Information Form for SJTU Graduate Profession Courses

Basic Information				
* Course Name	Failure Analysis of Materials			
* 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	Oral exam	
* School				
Subject				

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

Extended Information	
* ( ) Course Description	200 1 2 3 4 5 SEM EBSD
* English Course Description	"Failure Analysis of Materials" is designed for Master and PH. D students to learn how to analysis the failure of materials and components. The class will introduce the principals and practices of the failure of materials involving metals, ceramics, plastics, composites and electronic materials. In which the failure such as fracture, fatigue, creep, corrosion and frictional wear in above material will be provided. The analytic methods on mechanical properties and microstructure were included as well. The current literatures and update ideas on the failure analysis will be discussed in the class. **Teaching Aims** Student know a systematic approach to identify possible causes and utilize analytical techniques to pinpoint the exact cause(s). Student must not only know how to diagnosis the failure mode,

	but also to determine the best way to accomplish this diagnosis.

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Syllabus

	Content	Hours	Format	Instructor
1		2		
2		2		
3		2		
4	SEM EBSD	2		
5		2		
6		2		
7		2		
8		2		
9		2		
10		2		
11		2		
12		2		
13		2		
14		2		
15		4		

* English Syllabus	

NO.	Content	Hours	Format	Instructor
1	Introduction	2	Lecture	JIN Li
2	Fundamental theory and technology	2	Lecture	JIN Li
3	Fracture analysis of Metals	2	Lecture	JIN Li
4	In-situ SEM and EBSD analysis	2	Lecture	JIN Li
5	Project	2	Discussion	JIN Li
6	Fatigue analysis of Metals	2	Lecture	JIN Li
7	Fatigue of Metals: case analysis	2	Lecture	JIN Li
8	Project	2	Discussion	JIN Li
9	Failure due to corrosion	2	Lecture	JIN Li
10	Project	2	Discussion	JIN Li
11	Wear failure of metals	2	Lecture	JIN Li
12	Failure of electronic component	2	Lecture	HANG Tao
13	Failure analysis process for electronic component	2	Lecture	HANG Tao
14	Electronic component: case analysis	2	Lecture	HANG Tao
15	Final test	4	Oral presentation	JIN Li

* Requirements	
* English Requirements	Failure analysis involves a systematic approach to identify possible causes and utilize analytical techniques to pinpoint the exact cause(s). Student must not only know how to diagnosis the failure mode, but also to determine the best way to accomplish this diagnosis.
* Resources	1. / TB114.2 2004 ISBN7-118-03362-6 2. / TH13/46 1988 ISBN: 7-302-00164-2 3. / TH12-62/5 1989 4. / TG115/13 1985 5. . , / TG-62/2 V.10 1986 6. / TG-115/20 2003 7. / R. 2002 TB3/A39
* English Resources	1. Engineering Failure Analysis, Elsevier 2. Journal of Failure Analysis and Prevention. Springer Complete Collection

Note	10% 20% 10 70%