

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

## Course Schedule Information

<b>Course Code</b>	88A071
<b>Semester</b>	Winter Term
<b>Day and Period</b>	Other
<b>Course Name (Japanese)</b>	化学基礎工学：基礎とBio-Inspiredアプローチ
<b>Course Name</b>	Introduction to Chemical Engineering Science : Basic and Bio-Inspired Approach
<b>Capacity</b>	0
<b>Room</b>	Online
<b>Course Numbering Code</b>	88INES9U105
<b>Required/Optional</b>	学部1年次、特別聴講学生対象科目 オンデマンド授業
<b>Type of Class</b>	Lecture Subject
<b>Credits</b>	1.0
<b>Student Year</b>	1
<b>Instructor</b>	UMAKOSHI Hiroshi,WATANABE Nozomi
<b>Course of Media Class</b>	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

<b>Course Subtitle</b>	Introduction to Chemical Engineering Science : Basic and Bio-Inspired Approach	
<b>Language of the Course</b>	English	
<b>Learning Methods</b>	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)	
<b>Course Objectives</b>	The basics of chemical engineering are introduced. By employing chemical process as a case study, students will understand a conventional strategy on "Chemical Engineering": (i) Mass Balance (Unit Operations), (ii) Physico-Chemical Approach (Transport Phenomena / Equilibrium), (iii) Process Design. At the final stage, students will learn (iv) a new strategy utilizing self-organizing system, called as "Bio-Inspired Chemical Engineering".	
<b>Learning Goals</b>	<b>1</b>	- Students will be able to understand the basic and conventional strategy of Chemical Engineering
	<b>2</b>	- Students will be able to contrast the above strategy and a new strategy with "Bio-Inspired" approach
	<b>3</b>	- Students will be able to imagine how they could pioneer a new philosophy of their own
<b>Requirements, Prerequisites</b>	Nothing Special (Students do not have to study prior to this lecture. Lecture will focus on "Chemical Process Design" that most of students would not be interested. But, try to understand "Its Strategy" and to think of its application to your study/research. So, please do not hesitate to join us !)	

<b>Attendance and Student Conduct Policy</b>	Brief-Report, Brief Essay and Mini-examination are required.					
<b>Class Plan</b>	<b>1st</b>	Title:Background				
		What's Chemical Engineering and Chemical Engineering Science ?				
		Instructor :				
		Independent Study Outside of Class : Relating information will be provided at each lecture as a "Further Reading".				
	<b>2nd</b>	Title:Scientist's Approach (1)				
		Transport Phenomena (Mass)				
		Instructor :				
		Independent Study Outside of Class : Relating information will be provided at each lecture as a "Further Reading".				
	<b>3rd</b>	Title:Scientist's Approach (2)				
		Phase Equilibrium				
		Instructor :				
		Independent Study Outside of Class : Relating information will be provided at each lecture as a "Further Reading".				
	<b>4th</b>	Title:Engineer's Approach (1)				
		Mass Balance for Unit Operations				
		Instructor :				
		Independent Study Outside of Class : Relating information will be provided at each lecture as a "Further Reading".				
	<b>5th</b>	Title:Engineer's Approach (2)				
		Let's Design Chemical Process [1] Distillation				
		Instructor :				
		Independent Study Outside of Class : Relating information will be provided at each lecture as a "Further Reading".				
	<b>6th</b>	Title:Engineer's Approach (3)				
		Let's Design Chemical Process [2] Chemical Process				
		Instructor :				
		Independent Study Outside of Class : Relating information will be provided at each lecture as a "Further Reading".				
	<b>7th</b>	Title:Engineering Scientist's Approach				
		Cutting-edge for NEXT Chemical Process ~Bio-Inspired Chemical Engineering Science~				
		Instructor :				
		Independent Study Outside of Class : Relating information will be provided at each lecture as a "Further Reading".				
<b>Textbooks</b>	Relating documents will be provided at each lecture. Separation Process Principles (2nd Ed.), J. D. Seader and Ernest J. Henley , John Wiley and Sons, Inc.					
<b>Reference</b>	References will be provided at each lecture in a "Further Reading" document.					
<b>Grading Policy</b> *Hover the mouse over the number of a learning goal to view the full text of it.	<b>Evaluation Methods</b>	<b>Self-Feedback</b>	<b>Mini-Essay</b>	<b>Final exam</b>		
	Learning Goals1	○	○	○		
	Learning Goals2	○	○	○		
	Learning Goals3	○	○	○		
	<b>Allocation of Marks</b>	40%	40%	20%		
<b>Additional Information on</b>	Brief-Report (Lecture (2)-(6)): 40%, Mini-Essay (Lecture (1) and (7)): 40%, Mini-Examination: 20%					

<b>Grading</b>	
<b>Reasonable Accommodation</b>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• For more information, please visit the following website or contact the Disability Advisory and Support Service Office of the Health and Counseling Center.  Website : <a href="https://acs.hacc.osaka-u.ac.jp">https://acs.hacc.osaka-u.ac.jp</a>  Tel : 06-6850-6107  E-mail : campuslifekenkou-ac@office.osaka-u.ac.jp</li> </ul>
<b>Special Note</b>	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.
<b>Office Hours</b>	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
<b>Course Conducted by Instructors with Practical Experience</b>	

## Instructor(s)

Instructor Name	Name (hiragana)	Affiliation, Title, Course	Office	Extension	E-mail
Hiroshi UMAKOSHI		Engineering Science/Professor	C-329	6287	umakoshi.hiroshi.es@osaka-u.ac.jp
Nozomi WATANABE		Engineering Science/ Assistant Professor	C-331	6285	no.watanabe.es@osaka-u.ac.jp

## Cautions for Students

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