

111學年度化學工程與材料工程學系課程規畫表(111學年度入學新生適用)
Tamkang University Department of Chemical Engineering and Materials Engineering
Curriculum Planning Chart for 111 academic year (2022-2023) incoming freshmen

科目名稱 /subjects		學分 credits	第 1 學年		第 2 學年		第 3 學年		第 4 學年		備註 Remarks		
			1st academic year		2nd academic year		3rd academic year		4th academic year				
			上 1st semester	下 2nd semester	上 1st semester	下 2nd semester	上 1st semester	下 2nd semester	上 1st semester	下 2nd semester			
基本知能課程12學分 12 credits for general education curriculum	外國語文學門(Q) Foreign Languages (Field Q)	8	2	2	2	2					大1英文必修、大2外文自由選 Required English in freshman year; elective foreign language in sophomore year.		
	中國語文能力表達 ABILITY OF EXPRESSING IN SPOKEN AND WRITTEN CHINESE	2	2								語文表達 ABILITY OF EXPRESSING		
	大學學習 LEARNING IN UNIVERSITY	1	1								學習與發展學門(N) Learning And Development (Field N)		
	社團學習與實作(K) LEARNING AND PRACTICE OF CLUBS	1		1							課外活動與團隊發展 Extracurricular Activities and Team-Ship Development (Field K)		
通識核心課程14學分 14 credits for General Education Curriculum	AI與程式語言 AI and Programmiing Language	1	1										
	探索永續 Exploring Sustainability	1	1										
	文學經典學門(L) Classics In World Literature (Field L)	2									人文領域至少2學分 At least 2 credits in the Humanities field.	每學門至多修習2科4學分 Students may take up to 2 courses (4 credits) in each academic field.	
	歷史與文化學門(P) History And Culture (Field P)	2											
	哲學與宗教學門(V) Philosophy and Religion (Field V)	2											
	藝術欣賞與創作學門(M) Arts Appreciation and Invention (Field M)	2											
	全球視野學門(T) Global Outlook (Field T)	2									社會領域至少2學分 At least 2 credits in the Social Sciences field.		
	未來學學門(R) Futures Studies (Field R)	2											
	社會分析學門(W) Social Analysis (Field W)	2											
	公民社會及參與學門(S) Civil Society And Participation (Field S)	2											
	資訊教育學門(O) Information & Computer Education (Field O)	2									科學領域至少2學分 At least 2 credits in the Science field.		
	全球科技革命學門(Z) Global Technology Revolution (Field Z)	2											
	自然科學學門(U) Natural Sciences (Field U)	2											
其他課程 other subjects	體育 Physical Education	0	0	0	0	0							
	全民國防教育軍事訓練（一）-國防科技 ALL-OUT DEFENSE EDUCATION MILITARY TRAINING(I)-NATIONAL DEFENSE TECHNOLOGY	0	0	0									
校園與社區服務學習 CAMPUS AND COMMUNITY SERVICE-LEARNING		0	0	0									
■本系必修課程：70 學分 Required Courses：70 credits	化學工程與材料工程概論 INTRODUCTION TO CHEMICAL AND MATERIALS ENGINEERING	1	1										
	普通物理 GENERAL PHYSICS	4	2	2									
	微積分 CALCULUS	4	2	2									
	普通化學 GENERAL CHEMISTRY	4	2	2									
	普通化學實驗 GENERAL CHEMISTRY LAB.	2	1	1									
	材料科學 MATERIALS SCIENCE	2		2									
	質能均衡 MATERIAL AND ENERGY BALANCES	2		2									
	工程數學 ENGINEERING MATHEMATICS	6			3	3							
	有機化學 ORGANIC CHEMISTRY	4			2	2							
	有機化學實驗 ORGANIC CHEMISTRY LABORATORY	1			1								
	物理化學 PHYSICAL CHEMISTRY	6			3	3							
	無機材料 INORGANIC MATERIALS	3			3								

