

教學大綱(Syllabus)-研究所

系務會議通過修訂日期：2007/9/12
updated: 2008/1/21

課程編碼 (course no.)	M044			學分 (credits)	3	
課程名稱 (course name)	(中) 氧化動力學					
	(Eng.) Kinetics of Oxidation					
開課系所班級 (dept. & year)	碩士班 (Master)			授課教師 (teacher)	呂福興 (Fu-Hsing Lu)	
課程類別 (course type)	選修 (elective)	授課語言 (language)	中文 (Mandarin)	開課學期 (semester)	下學期 (Spring)	
課程簡述 (course description)	(中) 介紹氧化之基本理論，並包含實際無機之金屬材料與非金屬材料及有機材料(物質)之氧化探討等。以期對物質之氧化有概括性之認識。並透過文獻搜集與報告或實驗等方式，使學生對氧化有進一步之瞭解。					
	(Eng.) To firstly introduce the basic theory of oxidation. Subjects will then include inorganic (metals and non-metals) as well as organic materials. Literature survey or report is required to further understand the subject.					
課程目標 (course objectives)	(中) 瞭解氧化理論與應用					
	(Eng.) Understanding the oxidation theory and its application.					
先修課程(prerequisites)						
課程編碼 (course no.)	課程名稱 (course name)		與課程銜接的重要概念、原理與技能 (relation to the current course)			
教學模式 (teaching methodology)	模式 (methodology)	講授 (teaching)	討論/報告 (discussion & report)	實驗/參訪 (exp./fab visit)	遠距/網路教學 (remote/web teaching)	合計 (sum)
	學分分配 (credit distrib.)	3				3
	授課時數分配 (hour distrib.)	3				3

授課進度與內容 (週次、單元名稱與內容、習作/考試進度、備註) (course content and homework/tests schedule)			
週次 (week)	單元名稱與內容 (subject and content)	習作/考試進度 (homework and tests)	備註 (remark)
01	General Introduction		
02	General Introduction		
03	Theory of Oxidation		
04	Theory of Oxidation		
05	Theory of Oxidation		
06	Oxidation of Inorganic Systems -metals		
07	Oxidation of Inorganic Systems -metals		
08	Oxidation of Inorganic Systems -metals		
09	Prelim	prelim	
10	Oxidation of Inorganic Systems -metals		
11	Oxidation of Inorganic Systems -nonmetals		
12	Oxidation of Inorganic Systems -nonmetals		
13	Oxidation of Inorganic Systems -nonmetals		
14	Oxidation of Inorganic Systems -nonmetals		
15	Oxidation of organic Systems	paper report due	
16	Oxidation of organic Systems		
17	Oral report	oral report	
18	Oral report	oral report	
學習評量方式 (evaluation)			
期中考(prelim) (30%), 期末/口頭報告(final/oral report) (70%)			
教科書 (書名、作者、書局、代理商、說明) (textbook)			
none			
參考書目 (書名、作者、書局、代理商、說明) (other references)			
1. P. Kofstad, <i>High Temperature Corrosion</i> , Elsevier Applied Science, London, (1988).			



2. J. Nowotny (Ed.), *Diffusion in Solids and High Temperature Oxidation of Metals*, Trans Tech Publications, Zürich, (1992).
3. Journals (eg., Oxidation of Metals)

課程教材（教師個人網址請列在本校內之網址。）

(teaching aids & teacher's website)

Class notes

<http://www.mse.nchu.edu.tw/p1.asp?uno=6>

<http://web.nchu.edu.tw/~fhlu>



與學系教育目標之關聯性(材料系)
(relation to educational objective of materials engineering department)

1. 提供材料性質、製程與應用及跨領域知識與訓練
To provide interdisciplinary know-how and training on materials properties, processing, and applications
2. 培育具獨立思考、創新與實作能力之材料科技人才
To train materials technology students for independent thinking, innovation, and practical skills
3. 培養團隊合作精神與溝通協調整合能力
To cultivate the spirit of teamwork and the capacity of integrated cooperation
4. 建立多元價值與國際觀
To inculcate multifarious values and cosmopolitan worldview
5. 強化綠色材料科技教育
To implement educational programs in eco-materials technology

與學系教育核心能力之關聯性(材料系)
(relation to educational core abilities for materials engineering department)

- (A) 特定材料之專業知識
Specialized knowledge in Materials science and Engineering
- (B) 策劃及執行專題研究之能力
Ability to plan and execute a research project
- (C) 撰寫專業論文之能力
Ability to write journal articles
- (D) 創新思考及獨立解決問題之能力
Ability to do innovative thinking and independent problem solving
- (E) 跨領域協調整合之能力
Ability to work in an interdisciplinary setting
- (F) 國際觀及綠色材料意識
A fine international scope and general concept of eco-material
- (G) 領導、管理及規劃之能力
Ability in leadership, management, and organization
- (H) 終身自我學習成長之能力
Ability for life-long learning
- (I) 學術專業倫理
Professional ethics in Science and Engineering



課程內涵達成學系【教育目標】比對資料

授課進度與內容	教育目標				
	目標一 提供材料性質、製程與應用及跨領域知識與訓練	目標二 培育具獨立思考、創新與實作能力之材料科技人才	目標三 培養團隊合作精神與溝通協調整合能力	目標四 建立多元價值與國際觀	目標五 強調綠色材料科技教育
請勾選關聯性 <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
General Introduction	1	1	0	1	1
Theory of Oxidation	1	1	0	0	0
Oxidation of Inorganic Systems -metals	1	1	0	0	1
Oxidation of Inorganic Systems -nonmetals	1	1	0	0	1
Oxidation of organic Systems	1	1	0	0	1
Report (paper and oral)	0	1	1	0	0
總計(%)	83	100	17	17	67

- 註：
1. 所有必修課均須填寫此表。
 2. 矩陣中請填入關聯性； 1 表示相關，0 表示無相關。
 3. 學系教育目標項次請依據表1填寫。



課程內涵達成學系【核心能力】比對資料(研究所)

授課進度與內容	核心能力								
	A 特定材料之專業知識	B 策劃及執行專題研究之能力	C 撰寫專業論文之能力	D 創新思考及獨立解決問題之能力	E 跨領域協調整合之能力	F 國際觀及綠色材料意識	G 領導、管理及規劃之能力	H 終身自我學習成長之能力	I 學術專業倫理
請勾選關聯性 <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
General Introduction	1		0	1		1	0	1	1
Theory of Oxidation	1		0	1		0	0	0	0
Oxidation of Inorganic Systems -metals	1		0	1		1	0	0	0
Oxidation of Inorganic Systems -nonmetals	1		0	1		1	0	0	0
Oxidation of organic Systems	1		0	1		1	0	0	0
Report (paper and oral)	0		1	1		1	1	1	1
總計(%)	83		17	100		83	17	33	33

- 註：
1. 所有必修課均須填寫此表。
 2. 矩陣中請填入關聯性； 1 表示相關，0 表示無相關。
 3. 學系教育目標項次請依據表1填寫。