

* Course Name	Chinese			
	English Polymer Physics and Chemistry			
* Credits	2	* Teaching Hours	32 1 =16	
* Semester	Spring	* Cross-semester?	No	Spanning over Semesters
* Course Type	Program Frontier 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	Essay	
* School				
Subject				
Person in charge	Name	ID	School	E-mail
				smzhu@sjtu.edu.cn
* () Course Description				
* English Course Description	<p>This course deals with the basic theories and research methods of polymer physics and chemistry, including two parts: polymer physics and polymer chemistry. Polymer physics focuses on the relationship between structure and properties of polymers, such as mechanics, heat, solution, aging and other properties. It includes the chain structure, the aggregation structure, the morphology of the polymer, the relaxation and transformation of polymer solution, the mechanical and electrical properties of polymer and other basic properties and testing methods. Based on the concept of molecular motion and thermal transformation, the relationship between structure and properties is systematically illustrated, which provides a theoretical basis for the design, processing, application and analysis of composite materials. Furthermore, the basic theory of polymer synthesis, the selection of polymerization method is introduced. Through the study of this course, students have a relatively comprehensive understanding of the diverse fields of polymer materials, cultivate the students' ability to design and synthesize basic polymers. After this course, it is expected that the students can understand quickly about some advanced research results in polymer materials and have the ability to analyze questions and solve related problems.</p> <p>Prerequisite course: Material Chemistry</p>			

* () Syllabus		2	
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	PPT	2	
	PPT	2	
	* English Syllabus	Main contents, hours, teaching methods, etc	
Overview and short range structure of polymer		2	lecture
Long range structure of polymer		2	lecture
Condensed structure of polymer		2	lecture
	Polymer crystallization	2	lecture

		Research method and liquid crystal in polymer	2	lecture	
		Polymer molecular motion and glass transition	2	lecture	
		Viscoelasticity of polymer	2	lecture	
		Mechanical properties of polymers	2	lecture	
		Polymer solution	2	lecture	
		Conductive polymer	2	lecture	
		Polymer alloy	2	lecture	
		Toughening modification, interface and compatibilization of polymers	2	lecture	
		Design and fabrication of intelligent polymers	2	lecture	
		Basic polymerization method	2	lecture	
		Students' Presentation using PPT	2	Discussion	
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	*	Requirements	10%+ + 50%	40%	PPT
	*	English Requirements	The assessment method of the course includes the following parts: attendance rate of 10% + normal assignments of 40% (including classroom quiz, question answering, homework after class and PPT presentation in class) + major assignments of 50% (submitting the report in the form of review on a short topic)		
	*	Resources	1. “ ” , 2014 2. “ ” 2011 3. “ ” 2009 Canvas Canvas: http://oc.sjtu.edu.cn/		
	*	English Resources	1. "Progress in Polymer materials", Zhang Liucheng, Wang Jiayi, Chemical Industry Press, Second Edition, 2014 (postgraduate planning textbook) 2. "Polymer Research Methods", by Dong Yanming, Xiong Xiaopeng, Zheng Wei, Yang Liulin, Sinopec press, 2011 3. "Structure and Performance of New Polymer", by He Pingsheng, Science Press, 2009 Course Website: http://oc.sjtu.edu.cn/		
		Note			