

<<Last Updated:2024/03/16>>

Course Schedule Information

Course Code	88A076
Semester	Winter Term
Day and Period	Other
Course Name (Japanese)	化学基礎工学：分子集合体の基礎と応用
Course Name	Introduction to Chemical Engineering Science: Basics and Applied Aspect of Molecular Self-Assembly
Capacity	0
Room	Online
Course Numbering Code	88INES9U105
Required/Optional	学部1年次、特別聴講学生対象科目 On-demand/オンデマンド授業
Type of Class	Lecture Subject
Credits	1.0
Student Year	1
Instructor	UMAKOSHI Hiroshi,MATSUBAYASHI Nobuyuki,NISHIYAMA Norikazu
Course of Media Class	Not Applicable

※About Course of Media Class
 "Course of Media Class" are classes in which more than half of the classes are held in places other than classrooms by making advanced use of various media.
 Undergraduate students can include up to 60 credits in media class course as requirements for graduation.
 Even if this is not the case, we may hold classes using the media.

Detailed Syllabus Information

Course Subtitle	Diversity of "Molecular Self-Assemblies" that Play an Active Role in Advanced Materials (Bio/Medical/Nano Materials)	
Language of the Course	English	
Learning Methods	Listening and watching face-to-face/online class: Listening and watching a lecture, video, or demonstration, face-to-face or via online (e.g., attending a face-to-face lecture, watching an on-demand video) Reading: Reading books and academic papers (e.g., summarizing an academic paper, reading information on a website) Presentation: Writing papers, making presentations, and creating works (e.g., report writing, oral/poster presentation, creation of works, portfolio development)	
Course Objectives	A variety of molecular self-assemblies that constitute the chemical processes are rich in diversity, such as micelles, bicelles, nanoemulsions, liposomes, vesicles, hexagonal assemblies, cubic assemblies, and lamellar assemblies. Molecular assemblies are not only used as important nano-chemical materials, but also applied to bio-/biomedical fields, such as nanocarriers in DDS, food engineering, and cosmetics. Series of lectures will be given focusing on cutting-edge research on the basics and applications of molecular assemblies from a chemical engineering perspective.	
Learning Goals	1	Students will be able to understand diversity of molecular self-assemblies
	2	Students will be able to understand three approaches (in Silico, Soft, Hard) systematically
	3	Students will be able to contrast the strategy of Chemical Engineering and Chemical Engineering Science

	4	Students will be able to imagine how they could pioneer a new philosophy of their own
Requirements, Prerequisites	Nothing Special (Students do not have to study prior to this lecture.If possible, taking another course titled "Chemical Engineering Science" before and after the course will cultivate a broader perspective and way of thinking.)	
Attendance and Student Conduct Policy	Brief-Report, Brief Essay and Mini-examination are required.	
Class Plan	1st	Title:Course Outline and Introduction of Molecular Self-Assembly Basic Concept of Chemical Engineering Science) and Diversity of Molecular Self-Assembly in Advanced Science Instructor : Independent Study Outside of Class : If students read through the "Relating documents" before attending the on-demand type lecture, the students will deepen their understanding.
	2nd	Title:"in-Silico" Molecular Self-Assembly: Fundamentals Fundamentals of Molecular Self-Assembly Revealed by Computational Chemistry Instructor : Independent Study Outside of Class : If students read through the "Relating documents" before attending the on-demand type lecture, the students will deepen their understanding.
	3rd	Title:"in-Silico" Molecular Self-Assembly: Application Application of Molecular Self-Assembly Based on Computational Chemistry Instructor : Independent Study Outside of Class : If students read through the "Relating documents" before attending the on-demand type lecture, the students will deepen their understanding.
	4th	Title:"Soft" Molecular Self-Assembly: Fundamentals Fundamentals of meso-Scale Physicochemical Properties of Molecular Self-Assembly Instructor : Independent Study Outside of Class : If students read through the "Relating documents" before attending the on-demand type lecture, the students will deepen their understanding.
	5th	Title:"Soft" Molecular Self-Assembly: Application Design of Molecular Self-Assembly Based on meso-Scale Physicochemical Properties Instructor : Independent Study Outside of Class : If students read through the "Relating documents" before attending the on-demand type lecture, the students will deepen their understanding.
	6th	Title:"Hard" Molecular Self-Assembly: Fundamentals Fundamentals of Molecular Self-Assembly from the Viewpoint of Material Chemical Engineers Instructor : Independent Study Outside of Class : If students read through the "Relating documents" before attending the on-demand type lecture, the students will deepen their understanding.
	7th	Title:"Hard" Molecular Self-Assembly: Application Design of Functional Nano Materials Utilizing Molecular Self-Assembly Instructor : Independent Study Outside of Class : If students read through the "Relating documents" before attending the on-demand type lecture, the students will deepen their understanding.
Textbooks	Relating documents will be provided at each lecture.	

Reference	References will be provided at each lecture in a ""Further Reading"" document.					
Grading Policy *Hover the mouse over the number of a learning goal to view the full text of it.	Evaluation Methods	Self-Feedback	Mini-Essay	Final exam		
	Learning Goals1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	Learning Goals2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	Learning Goals3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	Learning Goals4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	Allocation of Marks	60%	20%	20%		
Additional Information on Grading	Brief-Report (Lecture (2)-(7)): 60%, Mini-Essay (Lecture (1)): 20%, Mini-Examination: 20%					
Reasonable Accommodation	<ul style="list-style-type: none"> • If you need reasonable accommodation to participate in this class due to disability (including intractable disease and chronic condition), please contact the office for students with disabilities (e.g., Educational Affairs Section, Academic Affairs Section, Student Affairs Section) at your school/faculty or graduate school, or the Disability Advisory and Support Service Office of the Health and Counseling Center. • For more information, please visit the following website or contact the Disability Advisory and Support Service Office of the Health and Counseling Center. Website : https://acs.hacc.osaka-u.ac.jp Tel : 06-6850-6107 E-mail : campuslifekenkou-ac@office.osaka-u.ac.jp 					
Special Note	All the lectures will be given "on-demand" by using Osaka University CLE. So, students will be able to join to this course at any time during the "Winter" term (in OU academic calendar). However, students will have to pay their attentions to "Deadline" of "Brief-Report", "Mini-Essay", and "Mini-Examination". All of them would be automatically closed after the deadline.					
Office Hours	Friday 17:00-18:00 (JST) But, ""commenting"" at the ""free comment column"" at ""Brief-Report"" and ""Mini-Essay"" is recommended because this class will be held at ""on-demand"" style					
Course Conducted by Instructors with Practical Experience						

Instructor(s)

Instructor Name	Name (hiragana)	Affiliation, Title, Course	Office	Extension	E-mail
Hiroshi UMAKOSHI	うまこし ひろし	Professor, Bio-Inspired Chemical Engineering Gr., Grad. Sch. of Engineering Science	C-329	6287	umakoshi.hiroshi.es@osaka-u.ac.jp

Cautions for Students