

Course Schedule Information

Course Code/時間割コード	88A071
Semester/開講区分(開講学期)	Winter Term
Day and Period/曜日・時間	Other
Course Name (Japanese)/開講科目名	化学基礎工学：基礎とBio-Inspiredアプローチ
Room/教室	
Course Name/開講科目名(英)	Introduction to Chemical Engineering Science : Basic and Bio-Inspired Approach
Capacity/定員	0
Course Numbering Code/ナンバリング	88INES9U105
Required/Optional/必修・選択	特別聴講学生対象科目 オンデマンド授業
Credits/単位数	1.0
Student Year/年次	1
Field/分野	
Instructor/担当教員	UMAKOSHI Hiroshi,WATANABE Nozomi
Course of Media Class/メディア授業科目	

※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.

[List of Instructor\(s\)](#)

Detailed Syllabus Information

Course Name/講義題目	Introduction to Chemical Engineering Science : Basic and Bio-Inspired Approach																
Language of the Course/開講言語	English																
Type of Class/授業形態	Lecture Subject																
Course Objective/授業の目的と概要	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/学習目標	<ul style="list-style-type: none"> - 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/履修条件・受講条件	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/授業計画	<table border="1"> <tr> <td rowspan="2">1st</td> <td>Title:Background</td> </tr> <tr> <td>What's Chemical Engineering and Chemical Engineering Science ? Instructor :</td> </tr> <tr> <td rowspan="2">2nd</td> <td>Title:Scientist's Approach (1) Transport Phenomena (Mass) Instructor :</td> </tr> <tr> <td>Title:Scientist's Approach (2) Phase Equilibrium Instructor :</td> </tr> <tr> <td rowspan="2">4th</td> <td>Title:Engineer's Approach (1) Mass Balance for Unit Operations Instructor :</td> </tr> <tr> <td>Title:Engineer's Approach (2) Let's Design Chemical Process [1] Distillation Instructor :</td> </tr> <tr> <td rowspan="2">6th</td> <td>Title:Engineer's Approach (3) Let's Design Chemical Process [2] Chemical Process Instructor :</td> </tr> <tr> <td>Title:Engineering Scientist's Approach Cutting-edge for NEXT Chemical Process ~Bio-Inspired Chemical Engineering Science~ Instructor :</td> </tr> <tr> <td rowspan="2">8th</td> <td>Title:Small Examination</td> </tr> <tr> <td>Instructor :</td> </tr> </table>		1st	Title:Background	What's Chemical Engineering and Chemical Engineering Science ? Instructor :	2nd	Title:Scientist's Approach (1) Transport Phenomena (Mass) Instructor :	Title:Scientist's Approach (2) Phase Equilibrium Instructor :	4th	Title:Engineer's Approach (1) Mass Balance for Unit Operations Instructor :	Title:Engineer's Approach (2) Let's Design Chemical Process [1] Distillation Instructor :	6th	Title:Engineer's Approach (3) Let's Design Chemical Process [2] Chemical Process Instructor :	Title:Engineering Scientist's Approach Cutting-edge for NEXT Chemical Process ~Bio-Inspired Chemical Engineering Science~ Instructor :	8th	Title:Small Examination	Instructor :
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Independent Study Outside of Class/授業外における学習	Relating information will be provided at each lecture as a "Further Reading".																
Textbooks/教科書・教材	Relating documents will be provided at each lecture.																
Reference/参考文献	References will be provided at each lecture in a "Further Reading" document.																
Grading Policy/成績評価	Brief-Report (Lecture (2)-(6)): 40%, Mini-Essay (Lecture (1) and (7)): 40%, Mini-Examination: 20%																
Other Remarks/コメント	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/特記事項	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 Hour/オフィスアワー	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																
Keywords/キーワード	Engineering Science, Chemical Engineering, Bio-Inspired, Multi-Phase System, Self-Organizing System, Mass Balance, Process Design																
Messages to Prospective Students/受講生へのメッセージ	Please think of "What is Engineering Science ?" by learning a "What is Bio-Inspired Approach?" as a case study of "Chemical Engineering Science". You can access to the PDF file of "Course Outline" at the following web address: https://1drv.ms/u/s!AsJWITSxR11shoUnYmD75pKgYPs1tw?e=Jt1Up3																

Instructor(s)

Instructor Name/教員 氏名	Name (hiragana)/ふりがな	Affiliation, Title, Course/所属・職名・ 講座名	Office/居 室	Extension/内 線	Fax/FAX	E-mail/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

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