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②图 i 東華大學 教學計劃表 Syllabus

		秋 与	产計劃衣	Sy 1 1	abus					
• •	名稱(中文) ume in Chinese	条米科技概論Al	3		學年/學期 Academic Year/Sen	nester	113/2			
	名稱(英文) ume in English	Introduction to Nanotechnology								
	十目代碼 rse Code	系級 PHYS2100AB Department 學3 & Year		學三	開課單位 Course-Offering Department	物理學系				
	修別 Type	「受我 Program 」 3 A								
	t課教師 structor	/馬遠榮								
	化修課程 requisite									
		課	程描述 Course	e Descript	tion					
·紹奈米科	技與實際奈米相關	技術與奈米材料	,增進學生對奈	米科技與打	支術的了解。					
課程目標 Course Objectives										
展學生修習:	此一課程後,能對	奈米科技對有深	入了解,以利研	ト究工作的ご	進行。					
系專業能力 Basic Learning Outcomes							程目標與系專業能 力相關性 relation betweer urse Objectives and Dept.'s Education Objectives			
	A 具備物理之基礎背景知識Possessing fundamental knowledge in physical sciences.									
能運用基本物理知識與邏輯推理,分析解決物理問題Being able to analyze and solve physics problems based on basic knowledge in physics as well as logical reasoning. U 對目前測量器材有基礎認識,且具有操作物理實驗儀器的能力Being acquainted with modern equipment and being able to operate them for performing physics experiments. D 能使用基礎電腦程式語言解決物理問題Being able to use basic computer programming for										
solving physics problems. E										
F 具備科技發展的國際視野以及外語溝通的能力Having an international view of the technology developments and being able to use a foreign language for communications							0			
圖示說明Ⅰ	llustration :	● 高度相關 Hi	ghly correla	ated 〇中	度相關 Moderatel	y corre	lated			
		授課進	度 表 Teaching	g Schedule	e & Content					
週次Week		內容 Subject/Topics				備註Remarks				
1	Introduction									
2	Nanotechnology & Nanostructures and nanomaterials: What is nanometer? Definition of nanotechnology and nanomaterials 0D, 1D, 2D nanostructures and bulk									
See nanoworld: Electron microscopy, Scanning electron microscopy. Transmission electron microscopy, Selected area electron										

diffraction

4	Manipulate nanoworld: Scanning probe microscopy, scanning tunneling microscopy, Quantum mechanism, Atomic force microcopy, van der Waals force							
5	Electronic structures of nanomaterials: Atomic physics and photoelectrons, X-ray photoelectron spectroscopy							
6	第一次小考							
7	期中口試與書面報告							
8	春假							
9	Optical properties of nanomaterials: Raman scattering & photoluminescence spectroscopy							
10	Structural and crystalline determinations: X-ray diffraction of molecules and solids, crystal structures and crystallinity							
11	2D materials and their applications							
12	Hot-filament metal-oxide deposition technique: Introduction & Operation							
13	Hot-plate metal deposition technique: Introduction & Operation							
14	ube furnace deposition technique: Introduction & Operation							
15	Field-emission scanning electron microscopy (FESEM) & Energy dispersive spectroscopy (EDS): Introduction & Operation							
16	期末口試與書面報告							
17	Raman spectroscopy & Photoluminescence spectroscopy: Introduction & Operation							
18	X-ray photoelectron spectroscopy (XPS): Introduction & Operation							
	教學策略 Teaching Strategies							
✓ 課堂講	授 Lecture							
其他Mi	scellaneous:							
	教學創新自評Teaching Self-Evaluation							
創新教學(Innovative Teaching)							
✓ 問題導	向學習(PBL) 解決導向學習(SBL)							
翻轉教	室 Flipped Classroom							
社會責任(Social Responsibility)							
在地實.	踐Community Practice 產學合作 Industy-Academia Cooperation							
跨域合作(Transdisciplinary Projects)							
	學Transdisciplinary Teaching 跨院系教學Inter-collegiate Teaching							
業師合	授 Courses Co-taught with Industry Practitioners							
其它 othe	r:							

學期成績計算及多元評量方式 Grading & Assessments									
配分項目	配分比例 Percentage	多元評量方式 Assessments							
Items		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績(含出缺席) General Performance (Attendance Record)	20%								點名
期中考成績 Midterm Exam	40%			~					
期末考成績 Final Exam	40%			~					
作業成績 Homework and/or Assignments									
其他 Miscellaneous				エ <i>ナ</i> ハ nn					

評量方式補充說明

Grading & Assessments Supplemental instructions

教科書與參考書目(書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website(Including online teaching information.

Personal website can be listed here.)

其他補充說明(Supplemental instructions)