



國立中興大學教學大綱(Syllabus)-研究所

系務會議通過修訂日期：2010/1/13
updated: 2010/1/25

課程名稱 (course name)	(中) M066 光學薄膜				
	(Eng.) M066 Optical Thin Films				
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)	學分 (credits)	3	授課教師 (teacher)	李正中教授/ 林佳鋒副教授 (Prof. Cheng-Chung Lee/ Associate Prof. Chia-Feng Lin)
課程類別 (course type)	<input type="checkbox"/> 必修(Mandatory) <input checked="" type="checkbox"/> 選修(Elective)	授課語言 (language)	中文 (Chinese)	開課學期 (semester)	上學期
課程目標 (course objectives)	(中) 1. 光學薄膜簡介 2. 理論介紹與公式推導 3. 光學薄膜之設計與模擬 4. 光學薄膜之製備與檢測技術				
	(Eng.) 1. Introduction of optical thin films. 2. Theory and deduction of the equation. 3. Design and simulation of optical thin films. 4. Fabrication and examination technology of optical thin films.				
課程簡述 (course description)	(中) 1. 光學薄膜簡介 2. 理論介紹與公式推導 3. 光學薄膜之設計與模擬 4. 光學薄膜之製備與檢測技術				
	(Eng.) 1. Introduction of optical thin films. 2. Theory and deduction of the equation. 3. Design and simulation of optical thin films. 4. Fabrication and examination technology of optical thin films.				
先修課程(prerequisites)					
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) 【請勾選】	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)	
	V	V		V	

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	Overall Introduction		
02	Theory : electromagnetism		
03	Theory : electromagnetism		
04	Theory : reflectance and transmission of single-layered		
05	Theory : reflection and transmission of multi-layered		
06	Design of optical thin films by vector method		
07	Design of optical thin films by vector method		
08	Midterm examination		
09	Design of optical thin films by conductance path law		
10	Design of high reflection mirror and anti-reflectance		
11	Design of high reflection mirror and anti-reflectance		
12	Design of band pass filter		
13	Design of edge filter		
14	Fabrication method of optical thin films		
15	Monitor of the thickness and uniformity of optical thin film		
16	Different optical thin film material property and application		
17	Final examination		
學習評量方式 (evaluation)			
<p>(1) Midterm examination: 30% Final examination: 40% Homework:30%</p> <p>期中考 (Midterm) : 目的在評估學生對課堂講授資料的了解程度。 期末考及簡易書面報告 (Final presentation & term paper) : 每位同學從設計及材料特性分析中，於學期末提出書面報告。目的是要培養學生設計能力、鍍膜</p>			



技術、檢測技術、以及整理資料與分析資料的能力，並訓練學生表達與溝通的能力。

教科書&參考書目 (書名、作者、書局、代理商、說明)
(textbook & other references)

教科書

李正中, “薄膜光學與鍍膜技術”, 藝軒出版社, 台北, (第六版, 2009 年 7 月, ISBN 978-957-616-951-9)

參考書

1. “Thin-Film Optical Filters”, 3rd ed. by H. A. Macleod (IoP)
2. “Handbook of Thin Film Technology” by E. I. Maissel and R. Glang (McGraw-Hill,1970.)

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.ncu.edu.tw/~tftc>

課程輔導時間
(office hours)

四 678



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【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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Overall Introduction	1	1	1	1	1	1	0	1	1
Theory : electromagnetism	1	1	1	1	1	0	0	1	1
Theory : reflectance and transmission of single-layered	1	1	1	1	1	0	0	1	1
Theory : reflection and transmission of multi-layered	1	1	1	1	1	0	0	1	1
Design of optical thin films by vector method	1	1	1	1	1	0	0	1	1
Design of optical thin films by conductance path law	1	1	1	1	1	0	0	1	1
Design of high reflection mirror and anti-reflectance	1	1	1	1	1	1	0	1	1
Design of band pass filter	1	1	1	1	1	1	0	1	1
Design of edge filter	1	1	1	1	1	1	0	1	1
Fabrication method of optical thin films	1	1	1	1	1	0	0	1	1
Monitor of the thickness and uniformity of optical thin film	1	1	1	1	1	0	0	1	1
Different optical thin film material's property and application	1	1	1	1	1	0	0	1	1

- 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。