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	物理化學實驗 PHYSICAL CHEMISTRY LAB.	1				1					
	輸送現象與單元操作(一) TRANSPORT PHENOMENA & UNIT OPERATION (I)	3				3					
	輸送現象與單元操作(二) TRANSPORT PHENOMENA & UNIT OPERATION (II)	3					3				
	高分子化學 POLYMER CHEMISTRY	3					3				
	化工熱力學 CHEMICAL ENGINEERING THERMODYNAMICS	3					3				
	化學工程實驗(一) CHEMICAL ENGINEERING LABORATORY (I)	1					1				
	分離程序 SEPARATION PROCESSES	3						3			
	化學反應工程 CHEMICAL REACTION ENGINEERING	3						3			
	化學工程實驗(二) CHEMICAL ENGINEERING LABORATORY (II)	1						1			
	儀器分析 INSTRUMENTAL ANALYSIS	2						2			
	程序控制 PROCESS CONTROL	2							2		
	程序設計 PROCESS DESIGN	3							3		
	材料工程實驗 MATERIALS ENGINEERING LABORATORY	1							1		
	化學工程實驗(三) CHEMICAL ENGINEERING LABORATORY (III)	1								1	
	儀器分析實驗 INSTRUMENTAL ANALYSIS LAB.	1								1	
	■本系系選修課程：至少須修16學分以上。 Department Elective Courses: A minimum of 16 credits must be completed. 附註： 系選修課程之開設科目，將依據本校規定可開課學分數開課。不是每個科目都會開課。 Note: The elective courses offered by the department will be arranged based on the number of credits permitted under the university's regulations. Not all listed courses will necessarily be offered.	化學工業安全概論 INTRODUCTION TO CHEMICAL PROCESS SAFETY	2	2							
生物技術概論 INTRODUCTION TO BIOTECHNOLOGY		3	3								
環境工程概論 INTRO. TO ENVIRONMENTAL ENGINEERING		3		3							
電化學工程 ELECTROCHEMICAL ENGINEERING PRINCIPLES		3		3							
新能源材料 NEW ENERGY MATERIALS		2			2						
光電材料與技術 OPTOELECTRONIC MATERIAL AND TECHNOLOGIES		3			3						
化工程序電腦輔助設計 CHEMICAL PROCESS COMPUTER-AIDED DESIGN		3				3					
工程統計 ENGINEERING STATISTICS		3				3					
奈米材料概論 INTRODUCTION TO NANOMATERIALS		2				2					
生化工程 BIOLOGICAL AND CHEMICAL ENGINEERING		3					3				
半導體製程概論 INTRODUCTION TO SEMICONDUCTOR PROCESSING		3					3				
化材創新利器：專利佈局與競爭力 INNOVATIVE EDGE IN CHEMICAL AND MATERIALS ENGINEERING: PATENT LANDSCAPE AND COMPETITIVENESS		2					2				
化學工業減廢 WASTE MINIMIZATION FOR CHEMICAL PROCESSES		3					3				

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	化工機械 CHEMICAL ENGINEERING EQUIPMENT	3						3			
	廢水處理 WASTEWATER TREATMENT	3						3			
	高分子物理 POLYMER PHYSICS	3						3			
	固態物理與化學 SOLID STATE PHYSICS AND CHEMISTRY	3						3			
	太陽能工程 SOLAR ENERGY ENGINEERING	3						3			
	專題研究 RESEARCH SEMINAR	2					1	1			
	生醫材料工程 BIOMATERIALS ENGINEERING	3							3		
	精密分離概論 INTRODUCTION TO SEPARATION PROCESS PRINCIPLES	3							3		
	高分子加工 POLYMER PROCESSING	3							3		
	化學材料講座 LECTURES ON CHEMICAL MATERIALS	2							2		
	專利實務概論 INTRODUCTION TO PATENT PRACTICE	2							2		
	高分子材料應用實習 PRACTICE AND APPLICATIONS OF POLYMERIC MATERIALS	4							4		
	高性能聚合物材料鑑定與性能檢測 HIGH PERFORMANCE POLYMERIC MATERIAL IDENTIFICATION AND PERFORMANCE TESTS	2							2		
	高分子材料 INTRODUCTION TO POLYMERIC MATERIALS	3								3	
	儲能材料科技 TECHNOLOGY OF ENERGY STORAGE MATERIALS	3								3	
	建廠工程實務 PLANT CONSTRUCTION PROJECT PRACTICES	2								2	

(1)必修科目總學分數：96 學分(含通識教育課程26學分)

(1)Total Credits for Required Courses: 96 credits (including 26 credits in General Education courses)

(2)最低應修本系選修科目總學分數：16 學分

(2)Minimum Credits Required for Departmental Elective Courses:16 credits

(3)其他選修總學分數：16 學分

(3)Minimum Number of Credits Required for Other Elective Courses: 16 credits

畢業總學分數：128學分

Total Number of Credits Required for Graduation: 128 credits