

Information Form for SJTU Graduate Profession Courses

Basic Information				
* Course Name	Chinese			
	English Fundamentals of Semiconducting Materials and Integrated Circuits Fabrication			
* Credits	2.0	* Teaching Hours	32	
* Semester	Fall	* Cross-semester?	No	Spanning over Semesters
* Course Type	Program Elective 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
				dyding@sjtu.edu.cn
Extended Information				
* () Course Description				
* English Course Description	<p>Course Positioning: This course is a professional elective course of the major in materials science and engineering.</p> <p>Teaching objectives: Semiconductor materials and microelectronics technology are the foundation of modern information industry, it is of great significance to study and master the principles of semiconductor materials, advanced integrated circuit manufacturing technology and methods. Through the learning and interaction of this course, students can become familiar with the electrical characteristics and applications of important semiconductor materials, master the basic design methods of integrated circuits and advanced manufacturing techniques, and understand the full picture of microelectronics technology. Developing learning and innovative research capabilities to lay a good foundation for continuing your studies or working directly in the electronic materials and information technology industry.</p> <p>Main content: This course introduces the physical characteristics of</p>			

	semiconductor materials, device applications of semiconductor materials, integrated circuit design methods and manufacturing techniques, and the development trend of microelectronics industry. Pre-Course: Materials Science and Foundation			
* () Syllabus				
			2	
			4	
			4	
			6	
			4	
			6	
			4	
			2	
* English Syllabus	Chapter	Content	Class hours	Teaching method
	Chapter 1	Introduction	2	Classroom lecture
	Chapter 2	Crystal growth and doping of Si and Ge	4	Classroom lecture
	Chapter 3	Compound semiconductor and its epitaxial growth	4	Classroom lecture
	Chapter 4	Fundamentals of semiconductor physics and device physics	6	Classroom lecture
	Chapter 5	VLSI and IC fabrication process	4	Classroom lecture
	Chapter 6	IC design method and SOC design	6	Classroom lecture
	Chapter 7	Optoelectronic device and MEMS	4	Classroom lecture
	Chapter 8	Group session	2	Classroom lecture
* Requirements	40%	60%		
* English Requirements	This course is assessed in the form of examination. The comprehensive results of the course are assessed according to the usual results and the results of the special assignments, of which the usual results account for 40%, the thematic homework results accounted for 60%.			
* Resources	2	3	Donald A Neamen	2004 2005 2005
* English Resources	Semiconductor Materials, 2nd Edition, Shuren Yang, Zongchang Wang, Jing Wang, Science Press, 2004 Semiconductor Physics and Devices, 3rd Edition, Donald A Neamen, Electronics Industry Press, 2005 Introduction to Microelectronics, 2nd Edition, Xing Zhang, Ru Huang, Xiaoyan Liu, Peking University Press, 2005			

Note	