國立中正大學課程大綱

National Chung Cheng University Syllabus

課號 Course Code	2708004	全英文授課 EMI	■是(Y)　□否(N)
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） Course Name (zh)	高等細胞分子生物學（一）		
課程名稱（英文） Course Name (en)	Advanced Cellular and Molecular Biology (I)		
學年/學期 Academic Year / Semester	114/1	學分 Credits	3
學系（所） Department	STEM PhD Program	必選修 Required / Selected	□必修　■選修
上課時間 Class Hours	Tue. B, C	上課地點 Classroom	生醫系館R228
教師 Instructor	江明格 (Ming-Ko Chiang) 陳浩仁 (Hau-Ren Chen) 楊玫琳(Yang Mei-Lin)	教師 email Instructor's email	biomkc@ccu.edu.tw biohrc@ccu.edu.tw biomly@ccu.edu.tw
助教 Teaching Assistant		助教 email TA's email	
先修科目或先備能力 Prerequisites	A strong understanding of both biology and chemistry is necessary.		
課程概述 Course Descriptions	The importance of molecular biology is increasing in solving the rising new problems in Material and BioScience, such as nanotechnology, biomedical issues, and environmental protection. This course focuses on the introduction of the central dogma theory of molecular biology (transcription, translation, and regulation among the DNA, RNA, and protein macromolecules). In addition, some advanced contemporary research and breakthroughs in bioscience will also be introduced.		
學習目標 Learning Objectives	Upon completion of this course, students should be able to: a. Demonstrate proficiency in both fundamental and advanced concepts of molecular biology. b. Analyze field-specific literature in molecular biology with ease. c. Design and conduct experiments utilizing molecular biology techniques effectively.		

教科書及參考書 Textbooks and References	Molecular Biology (5th edition), 2007 ISBN 978 -0-07 -110216110216-2 Editor: Robert F. Weaver Copyright: The McGraw Hill Companies, Inc., New York, USA

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 lecture □小組討論 ■學生口頭報告 student's presentation □問題導向學習 □個案研究 □其他
評量工具 Evaluation Tools	■期中考 midterm exam ■期末考 final exam □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 (ecourse 2) □實習網站
教師相關訊息 Instructor's Information	

每週課程內容 Weekly Scheduled Contents	
Part 1 :Introduction and Methods of Molecular Biology	
Week 01	A Brief History of Molecular Biology
Week 02	The Molecular Nature of Genes
Week 03	Methods in Molecular Biology
Part 2: Transcription in Prokaryotes	
Week 04	Transcription in Prokaryotes I: The mechanism and fine control of bacterial transcription
Week 05	Transcription in Prokaryotes II: Infection of bacteriophage and DNA-Protein interactions in bacteria
Part 3: Transcription in Eukaryotes	
Week 06	Transcription in Eukaryotes I: General transcription factors in eukaryotes
Week 07	Transcription in Eukaryotes II: Transcription activators in eukaryotes

Week 08	Transcription in Eukaryotes III: Chromatin Structure and its effects on transcription
Week 09	**Exam-1**
Part 4: Post-Transcriptional Events	
Week 10	Posttranscriptional Events I: Splicing
Week 11	Posttranscriptional Events II: Capping and polyadenylation
Week 12	Posttranscriptional Events III: Other RNA processing events and post-transcriptional control of gene expression
Part 5: Translation	
Week 13	Translation I: The mechanism of initiation
Week 14	Translation II: The mechanism of elongation and termination
Part 6: DNA replication, recombination, and transposition	
Week 15	DNA Replication
Week 16	Homologous Recombination and Transposition
Week 17	Genomics, Proteomics, and Bioinformatics
Week 18	**Exam-2**

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. 具分子生物學領域之專業知識。					V
	2. 創新思考及獨立解決分子生物學相關問題之能力					V
	3. 發表分子生物專業論文之能力					V
	4. 具有自我學習及領導規劃之能力				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。