

## Course Schedule Information

Course Code	88V001
Semester	Fall Term
Day and Period	Fri5
Course Name (Japanese)	国際交流特別講義 (Introduction to Chemical Engineering Science : Basic and Bio-Inspired Approach)
Room	
Course Name	International Exchange Special Lecture (Introduction to Chemical Engineering Science : Basic and Bio-Inspired Approach)
Capacity	0
Course Numbering Code	88INES9U105
Required/Optional	
Credits	1.0
Student Year	1
Field	
Instructor	UMAKOSHI Hiroshi

## Detailed Syllabus Information

Course Name	Introduction to Chemical Engineering Science : Basic and Bio-Inspired Approach
Language of the Course	English
Type of Class	Lecture Subject
Course Objective	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".
Learning Goals	- Students will be able to understand the basic and conventional strategy of Chemical Engineering - Students will be able to contrast the above strategy and a new strategy with "Bio-Inspired" approach - Students will be able to imagine how they could pioneer a new philosophy of their own
Requirement / Prerequisite	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 !)
Class Plan	(1) Background: What's Chemical Engineering and Chemical Engineering Science ? (2) Scientist's Approach (1) : Transport Phenomena (Mass) (3) Scientist's Approach (2) : Phase Equilibrium (4) Engineer's Approach (1) : Mass Balance for Unit Operations (5) Engineer's Approach (2) : Let's Design Chemical Process [1] Distillation (6) Engineer's Approach (2) : Let's Design Chemical Process [2] Chemical Process (7) Engineering Scientist's Approach : Cutting-edge for NEXT Chemical Process ~Bio-Inspired Chemical Engineering Science~ (8) Small Examination
Independent Study Outside of Class	Relating information will be provided at each lecture as a "Further Reading".
Textbooks	Relating documents will be provided at each lecture.
Reference	References will be provided at each lecture in a "Further Reading" document.
Grading Policy	Brief-Report (Lecture (2)-(6)): 40%, Mini-Essay (Lecture (1) and (7)): 40%, Mini-Examination: 20%
Other Remarks	Nothing Special. Please enjoy "Cutting-Edge" on "Bio-Inspired Chemical Engineering", but unfortunately only at the final lecture (Lecture (7)). If students would be interested in such fields, they could have chance to register other courses (Bio-Inspired Chemical Engineering 1(Autumn) and 2(Winter) only for graduate students).
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 "Autumn" 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 Hour	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>Keywords</b>	Engineering Science, Chemical Engineering, Bio-Inspired, Multi-Phase System, Self-Organizing System, Mass Balance, Process Design
<b>Messages to Prospective Students</b>	Please think of "What is Engineering Science ?" by learning a "What is Bio-Inspired Approach?" as a case study of "Chemical Engineering Science".

## Instructor(s)

Instructor Name	Name (hiragana)	Affiliation, Title, Course	Office	Extension	Fax	E-mail
Hiroshi UMAKOSHI		Engineering Science/Professor	C-329	6287		umakoshi@cheng.es.osaka-u.ac.jp
Nozomi WATANABE		Engineering Science/ Assistant Professor	C-331	6285		nozomi@cheng.es.osaka-u.ac.jp

## Cautions for Students

--