

基本情報/Course Schedule Information	
開講区分(開講学期)/Semester	Spring and Summer Term
曜日・時間/Day and Period	Fri3
開講科目名/Course Name (Japanese)	ミクロな世界の旅
開講科目名(英)/Course Name	A Microscopic Tour of Life
授業形態/Type of Class	講義科目/Lecture
単位数/Credits	2
担当教員/Instructor	ZHENG, Yajuan

※メディア授業科目について

授業回数の半数以上を、多様なメディアを高度に利用して教室等以外の場所で行う授業を「メディア授業科目」としています。

学部学生が「メディア授業科目」を卒業要件に算入できるのは60単位が上限です。

なお、非該当の場合であっても、メディアを利用した授業を実施する場合があります。

[授業担当教員一覧](#)

詳細情報/Detailed Syllabus Information	
授業サブタイトル/Course Subtitle	
開講言語/Language of the Course	English
学習方法/Learning Method	聴講・視聴/Listening and watching face-to-face/online class,読解/Reading,討論/Discussion,協同/Collaborative work,調査/Research,体験・実践/Experience/practice,発表/Presentation ☒ 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) ☒ Discussion: Learning through question-and-answer interactions and exchanges of opinions among students and between students and the instructor (e.g., pair/group discussion, online chat, one-on-one guidance for writing an academic paper) ☒ Collaborative work: Working as a pair or a group (e.g., producing a poster through group work) ☒ Research: Collecting information from books and academic papers; gathering and analyzing data by fieldwork (e.g., review of previous research, fieldwork) ☒ Experience/practice: Learning from experience- and practice-based activities, and feedback on such activities (e.g., solving problems; laboratory work using instruments; on-campus and off-campus practical training; skills practice including sporting skills; project-based learning; internship) ☒ Presentation: Writing papers, making presentations, and creating works (e.g., report writing, oral/poster presentation, creation of works, portfolio development) ☐ Others(free description) 右の8つの学習方法のうち、該当するものにチェックをつけてください。 「その他（自由記述）」を選択した場合は、右の黄色セルに具体的な内容を入力してください。
授業の目的と概要/Course Objective	Why do leaves change colors in autumn? How do birds know when and where to migrate? What really happens when lightning strikes? How do our eyes see the world? The course will introduce a range of everyday phenomena that connected to subatomic physics. During the course, guest speakers from relevant research fields will be invited to give introductory lectures. We will also visit research facilities. The subatomic world is invisible. Use your imagination.
履修条件・受講条件/Requirement / Prerequisite	Interests in understanding daily life
出欠席及び受講に関するルール/Attendance and Student Conduct Policy	N/A
教科書・指定教材/Textbooks	N/A
参考図書・参考教材/Reference	N/A
成績評価に関する補足情報/Additional Information on Grading	N/A
特記事項/Special Note	N/A
オフィスアワー/Office Hour	Upon Appointment
実務経験のある教員による授業科目/Course conducted by instructors with practical experience	N/A

※ 合理的配慮は定型文につき除外。

学習目標・成績評価詳細情報/Learning Goals &Grading Policy Information	
学習目標(1)/Learning Goal(1)	The goal is to help students develop an awareness of subatomic level mechanisms shaping daily life.
学習目標(2)/Learning Goal(2)	
学習目標(3)/Learning Goal(3)	
学習目標(4)/Learning Goal(4)	
学習目標(5)/Learning Goal(5)	

↑ 5行以上必要な場合は、行を挿入してください。

評価方法/Evaluation Method（プルダウンで選択してください。「その他（自由記述）」を選択した場合は、カッコ内に具体的な内容を入力してください。）					
学習目標/Learning Goals	学習への参加度/Learning Engagement	レポート・論文/Report/paper	発表/Presentation		
学習目標(1)/Learning Goal(1)	○	○	○		
学習目標(2)/Learning Goal(2)					
学習目標(3)/Learning Goal(3)					
学習目標(4)/Learning Goal(4)					
学習目標(5)/Learning Goal(5)					
評価割合(%) /Grade Breakdown	40%	20%	40%	%	%

↑ 5行以上必要な場合は、行を挿入してください。

評価割合/Allocation of Marks（%）：100%

授業計画/Class Plan Detailed Information

回/Time	題目/Title	内容/Content	授業時間外学習/ Independent Study Outside of Class
1	Guidance	Introduce the course plan and teaching methods. Brief presentation by everyone about the future.	(Preview) Please read the syllabus in advance.
2	A glance at subatomic physics	A particle physics point of view	(Review) Please review what's introduced in the previous lesson.
3	Photosynthesis	Converting light energy into chemical energy	(Review) Please review what's introduced in the previous lesson.
4	Bird migration	What's the trigger and how to navigate?	(Review) Please review what's introduced in the previous lesson.
5	Eyes	Eyes vs. camera	(Review) Please review what's introduced in the previous lesson.
6	Stars research	What's behind the starry night?	(Review) Please review what's introduced in the previous lesson.
7	Energy efficient devices	Battery	(Review) Please review what's introduced in the previous lesson.
8	Lasers and light	How do they work, their properties, and uses	(Review) Please review what's introduced in the previous lesson.
9	Computer and internet	The development of network	(Review) Please review what's introduced in the previous lesson.
10	Magnetic resonance and medical imaging	Medical physics in life	(Review) Please review what's introduced in the previous lesson.
11	Lighting research	Terrestrial Gamma-ray flash	(Review) Please review what's introduced in the previous lesson.
12	Semiconductivity in life	Industry	(Review) Please review what's introduced in the previous lesson.
13	AI	The mathematical foundation of AI.	(Review) Please review what's introduced in the previous lesson.
14	Quantum Research	Visit Research Facility	(Review) Please review what's introduced in the previous lesson.(Preview) prepare for presentation.
15	Student Presentation	Students give presentation on their selected topics.	(Preview) Please review what's introduced in the whole course.
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↑ 16行以上必要な場合は、行を挿入してください。

授業担当教員/Instructor(s)

教員氏名/Instructor Name	ふりがな/Name (hiragana)	所属・職名・講座名/Affiliation, Title, Course	居室/Office	内線/Extension	e-mail/E-mail
ZHENG, Yajuan	ぜん やーじゅあん	International College			yizheng.ic@osaka-u.ac.jp

↑ 5行以上必要な場合は、行を挿入してください。