Kphqtocvkqp"Hqto"hqt" ULVW"Itcfwcvg"Rtqhguukqp"Eqwtugu"

			Dcuke"Kphqt o cvkqp)"		
*	Chinese					
Course Name	English Frontiers of modern experimentation in materials science					
* Credits	2		* Teaching Hours		32 1 =16	
* Semester	Spring		* Cross-semester?	No	Spanning over Semesters	
* Course Type	Program Elective Course		e * Course Type		For full-time students	
* Course Category	Specialized Course		Targeting Students		Doctoral Level	
* Instruction Language	Chinese		Teaching Method		Online teaching	
* Grade	Letter g	grading	Exam Method	Е	ssay	
* School						
Subject						
	Name	ID	School		E-mail	
Person in charge					lantingzh@sjtu.edu.cn	
	Gzvgpfgf"Kphqt o cvkqp"					
* () Course Description	1. 2. 3. 1. 2. 3. 4. 5. 6. 7. 8. 9.	(S	STEM, PPMS) STM, AFMI 4PS, AES)	ſ FIB,	3DAP, XMID	

* English Course Description	A systematic relationship among the composition-process-property-characterization forms the tetrahedron of materials science and engineering. Characterization lies in the center of the tetrahedron which correlates the causal relationship among composition, process and properties. On the basis of the related undergraduate courses and professional core course of graduate students, the present course aims at graduate students working for a PhD degree. Based on the fundamental microscopy and spectroscopy methods, the cutting-edge progress in the characterization methods and techniques is covered in the course, conforming to the trend of high-sensitivity, high-spatial resolution and quantitative analysis analytical technique. In the meanwhile, how modern analytical technique can be applied to solving engineering problems is explained by case studies.				
* () Syllabus		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
* English Syllabus	Content Multi-scale association method for tissue structure characterization (I) Multi-scale association method for tissue structure characterization (II) X-ray fluorescence spectroscopy (XRF) and experiment Scanning probe microscopy (STM, AFM) PPMS and experiment Material surface analysis technology (XPS, AES, etc.) Material surface analysis technology (XPS, AES, etc.) experiment Elemental Analysis Technology (ICP) Elemental Analysis Technology (ICP)	2 2 2 2 2 2 2 2 2 2 2 2			

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	experiment					
	Infrared, Raman spectroscopy and					
	experiment	2				
	In-situ transmission electron					
		2				
	microscopy characterization					
	Synchrotron radiation principle and	2				
	technology					
	Condensed state spectroscopy and its					
	application in semiconductor material	2				
	physics research					
	In-situ characterization of material					
	behavior based on synchrotron	2				
	radiation					
	Progress in thermal analysis of modern					
	polymer materials					
	50					
*	1.	30%				
	2					
Requirements						
*		ndance, and no grades will be given to those who				
English	miss more than 30% of classes!					
Requirements		k, choose two different aspects, and write two				
	reading reports on the basis of expanding the re					
	1. , ,	, , 1982				
	2 J.W. Edington, Practical Electr	ron Microscopy, Pt. 1-4, Macnillan,				
	1974-76					
	3. J.C.H. Spence, Experimental High Resolution Electron Microscopy,					
	Oxford, 1980	17/				
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	· ·	nd J.I. Goldstein, Principles of				
*	Analytical Electron Microscopy, F	Plenum Press, New York, 1986				
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Resources	Materials Science, Philips Electronic Instruments Inc., Electron					
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	to Analytical Electron Microscopy, Plenum Press, New York, 1979					
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	Microscopy - A Textbook for Mate	erials Science				
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*	2 J.W. Edington, Practical Electron Microscopy, Pt. 1-4, Macmillan, 1974-76					
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	4. , High spatial resolution ele	ectron microscopy, , , ,				

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Note	

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