

Information Form for SJTU Graduate Profession Courses

Basic Information				
* Course Name	Chinese			
	English Microscopy and Spectroscopy Characterization			
* Credits	3	* Teaching Hours	48 1 =16	
* Semester	Fall	* Cross-semester?	No	Spanning over Semesters
* Course Type	Program Core Course	* Course Type	For full-time students	
* Course Category	Specialized Course	Targeting Students	All graduates	
* Instruction Language	Chinese	Teaching Method	In class teaching	
* Grade	Letter grading	Exam Method	Tests	
* School				
Subject				
Person in charge	Name	ID	School	E-mail
				xdwang77@sjtu.edu.cn
Extended Information				
* () Course Description	200 SIEM TEM			
* English Course Description	<p>Microscopy and Spectroscopy Characterization is a major graduate course for materials and metallurgy majors, and it is also the main technical basic course for the majors. This course is an introductory course to master the principles and applications of analytical electron microscopy. Through lectures, classroom discussions, experimental demonstrations, team work and other teaching links, the basic principles and practical applications of TEM analysis are integrated to study the microstructure of materials, focusing on the structure and composition of materials, especially the analysis of nanometer or even atomic scale, to guide the design and application of materials. The main contents include microscopy based on the TEM mode and spectroscopy based on the STEM mode. Prerequisite course: Fundamental of Materials Science, Microstructure Characterization of Materials.</p>			
* () Syllabus			3	
			2	
			10	
			6	

			12	
			6	
			3	
		STEM EDS	3	
			3	
* English Syllabus	Chapter	Contents	Hours	Mode
	1	Introduction, Structure of TEM	3	Class teaching
	2	Sample preparation	2	Class teaching
	3	Electron diffraction	10	Class teaching
	4	Diffraction contrast imaging	6	Class teaching
	5	Inelastic scattering	12	Class teaching
	6	High resolution and high spatial resolution TEM	6	Class teaching
	7	Demo experiment 1	3	Demo experiment
	8	Demo experiment 2	3	Demo experiment
	9	Final defense	3	Team defense
* Requirements			50 40% + 15% 25% 60% 5-7	
* English Requirements	Test peacetime grade, 40% (Attendance, 15%, homework, 25%) Group defense, 60% (Class defense, in groups of 5-7, give the topics two weeks in advance)			
* Resources	1) 2015. 2) David B. William & C. Barry Carter Transmission electron microscopy A textbook for Materials Science Springer, 2 edition, 2009 3) Ray F. Egerton, Electron energy-loss spectroscopy in the electron microscope Springer 3rd 2011			
* English Resources	1) Rong Yonghua, Introduction to analytical electron microscopy, Second edition, Higher Education Press, 2015 2) David B. William & C. Barry Carter Transmission electron microscopy A textbook for Materials Science Springer, 2 edition, 2009 3) Ray F. Egerton, Electron energy-loss spectroscopy in the electron microscope Springer 3rd 2011			
Note				