

Special Subjects of the Department of Structural Molecular Science

Field	Subject Code	Subject	Credit	Content of subject	
Theoretical Chemistry	20DSM001	Theoretical Chemistry	2	The electronic structure of molecules and chemical reaction are systematically understood based on the methodologies of quantum chemistry. The dynamic behaviors of molecules and molecular assemblies are investigated with the analysis of molecular dynamics simulations.	Akihito Ishizaki
Structural Photo-Molecular Science	20DSM002	Structural Photo-Molecular Science	2	The basic frameworks of various spectroscopic methods such as laser spectroscopy, nonlinear and time-resolved spectroscopy and microscopic methods, for investigation of structures and dynamics of small molecules to molecular assemblies are overviewed. Examples of applications of those methods for understanding/control of materials functionalities are also introduced.	Hiroimi Okamoto
Materials Chemistry	20DSM003	Materials Chemistry	2	The basic concept and experimental methods in molecular science including organic chemistry, materials chemistry, and solid physics are provided in this class. The case studies are also provided for the molecular design, structural analysis, measurement of molecular properties, and expression of function in the multi-disciplinary research fields.	Members of dept. of structural molecular science
Structural Biomolecular Science	20DSM004	Structural Biomolecular Science	2	The molecular mechanisms of various biological processes will be lectured in this course. Especially, the molecular mechanisms of the following topics will be provided: Structure and function of proteins, DNA replication, transcription and translation of DNA, cellular homeostasis, biological energy conversion such as respiration and photosynthesis, biological metabolism and some recent research topics.	Shigetoshi Aono Nobuyasu Koga
Basic Electronic Chemistry-Vacuum UV Spectroscopy	20DSM005	Fundamental Electronic Physics	2	Lecture on characteristics of electronic structures for strongly correlated materials. The methods of vacuum UV spectroscopy and other related techniques using synchrotron radiation are introduced.	Kiyohisa Tanaka Genki Kobayashi
Common Courses	90DSM001	Exercise on Structural Molecular Science I	4	Discussion, experimental instructions, and/or theoretical studies for the student to perform the individual fundamental and applied research in the field of structural molecular science. This program is provided by appropriate teaching stuffs based on the research subject of the individual student.	
	90DSM002	Exercise on Structural Molecular Science II	4		
	90DSM003	Exercise on Structural Molecular Science III	4		
	90DSM004	Exercise on Structural Molecular Science IV	4		
	90DSM005	Exercise on Structural Molecular Science V	4		
	90DSM006	Seminar on Structural Molecular Science I	4	Small size seminar to gain scientific knowledge, competence for scientific consideration, discussion, and research formance, and original scientific conceptions in the field of fundamental and applied structural molecular science. This program is provided by appropriate teaching stuffs based on the research subject of the individual student.	
	90DSM007	Seminar on Structural Molecular Science II	4		
	90DSM008	Seminar on Structural Molecular Science III	4		
	90DSM009	Seminar on Structural Molecular Science IV	4		
	90DSM010	Seminar on Structural Molecular Science V	4		
		10DSM001	English for scientific research	2	The principal aim of this course is to improve academic reading, acadimic writing, listenig, and speaking in English for scientific research.