

## Information Form for SJTU Graduate Profession Courses

Basic Information				
* Course Name	Chinese			
	English Welding Metallurgy			
* Credits	2	* Teaching Hours	32 1 =16	
* Semester	Fall	* Cross-semester?	No	Spanning over Semesters
* Course Type	Program Frontier Course	* Course Type	For full-time students	
* Course Category	Specialized Course	Targeting Students	Master Level	
* Instruction Language	Chinese	Teaching Method	In class teaching	
* Grade	Letter grading	Exam Method	Essay	
* School				
Subject				
Person in charge	Name	ID	School	E-mail
				ghe@sjtu.edu.cn
Extended Information				
* ( ) Course Description	200			
* English Course Description	<p>The purpose of this course is to elaborate on the principles of physical metallurgy, chemical metallurgy and mechanical metallurgy of the metallic materials in the welding process, including the microstructure and phase transition, the formation of the welding defects, weldability, welding procedure, weld inspection, etc. The focus will be put on the low alloy high strength steel, stainless steel, nickel based alloy, aluminum alloy, etc. The aim of this course is to enable students to understand and master the weldability of materials in some key welding structures, the basic law of welding metallurgy, and the mechanism of the microstructure and phase transition in the welding process. After the teaching, the students will have the ability to design welding structure and develop welding process for the specified materials, to analyze the welding defects for particular material, and to find the way to solve the welding problems by utilizing the knowledge of the welding metallurgy.</p>			

<p>* ( ) Syllabus</p>	<ul style="list-style-type: none"> <li>● 2</li> <li>● 2</li> <li>● 2</li> <li>● 1</li> <li>● 1</li> <li>● 8</li> <li>● 6</li> <li>● 6</li> <li>● 4</li> </ul>
<p>* English Syllabus</p>	<ul style="list-style-type: none"> <li>● Background period 2 hours</li> <li>● Welding material metallurgy period 2 hours</li> <li>● Chemical reaction during welding process period 2 hours</li> <li>● Flow behavior during welding process period 1 hours</li> <li>● Stress deformation during welding process period 1 hours</li> <li>● Metallurgical behavior in weld zone period 8 hours</li> <li>● Metallurgical behavior in Partial melting zone period 6 hours</li> <li>● Metallurgical behavior in heat-affected zone period 6 hours</li> <li>● Summary &amp; Assessment period 4 hours</li> </ul>
<p>* Requirements</p>	<p style="text-align: center;">50</p>
<p>* English Requirements</p>	<p>Examination includes writing literature review and classroom presentation.  Literature review: Searching and reading welding metallurgy literatures for finding problems existed and focusing on research ideas, experimental design, and research progress, etc. After then, writing a literature review.  The class presentation Each student gives 15-25 minutes of presentation for the literature review.</p>
<p>* Resources</p>	<ol style="list-style-type: none"> <li>1. 2012.</li> <li>2. 2014.</li> <li>3. John C. Lippold. Welding metallurgy and weldability, Wiley, 2014.</li> <li>4. John C. Lippold, Damian J. Kotecki. Welding metallurgy and weldability of stainless steel, Wiley, 2005.</li> <li>5. John N. DuPont, John C. Lippold, Samuel D. Kiser. Welding metallurgy and weldability of nickel-base alloys, Wiley, 2009.</li> </ol>
<p>* English Resources</p>	<ol style="list-style-type: none"> <li>1. Sindo Kou. Welding metallurgy, in Chinese, translated by Yan J. Higher Education Press, 2012.</li> <li>2. Zhang W. Welding metallurgy (fundamental), in Chinese, Machinery Industry Press, 2014.</li> <li>3. John C. Lippold. Welding metallurgy and weldability, Wiley, 2014.</li> <li>4. John C. Lippold, Damian J. Kotecki. Welding metallurgy and weldability of stainless steel, Wiley, 2005.</li> <li>5. John N. DuPont, John C. Lippold, Samuel D. Kiser. Welding metallurgy and weldability of nickel-base alloys, Wiley, 2009.</li> </ol>

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