

國立中正大學課程大綱

National Chung Cheng University Syllabus

課號 course code	2555146 (Biomedical Sci.) 2708018 (STEM)	全英文授課 EMI	☒ 是 ☐ 否
課程類別 course type	☐ 人文關懷課程 ☐ 競賽專題課程 ☒ 問題導向課程 ☐ 專題導向課程 ☐ 總整課程 ☐ 實作課程 ☐ 實習 ☐ 其他		
課程名稱 (中文) Chinese course name	奈米醫藥		
課程名稱 (英文) English course name	Nanomedicine		
學年/學期 academic year /semester	115/1	學分 credits	2
學系 (所) department	Biomedical Sciences STEM	必選修 required/selected	☐ 必修 ☒ 選修
上課時間 class hours	Wednesday 10:10 ~ 12:00	上課地點 classroom	R534
教師 instructor	Cheng-I Lee (Sophia)	教師 email Instructor's email	biocil@ccu.edu.tw
助教 teaching assistant		助教 email TA's email	
先修科目或 先備能力 prerequisites			
課程概述 course descriptions	This graduate-level course introduces the fundamental principles of nanomaterials and their applications in medicine, progressing from nanoscale properties, synthesis, and characterization to nano-bio interactions, drug delivery, targeting, therapeutic applications, safety, and clinical translation. The course emphasizes active learning through scientific literature, data analysis, case discussions, and mini-project development, encouraging students to critically evaluate how nanomaterial design influences biological function, what evidence supports proposed mechanisms, and what challenges must be addressed for successful biomedical translation.		
學習目標 learning objectives			
教科書及參考書 textbooks and references	Research articles provided in e-course 2		
教學要點概述			

教材編選 teaching materials	☒ 自製簡報(ppt) ☐ 課程講義 ☐ 自編教科書 ☐ 教學程式 ☐ 自製教學影片 ☐ 其他			
教學方法 teaching methods	☒ 講述 ☒ 小組討論 ☒ 學生口頭報告 ☒ 問題導向學習 ☒ 個案研究 ☐ 其他			
評量工具 Evaluation tools	☐ 期中考 ☐ 期末考 ☐ 隨堂測驗 ☐ 隨堂作業 ☐ 課後作業 ☐ 期中報告 ☐ 期末報告 ☐ 專題報告 ☐ 評量尺規 ☐ 其他 In-class discussion and participation 20% Weekly group challenge / project milestones 20% Presentation 30% Mini research proposal 30%			
教學資源 teaching resources	☐ 課程網站 ☒ 教材電子檔供下載 ☐ 實習網站			
教師 相關訊息 instructor's information				
每週課程內容 weekly scheduled contents				
Week 1 What Makes a Material “Nano,” and Why Does It Matter in Medicine?				
Week 2 Nanomaterial Synthesis, Characterization, and Reproducibility				
Week 3 Nano–Bio Interface and Protein Corona				
Week 4 Drug Loading, Release, and Stability				
Week 5 Cellular Uptake, Intracellular Trafficking, and Biological Barriers				
Week 6 Targeting: Passive, Active, and Environment-Responsive Strategies				
Week 7 Nanomedicine for Cancer Therapy				
Week 8 Nanomedicine Beyond Cancer				
Week 9 Mid-term examination week (no class)				
Week 10 Nanotoxicology, Immunological Effects, and Experimental Quality				
Week 11 Clinical Translation, Manufacturing, and Proposal Workshop				
Week 12 Case study				
Week 13 Discussion of Mini-project				
Week 14 Discussion of Mini-project				
Week 15 Presentation of Mini-project				
Week 16 Presentation of Mini-project				
Week 17 Presentation of Mini-project				
Week 18 Final examination week (no class)				
核心能力 core competencies				

核心能力 Core competency		本課程與核心能力關聯強度 Degrees of related to core competencies				
		1	2	3	4	5
專業能力 Specific competency	1. 具生物醫學領域學理之專業知識。					v
	2. 具執行實驗及解決生物醫學相關問題之能力。				v	
	3. 撰寫生物醫學專業論文之能力。				v	

註：關聯強度以五點量表標示，1 表示沒有關聯，5 表示非常有關聯。