Osaka University International Certificate Program Composition

since 2020

Course Name	Introduction to Computational Materials Design		
Course Affiliation	Graduate School of Engineering		
Course Manager	Prof. Morikawa Yoshitada, Graduate School of Engineering		
Cooperative Schools	Graduate School of Science, Graduate School of Engineering Science, Institute for NanoScience Design, Center for Global Initiatives		
Eligibility	Graduate students of Joint Campus counterpart universities, and working people who have received at least a bachelor's degree are eligible		
Requirements for completion	6 to 8 credits	Capacity	15
Course Objective	To reveal the factors which donate material properties by computer simulation based on quantum mechanics To get basic knowledge and skills about computational material design which can give a guide for designing materials with desired properties through lectures, practical trainings and laboratory works To develop human resources who are capable of utilizing quantum simulations for major issues related to the future of the human beings such as economics, energy and environmental issues		
Learning Goals	To understand the importance of computer simulation methods especially simulation methods based on quantum mechanics in material sciences To understand the utility of quantum simulation methods on designing materials To understand the utility of quantum simulation methods on SDGs To understand the collaboration of quantum simulations and demonstrations To nurture practical skills to apply quantum simulations for specific issues		
Components	【Required Subjects】 Common Subject (Fall, Winter Term) : "OUICP-Introduction to computational materials design" Common Subject (Spring, Summer Term) : "SDGs and Asia-Pacific Region Ⅱ" 【Required Elective Subjects】 Practical Study Abroad (PSA) Subjects: "Laboratory Study Ⅰ, Ⅱ" 【Elective Subjects】 "Tutorials on Computational Nano-Materials Design I", "Topics in Quantum Simulations Ⅰ, Ⅱ", "Solid State Physics" "Selected Topics in Quantum Physics of Solids", "Solid State Theory I"		
Special Note	All the courses in this program will be given in English.		

Components

Course Numbering Code	Course Name	Credits			Course Term	Study Hours	Course Affiliation	Special Note
		Required	Required, Elective	Elective				
720556	OUICP-Introduction to computational materials	1			Fall, Winter	15	Center for Global Initiatives	
720560	SDGs and Asia Pacific Region Ⅱ	1			Summer	15	Center for Global Initiatives	
720542	(PSA) Laboratory study Ⅰ		1		Spring, Summer, Fall,	45	Center for Global Initiatives	
720543	(PSA) Laboratory study Ⅱ		1		Spring, Summer, Fall,	45	Center for Global Initiatives	
281503	Tutorials on Computational Nano-Materials Design I			1	Winter	lecture 13+ Practice 25	Graduate School of Engineering	
281559	Topics in Quantum Simulations Ⅰ			1	Spring	15	Graduate School of Engineering	
281560	Topics in Quantum Simulations Ⅱ			1	Summer	15	Graduate School of Engineering	
280488	Solid State Physics			2	Spring, Summer	30	Graduate School of Engineering	
280769	Selected Topics in Quantum Physics of Solids			2	Spring, Summer	30	Graduate School of Engineering	
240190	Solid State Theory Ⅰ			2	Spring, Summer	30	Graduate School of Science	Not offered in 2022