

國立中正大學課程大綱

National Chung Cheng University Syllabus

課號 course code	115_1_2605237_01	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	生化分子		
課程名稱 (英文) English course name	Biomolecules		
學年/學期 academic year /semester	Autumn 2026	學分 credits	3
學系 (所) department	Chemistry and Biochemistry	必選修 required/selected	☐ 必修 ☒ 選修
上課時間 class hours	Tuesday, 09:10AM - 12:00noon	上課地點 classroom	化生館 502 教室
教師 instructor	朱延和	教師 email Instructor's email	cheyhc@ccu.edu.tw
助教 teaching assistant		助教 email TA's email	
先修科目或 先備能力 prerequisites	Undergraduate Organic chemistry and/or Biochemistry with pass grades are the prerequisite for this course. A firm understanding of organic chemistry and biochemistry discussed in those courses is expected and needed to understand the topics discussed in this advanced course.		
課程概述 course descriptions	Protein biotechnology; bacterial quorum sensing; antibiotics and their mechanisms of action.		
學習目標 learning objectives	1. A firm introduction and discussion on Protein biotechnology; 2. An introduction and discussion on bacterial quorum sensing; 3. An introduction and discussion on antibiotics and their mechanisms of action.		
教科書及參考書 textbooks and references	Latest papers on subjects of biomolecules from professional journals. Biochemistry, 5 th ed., J. M. Berg, J. L. Tymoczko, L. Stryer, W. H. Freeman and Company, New York, New York, 2002. Antibiotics: Actions, Origins, Resistance by C. T. Walsh; ASM Press, Washington, D.C., 2003.		
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
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	請尊重智慧財產權，不得非法影印教師指定之教科書籍
每週課程內容 weekly scheduled contents	
Week 1 Protein primary structures	
Week 2 Protein secondary and tertiary structures	
Week 3 Protein quaternary structures	
Week 4 Protein technology, an introduction	
Week 5 Protein purification: salting out, dialysis (centricon), and gel filtration and ion exchange chromatography	
Week 6 Protein purification: ion exchange and isoelectric focusing chromatography	
Week 7 Protein purification: affinity chromatography and an introduction on gel electrophoresis	
Week 8 Protein analysis: SDS-polyacrylamide gel electrophoresis	
Week 9 Protein analysis: native gel electrophoresis and affinity gel electrophoresis	
Week 10 Protein analysis: isoelectric focusing gel electrophoresis	
Week 11 Protein analysis: two-dimensional gel electrophoresis and proteomics	
Week 12 Protein analysis: an introduction on antigen and antibody	
Week 13 Protein analysis: antibody technology	
Week 14 An introduction on bacterial quorum sensing	
Week 15 A continuous discussion of bacterial quorum sensing focused on small-molecule autoinducers	
Week 16 Antibiotics: an introduction and their mechanisms of action	
Week 17 Students oral presentation	
Week 18 Students oral presentation	
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	專業能力 1			■		
	專業能力 2			■		
	專業能力 3			■		
	專業能力 4			■		
	專業能力 5			■		
共通能力 General Competence	共通能力 1			■		
	共通能力 2			■		
	共通能力 3			■		
	共通能力 4			■		
	共通能力 5			■		

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。