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Course Name	Modern Technology and Equipment of Plastic Forming			
Credits	2	* Teaching Hours	32 1 =16	
Semester	Spring	* 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	Other	
* School	050 School of Material Science and Engineering			
Subject	Material Science and Engineering			
Person in charge	Name	ID	School	E-mail
				yuhp@sjtu.edu.cn
				liujan@sjtu.edu.cn
* () Course Description	200			

* English Course Description	Metal forming is a basic course of metal plastic deformation technology and methods. This course includes the analysis and discussion of several basic plastic forming processes. It will describe the basic processes and dies of plastic forming technology and the key points in metal material forming. It will focus on the relationship between material properties and material processing properties, and the impact of each process on the environment and cost. The aim is to develop students' ability to design and optimize the forming processes for complex metal parts based on environmentally friendly and sustainable development.				
* () Syllabus					
	1		2		
	2-3		4		
	4-5		4		
	6		2		
	7-8		4		
	9		2		
	10		2		
	11-12		4		
	13-14		4		
	15-16		4		
* English Syllabus	Week	Content	Hours	Format	Instructor
	1	Introduction: sheet forming characteristics, process and equipment, applicable fields, principle of minimum resistance,	2	Teaching	Yu Huping

		etc			
	2-3	Blanking and die design, fracture separation principle, blanking clearance determination, blanking force prediction, technological analysis of blanking parts; die structure design	4	Teaching	Yu Huping
	4-5	Bending process, minimum bending radius; bending mode; springback control; bending die structure design	4	Teaching	Yu Huping
	6	Deep drawing process, Winkler and fracture prediction and measures; drawing coefficient	2	Teaching	Yu Huping
	7-8	Multiple drawing process, drawing coefficient adjustment; die design; comprehensive process analysis; simple die, drawing die classification; continuous die design, composite die design	4	Teaching	Yu Huping
	9	Research status and development trend of forging, characteristics of hot forging,	2	Teaching	Liu Juan
	10	open die forging forming mechanism and process specification for upsetting and stretching, large forging manufacturing	2	Teaching	Liu Juan
	11-12	Die forging: Classification of die forgings, drawing of die forgings draft, design of blank cavity and forming cavity, structural design of forging die	4	Teaching	Liu Juan
	13-14	Special forging: Precision die forging, roll forging, ring rolling, wedge rolling, radial forging, multiple forging, powder forging, etc.	4	Teaching	Liu Juan
	15-16	Super plastic deformation and	4	Teaching	Liu Juan

		grain control, electric and magnetic field assisted forming etc			
			50		
*			25%		
	1		25%		
	2				
Requirements	3	PPT	25%		
	4		25%		
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English Requirements		Comprehensive scores including multiple assignments (25%), discussions(25%), presentation(25%) and essays(25%)			
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Resources	1)				
	2)				
	3)				
	4)				
	5)				
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English Resources		1) Gao Jinzhang, Plastic forming technology and die design, China machine press 2) Wang Xiaopei, Stamping manual, China machine press 3) Wang Zutang, Forging technology, China machine press 4) Lv Yan, Forging technology, China machine press 5) Xia Jushen, Precision plastic forming process, China machine press			
Note					