

Course number		U-LAS70 10002 SE50					
Course title (and course title in English)	ILAS Seminar-E2 :Nanostructured Materials (ナノ組織材料)		Instructor's name, job title, and department of affiliation	Graduate School of Engineering Associate Professor,GAO , Si			
	ILAS Seminar-E2 :Nanostructured Materials						
Group	Seminars in Liberal Arts and Sciences		Number of credits	2	Number of weekly time blocks	1	
Class style	seminar (Face-to-face course)		Year/semesters	2024 ・ First semester		Quota (Freshman)	15 (15)
Target year	Mainly 1st year students	Eligible students	For all majors		Days and periods	Tue.5	
Classroom	822, 8F, Engineering Science Depts Bldg. (Main Campus)				Language of instruction	English	
Keyword	Science / materials						
[Overview and purpose of the course]							
<p>Nanostructured materials refer to the materials having microstructures of which the characteristic length scale is in the order of 1 to 1000 nanometers (10^{-9} meter). Because of the extremely fine microstructures, the nanostructured materials often exhibit unique physical properties which cannot be obtained from the conventional materials. The purpose of this course is to introduce the frontier research of the nanostructured materials with focusing on the microstructures and mechanical properties nanostructured metallic materials.</p>							
[Course objectives]							
<p>By taking this course, students will learn why the materials researches are going into the length scale of nanometer in recent decades. In addition, they will have a brief understanding on the frontier researches of processing, properties and microstructures of the nanostructured metals and alloys.</p>							
[Course schedule and contents]							
1. Introduction to materials and materials science 2. Atomic structure and interatomic bonding 3. Structure of crystalline solids 4. Imperfections in solids 5. Microstructures of materials 6. Concept of nanomaterials 7. Metallic materials having nanostructures 8-11. Microstructures and mechanical properties of nanostructured metallic materials 12. Laboratory tour 13-14. Advanced characterization techniques							
[Course requirements]							
None							
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[Evaluation methods and policy]

Attendance and active participation [60%]

Final report [40%]

[Textbooks]

Not used

[Study outside of class (preparation and review)]

Students are required to read assigned materials (distributed by the teacher) before and after the class for preparation and review. The necessary time for those would be around 2 hours for each class.

[Other information (office hours, etc.)]