

化材系 碩士班 114學年度入學課程結構規劃表(1140320修)
2025 Curricula for the Master's Program in Department of Chemical and Materials Engineering (Effective from Mar. 20, 2025)

課程類別 Course Category		一年級1st academic year (Y1)						二年級2nd academic year (Y2)					
		第一學期Semester 1			第二學期Semester 2			第一學期Semester 1			第二學期Semester 2		
		課程名稱 courses	學分 credit	時數 hour	課程名稱 courses	學分 credit	時數 hour	課程名稱 courses	學分 credit	時數 hour	課程名稱 courses	學分 credit	時數 hour
必修 Required courses	應修學分數11學分 11 credits of required courses	專題研討(一) Seminar (1)	1	2	專題研討(二) Seminar (2)	1	2			論文 Master thesis	6		
					科技英文 English writing for science and technology	3	3						
特用化學品領域 Specialty Chemicals		特用化學品特論 Specialty Chemicals	3	3	界面化學特論 Special Topics of Surface Chemistry	3	3	特用合成樹脂 Special synthetic resin	3	3	光電特用化學品技術 Optical technology specialty chemicals	3	3
		高等有機化學 Advanced Organic Chemistry	3	3	有機分析 Analysis of Organic Chemistry	3	3	界面活性劑製程 Manufacturing Process of Surfactant	3	3	生醫特用化學品 Bio specialty chemicals	3	3
		有機合成 Synthesis of Organic Chemistry	3	3	特用化學品製造程序 Specialty chemicals manufacturing process	3	3			凝膠技術與應用 Colloid Technology and Applications	3	3	
		溶凝膠及粉體技術 Sol-Gel Science and Powder Technology	3	3	化妝品化學實務 Cosmetics Practice	3	3						
		工業化學特論 Special Topics in Industrial Chemistry	3	3	界面科技與應用 Interfacial Technology and Application	3	3						
		膠體與界面科學 Colloid and surface science	3	3									
		高分子材料 Polymer materials	3	3	高分子分析技術 Polymer characterization	3	3	真空薄膜工程 Vacuum Thin-Film Engineering	3	3	奈米材料特論 Special Topics in Nano-materials	3	3
		功能性高分子材料 Functional Polymer materials	3	3	高分子機械性質 Mechanical Properties of Polymer Materials	3	3	半導體理論與製程 Manufacturing Process of Semiconductor Material	3	3	材料表面處理特論 Special Topics on Surface Treatment of Material	3	3
		高分子結構與物性 Polymer structure and physical properties	3	3	高分子加工與應用 Processing and applications of polymeric materials	3	3	表面科學與分析 Surface Science and Analysis	3	3	IC元件電漿製程 Plasma processing for ic manufacturing	3	3
		擴散理論 Diffusion Theory	3	3	高分子物理化學 Physical Chemistry of Polymer	3	3	薄膜製程特論 Special topics on fabrication of ceramic film	3	3	光學高分子材料 Optical Optoelectrical polymeric materials	3	3
		結晶化學 Crystallography Chemistry	3	3	電子陶瓷材料 Electronic ceramics	3	3	光電材料特論 Special Topics of Optical-Electrical Materials	3	3	陶瓷薄膜製程特論 Special topics on fabrication of ceramic film	3	3
		材料科技領域 Materials Technology		有機光電材料特論 Special Topics on Organic Optoelectronic Materials	3	3	X-ray繞射學 X-Ray Diffraction	3	3	材料製程之固化現象與理論 Solidification phenomena and principles in materials processing	3	3	
電子顯微鏡學 Transmission Electron Microscopy	3			3	陶瓷材料 Ceramic materials	3	3						
光電高分子材料特論 Special Topics of Optoelectronic Polymer Materials	3			3	陶瓷製程特論 Special Topics of Ceramic Processing	3	3						
薄膜材料學 Thin Film Materials	3			3	半導體構裝材料與製程特論 Special topics of assembly and fabrication of semiconductor materials	3	3						
高等複合材料 Advanced Composite Materials	3			3	小角度X光繞射學 Small Angle X-Ray Diffraction	3	3						
導電性高分子材料 Conducting Polymer Materials	3			3	薄膜材料特論 Materials of Thin Films	3	3						
					顯微技術分析 Nano Technology & Microstructure	3	3						
					電漿原理 Plasmon Theory	3	3						
					材料檢測技術 Technology of material examination	3	3						
					固態化學 Solid State Chemistry	3	3						
化工製程領域 Chemical Process				高等輸送現象與單元操作 Advanced transport phenomena and unit operation	3	3	高等程序控制 Advanced Process Control	3	3	程序設計特論 Special Topics on Process Design	3	3	製程系統工程 System Engineering of Manufacturing Process
		高等熱力學 Advanced Thermodynamics	3	3	相平衡 Phase Equilibrium	3	3	製程整合與電腦輔助設計 Computer Aided Design and Manufacture	3	3			
		觸媒化學特論 Special Topics of Catalytical Chemistry	3	3	統計與實驗設計 Statistical and Design of Experiments	3	3						
					高等反應工程 Advanced Chemical Reaction Engineering	3	3						
					高等數值分析 Advanced numerical analysis	3	3						
電化學與能源 科技領域 Electrochemical and Energy Technology		儲能元件 Energy storage devices	3	3	電化學感測器 Sensor For Electrochemistry	3	3	電池製作技術與發展 Development and fabrication of batteries	3	3	燃料電池特論 Special topics on fuel cells	3	3
		高等電化學 Advanced Electrochemistry	3	3	電化學合成及分析特論 Synthesis and Analysis For Electrochemistry	3	3	電鍍技術特論 Special Topics in Electrochemical Deposition Technology	3	3			
		能源技術特論 Special Topics on Energy Technology	3	3	分析電化學特論 Analytical Special Topics in Electrochemistry	3	3						
		太陽能電池特論 Special Topic of Solar Cells	3	3									
		電化學特論 Special topics in electrochemistry	3	3									
		平面顯示器原理與應用 Principle and Application for Panel Display	3	3									
環境科技領域 Environmental Technology		高等環境化學 Advanced Environmental Chemistry	3	3	廢水處理特論 Special Topics of Waste-Water Treatment	3	3			廢棄物處理特論 Selected Topics on Waste Treatment	3	3	
		環境工程特論 Special Topics on Environmental Engineering	3	3	空氣污染防治特論 Special topics of air pollution control	3	3			環境生物技術特論 Special topics in Environmental biotechnology	3	3	

