

教學大綱(Syllabus)-研究所

系務會議通過修訂日期：2007/9/12
updated: 2009/8/24

課程編碼 (course no.)	M061			學分 (credits)	3	
課程名稱 (course name)	(中) 功能性高分子材料					
	(英) Functional Polymer Materials					
開課系所班級 (dept. & year)	材料科學與工程學系碩士班一年級 (Dept. of Mat. Sci. & Engr., Master)			授課教師 (teacher)	林江珍 教授 (Prof. JiangJen Lin)	
課程類別 (course type)	選修 (Elective)	授課語言 (language)	中文 (Chinese)	開課學期 (semester)	下學期 (Spring)	
課程簡述 (course description)	(中) 更進一步探討以高分子化學結構式及官能基 (functional groups) 表達高分子化學及物理性質；更進一層應用上在熱、光、電、機械及生化之功能應用性質。					
	(Eng.) Understanding the knowledge of polymer chemistry, and chemical/physical meanings of polymer structures and functional groups; including a variety of industrial applications for physical, thermal, photoelectronic, electric conductive and biochemical/biological properties. Ultimately their industrial applications are covered.					
課程目標 (course objectives)	(中) 講授基本之性能與功能，以利未來應用時所需之知識。					
	(Eng.) 1. The purpose of this course is to train graduate students to be familiar with the terminologies of polymer science and to be knowledgeable about polymer research, development and industrial applications. (Since polymer materials are central for the current advances of many industrial areas including plastics/elastomers, conducting materials, optoelectronics, biomaterials, drug- delivery, etc., that the young researchers have to face the challenges to the fast emerging and multidisciplinary technologies.) 2. The contents of lectures, homework and exams are designed to stimulate students to think and adsorb the new knowledge in this field and to apply what they learn from this class. (Students are encouraged to raise questions and discussion during the lectures; literature reading and intensive discussion)					
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.)	42	12			54



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	Lecture on polymer research, development and industrial applications		
02	Plastics/elastomers		
03	Conducting materials		
04	Conducting materials		
05	Optoelectronics		
06	Optoelectronics	homework 1 and tests 1	
07	Biomaterials		
08	Biomaterials		
09	Drugs	Mid-term exam	
10	Discussion on literature reading and reporting		
11	Discussion on literature reading and reporting		
12	Discussion on literature reading and reporting		
13	Discussion on literature reading and reporting	homework 2 and tests 2	
14	Discussion on literature reading and reporting		
15	Discussion on literature reading and reporting		
16	Discussion on literature reading and reporting		
17	Discussion on literature reading and reporting		
18	Discussion on literature reading and reporting	Final exam	
學習評量方式 (evaluation)			
homework, quizzes, midterm/final examinations (40-60%), class attendance (up to 10%) and presentations (0-20%)			
教科書 (書名、作者、書局、代理商、說明) (textbook)			
Provided powerpoint files and recent literature publications			
參考書目 (書名、作者、書局、代理商、說明) (other references)			
None			
課程教材 (教師個人網址請列在本校內之網址。) (teaching aids & teacher's website)			
http://www.mse.nchu.edu.tw/wb_main_co3.asp			



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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1、Lecture on polymer research, development and industrial applications	1	1	0	0	1
2、Plastics/elastomers	1	1	0	0	1
3、Conducting materials	1	1	0	0	1
4、Conducting materials	1	1	0	0	1
5、Optoelectronics	1	1	0	0	1
6、Optoelectronics	1	1	0	0	1
7、Biomaterials	1	1	0	0	1
8、Biomaterials	1	1	0	0	1
9、Drugs	1	1	0	0	1
10、Discussion on literature reading and reporting	1	1	0	0	1
11、Discussion on literature reading and reporting	1	1	0	0	1
12、Discussion on literature reading and reporting	1	1	0	0	1
13、Discussion on literature reading and reporting	1	1	0	0	1
14、Discussion on literature reading and reporting	1	1	0	0	1
15、Discussion on literature reading and reporting	1	1	0	0	1
16、Discussion on literature reading and reporting	1	1	0	0	1
17、Discussion on literature reading and reporting	1	1	0	0	1
18、Discussion on literature reading and reporting	1	1	0	0	1
總計(%)	100	100	0	0	100

- 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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1、Lecture on polymer research, development and industrial applications	1	1	1	1	1	1	0	0	1
2、Plastics/elastomers	1	1	1	1	1	1	0	0	1
3、Conducting materials	1	1	1	1	1	1	0	0	1
4、Conducting materials	1	1	1	1	1	1	0	0	1
5、Optoelectronics	1	1	1	1	1	1	0	0	1
6、Optoelectronics	1	1	1	1	1	1	0	0	1
7、Biomaterials	1	1	1	1	1	1	0	0	1
8、Biomaterials	1	1	1	1	1	1	0	0	1
9、Drugs	1	1	1	1	1	1	0	0	1
10、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
11、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
12、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
13、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
14、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
15、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
16、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
17、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
18、Discussion on literature reading and reporting	1	1	1	1	1	1	0	0	1
總計(%)	100	100	100	100	100	100	0	0	100

- 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。