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## ② 國玄東華大學

教學計劃表 Syllabus								
課程名稱(中文) Course Name in Chinese	奈米材料科技				學年/學期 Academic Year/Se	113/1		
課程名稱(英文) Course Name in English	Nanometer-Scale Materials Science and Engineeing							
科目代碼 Course Code	MSM0120	系級 Department & Year	Department 硕士		開課單位 Course-Offering Department	材料科學與工程學系		
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)			3.0/3.0			
授課教師 Instructor	/傅彦培							
先修課程 Prerequisite								
課程描述 Course Description								
本課程目的是讓學生對最新奈米科技有所理解。課程的內容包括奈米尺寸效應、奈米材料分析、奈米的應用等。本課 程也將介紹特定奈米材料系統及其背景原理。								
The purpose of this course is an overview of the up-to-date nanotechnology. The effect of nano-size, the characterization tools for the nanomaterials, and the application of nanotechnologies will be								

## 課程目標 Course Objectives

students can have an in-depth understanding of nanostructured materials and nanotechnology to facilitate their research work.

introduced. Several nanomaterial systems and background theories will be reviewed and discussed.

	系專業能力 Basic Learning Outcomes	課程目標與系專業能 力相關性 Correlation between Course Objectives and Dept.'s Education Objectives
A	具備材料科學所需的進階物理、化學及數學的知識。Acquire required advanced physical, chemical, and mathematic knowledge for materials science and engineering.	0
В	具備材料科學的進階專業知識,並能應用於解決工程上之問題。Acquire required advanced professional knowledge for materials science and engineering, applicable in solving engineering problems.	•
С	具備獨立研究之能力。Equipped with capabilities of independent research.	0
D	具備專業道德及責任感,與良好的溝通及團隊合作的能力。Acquire professional morality and responsibility, and capability of quality communication and team cooperation.	
Е	具備適當的英文能力,應用於學習與交流。Acquire English capability used for learning and interaction.	0

圖示說明Illustration : ● 高度相關 Highly correlated ○中度相關 Moderately correlated

## 授課進度表 Teaching Schedule & Content

週次Week	內容 Subject/Topics	備註Remarks
1	Introduction	
2	Physics of Solid State - Crystalline Structure	
3	Physics of Solid State - Energy Bands	
4	Characterization - Structure	

5	Characterization - Microscopy and Spectroscopy					
	Characterization - Microscopy and Spectroscopy					
6	Individual Nanoparticles					
7	Carbon Nanostructures					
8	2-D Nanomaterials					
9	期中考試週 Midterm Exam					
10	Bulk Nanostructured Materials - Polycrystalline and Layered					
11	Bulk Nanostructured Materials - CrystallizedNanostructure					
12	Nanostructured Ferromagnetism					
13	Quantum Wells Wires and Dots					
14	Self-Assembly and Catalysis					
15	Organic Compounds and Polymers					
16	Biological Materials					
17	Buffer week					
18	期末考試週 Final Exam					
	教 學 策 略 Teaching Strategies					
✓ 課堂講	授 Lecture					
   其他Mis	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 磨課師 Moocs						
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)						
■ 跨界教學Transdisciplinary Teaching ■ 跨院系教學Inter-collegiate Teaching						
□ 業師合授 Courses Co-taught with Industry Practitioners						
其它 other:						

學期成績計算及多元評量方式 Grading & Assessments									
配分項目	多元評量方式 Assessments								
Items	配分比例 Percentage	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 General Performance	20%		~						
期中考成績 Midterm Exam	30%	<b>&gt;</b>							
期末考成績 Final Exam	40%	<b>~</b>		~					
作業成績 Homework and/or Assignments	10%		~						
其他 Miscellaneous									

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)