



教學大綱(Syllabus)-大學部

updated: 2007/01/30

課程編碼 (course no.)	U030			學分 (credits)	3	
課程名稱 (course name)	(中) 高分子材料					
	(Eng.) Introduction of Polymer					
開課系所班級 (dept. & year)	材料工程學系大學部三年級 (Dept. of Mat. Engr., Junior)			授課教師 (teacher)	吳宗明 教授 (Prof. Tzong-Ming Wu)	
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)	<p>(中) 本課程主要講解高分子材料分類與鍵結、幾何同分異構物、高分子材料型態、高分子材料分子量與分佈、高分子材料轉換溫度、高分子材料合成、高分子材料黏彈性與高分子材料機械性質。主要針對高分子分子之特性進行說明、此課程以課堂講授為主, 並針對課程內容進行期中考與期末考來評量學生對於課堂講授資料之理解與思考判斷力</p> <p>(Eng.) This course describes the fundamental principle of polymer science and engineering that are currently of practical relevance. The main focus of this course is the bonding and stereoisomerism of polymers, the morphology of polymers, the determination of molecular weight and distribution, the transition temperature of polymers, and their related viscoelasticity and mechanical properties.</p>					
課程目標 (course objectives)	<p>(中) 本課程主要使學生了解高分子材料分類與鍵結、幾何同分異構物、高分子材料型態、高分子材料分子量與分佈、高分子材料轉換溫度、高分子材料合成、高分子材料黏彈性與高分子材料機械性質。以了解高分子材料與金屬材料或陶瓷材料之不同</p> <p>(Eng.)The objective of this course is the understand the definition and structure of polymer, specifically the morphology, glass transition temperature, molecular weight distribution and viscoelasticity of polymers.</p>					
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	Introduction		
02	Type of polymers		
03	Bonding in polymers		
04	Stereoisomerism		
05	Polymer morphology I		
06	Polymer morphology II		
07	Molecular weights determination I		
08	Molecular weights determination II		
09	Polymer solubility and solution		
10	Mid-term Exam.		
11	Transition temperature I		
12	Transition temperature II		
13	Polymer synthesis I		
14	Polymer synthesis II		
15	Polymer properties I		
16	Polymer properties II		
17	Polymer properties III		
18	Final Exam.		
學習評量方式 (evaluation)			
(1) Mid-term Exam.: 50%			
(2) Final Exam.: 50%			
以中招考與期末考來評量學生對於課堂講授資料之理解與思考判斷力			
教科書 (書名、作者、書局、代理商、說明) (textbook)			
Textbook: Fundamental principle of polymeric materials, S.L. Rosen, 2 nd Ed., John Wiley & Sons, Inc. (2001) 課程有關高分子材料分類與鍵結、幾何同分異構物、高分子材料型態、高分子材料分子量與分佈、高分子材料轉換溫度、高分子材料合成、高分子材料黏彈性與高分子材料機械性質之變化, 主要取自本教科書, 部份資料可參考下列參考書目			
參考書目 (書名、作者、書局、代理商、說明) (other references)			
1. Macromolecular Physics, B. Wunderlich, Academic Press (1980)			
課程教材 (教師個人網址請列在本校內之網址。) (teaching aids & teacher's website)			
1. http://audi.nchu.edu.tw/~tmwu			

與學系教育目標之關聯性(材料系) (相關請勾選)
(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) (相關請勾選)
(relation to educational core abilities for materials engineering department)

- (A) 運用數學、科學及材料工程知識能力
(ability to apply knowledge of mathematics, science, and materials engineering)
- (B) 設計與執行材料實驗及分析數據之能力
(ability to design and conduct experiments, as well as analyze data)
- (C) 執行材料工程實務所需之技術與能力
(ability to use techniques and skills for materials engineering practices)
- (D) 製程整合及及元件實作之能力
(ability to integrate process and make devices)
- (E) 溝通協調之能力與團隊合作之精神
(ability to communicate effectively and cultivate the spirit of teamwork)
- (F) 獨立思考及解決問題之能力
(ability to think independently and solve problems)
- (G) 培養國際觀及認識綠色材料對全球環境的影響
(cultivation of cosmopolitan worldview and understanding effects of eco-materials on global environment)
- (H) 終身學習之習慣與能力
(ability to cultivate life-long learning habit)
- (I) 瞭解材料工程人員的社會責任與專業倫理
(understanding materials engineers' social responsibility and professional ethics)