Information Form for SJTU Graduate Profession Courses

Basic Information					
* Course Name	Chinese				
	English Mechanics of Welding Structure				
* 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	Tests		
* School					
Subject					

Person in charge	Name	ID	School	E-mail
				Lfg119@sjtu.edu.cn
				xujijin_1979@sjtu.edu.cn

Extended Information	
* ( ) Course Description	200
* English Course Description	The mechanics of welding structure plays an important role in modern welding structure design, manufacture and safety evaluation. As an interdisciplinary subject of welding science and mechanics, which opens to master & doctor students of Materials Science and Engineering School. Basing on the early courses such as materials science foundation and materials mechanics, inhomogeneous mechanics characterize of welded joint will be delivered in this course. The related theory and experimental method of fracture, fatigue of welded structure will be introduced, provides basic theoretical knowledge and experimental method in design, assessment and failure analysis for welding structure. The establishment of suitable assessment method for welding structure is the main objective of this course based on the better understanding of the design of welding structure coupling with mechanical behavior. Meanwhile, the course is offered to the postgraduate student, combining with the welding knowledge studied in undergraduate process, the ability to solve practical engineering problems for welding structure in service will be improved. For the cultivating advanced talents of

	welding subject, the mechanics of welding structure is also needed.
* ( ) Syllabus	

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* English Syllabus				
	Chapter 1	Design principle of welding joint	2	Lecture
	Chapter 2	Analysis of welding stress	4	Lecture
	Chapter 3	Fracture of welding structure	4	Lecture
	Chapter 4	Application of the finite element in welding structure mechanics	2	Lecture
	Chapter 5	Fatigue of welding structure	4	Lecture
	Chapter 6	Welding stress corrosion cracking	2	Lecture
	Chapter 7	Integrity assessment of welding structure	2	Lecture
	Chapter 8	Welding fracture test and analysis	2	Experiment
	Chapter 9	Welding fatigue test and analysis	2	Experiment
	Chapter 10	Welding residual stress measurement	2	Experiment
	Chapter 11	Modeling on welding process	2	Experiment
	Chapter 12	Course discussion	4	Lecture

* Requirements	50 (10%)+ (20%)+ (70%) Homeworks (15%) +Class performance (15%) Project analysis report (70%) 1. 2. 3. 4.
* English Requirements	1. Different welding joints design according to literatures (homework) 2. Test and analysis of weld fracture performance (homework) 3. Derivation of welding residual stress evolution process (homework) 4. Analysis report and defense (exam)
* Resources	1. 2000 2 2. 2007 8 3. 2008 5 4. Fracture and fatigue of weld joints and structures. Kenneth A. Macdonald, Woodhead Publishing Limited, 2011
* English Resources	1. Fracture behavior and evaluation of welded structure, Huo Lixing. China Machine Press, 2000. 2. Welding mechanics and principle of structural integrity Zhang Yanhua, Beihang University Press, 2007. 3. Welding structure Fang Hongyuan. China Machine Press, 2008. 4. Fracture and fatigue of weld joints and structures. Kenneth A. Macdonald, Woodhead Publishing Limited, 2011.
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