Elective Course Description (2. Spring Semester)

Subject (English)	Physical Chemistry	Semester	Spring	Day/Slot	
科目名 (日本語)	物理化学				
Course Code		Course Numbering	SCH-PCH801E	Period	Apr. – Aug.
Instructor (Post)	TBC			Campus	
				Building	
Faculty	Faculty of Science	Credits	2	Class Room	

Class subject	Physical Chemistry

Object and summary of class

Modern physical chemistry is the basis of applied science and engineering. Reaction kinetics is useful in a variety of chemical reactions occurring in our environment. Spectroscopy is an essential tool in life science and material science. In this course, essential subjects in physical chemistry will be given by four different lectures who are experts of modern physical chemistry.

Keywords	quantum chemistry, reaction dynamics, spectroscopy, statistical thermodynamics

Goal of study

In order to understand chemical reaction and spectroscopy, one has to learn the fundamentals of quantum chemistry and statistical thermodynamics.

Contents and progress schedule of class

Outline (3-4 weeks each) :
1) Reaction kinetics and dynamics
Kinetic Theory of Gases, The Rates of Chemical Reactions, Theories of Chemical Reactions
2) Quantum chemistry
Quantum theory, Atomic orbitals, Many electron atoms, Molecular orbitals
3) Computational chemistry
Basic concepts of computational chemistry, electronic structure, molecular simulation
4) Current topics in physical chemistry
Spectroscopy and application

Any textbook with the title including “physical chemistry” will be fine.
Each of the lecturers may have one’s favorite textbooks and study-aid books.
These will be announced at the beginning of each topic.

Students will be evaluated by each lecturer with attendance, short tests, or reports depending on the lecturer, which will be explained during the lectures.

Preparation	Nothing special
Record and evaluation method	Attendance, short tests, or reports
Textbook and references	Text books will be announced at the beginning of each topic
Self study	Nothing special
In addition	