbooks]

Peter Atkins and Julio de Paula 『Atkins' Physical Chemistry, 10th Edition』 （Oxford University Press）
ISBN:978-0-19-969740-3

[References, etc.]

（References, etc.）
Introduced during class

[Study outside of class (preparation and review)]

I recommend that the students should review the points to be learned.
The students, who have not studied high-school physics, can take this lecture, it is desired that they should make up for the knowledge lacked by self-study and inquiry to the teacher after lectures or in office hour.

[Other information (office hours, etc.)]

Office hours are set at 15:00-17:00 in every Friday.