系專業課程
Departmental
Professional
Courses

選修
Elective
courses

應修學分數23學分
23 credits of
elective courses

	Environmental Technology	奈米環境工程技術特論 Special topics of nanotechnology for environmental engineering	3	3	污染防治特論 Special Topics on Pollution Control	3	3							
		環境檢測 Environment Examination	3	3										
	生化科技領域 Biochemical Technology	生物技術特論 Special topics in biotechnology	3	3	生化工程特論 Special topics in biochemical engineering	3	3	生化分離程序 Biochemical Separation process	3	3				
		微生物應用工業 Micro Organism Industry	3	3										
其他 other				計算材料科學特論 Special Topics of Computational Materials Science	3	3	專題研討(三) Seminar (3)	2	2	專題研討(四) Seminar (4)	2	2		

備註：

- 一、畢業總學分數為38學分。
- 二、必修13學分，選修25學分。
- 三、學生修讀所屬學院之「學院共同課程」應認列為本系專業課程學分；修讀所屬學院之「學院跨領域課程」或其他學院開課之課程，則認列為外系課程學分。
- 四、系所訂定條件（學程、檢定、證照、承認外系學分及其他）：
 - (一)碩士論文以提出論文之該學期為準。
 - (二)研究生應選修專題研討(三)及(四)，唯經本系研究生事務委員會審議通過可縮短修業年限畢業者，得免修專題研討(三)及(四)，但仍須達最低畢業學分。
 - (三)非本系開設之專業選修課程，至多可承認3學分。
 - (四)「高等反應工程」及「高等熱力學」任選一門修讀，「材料檢測技術」及「顯微技術分析」任選一門修讀，所選兩門課程需及格才能畢業。
 - (五)選修：表列者為預定科目，將依各學期實際需要開課。
 - (六)至少修畢一門工學院內全英授課課程。
 - (七)外籍生修讀非本系或外校開設之英語授課課程(含線上課程)，經指導教授許可並繳交指導教授同意修課書後，可認列為畢業學分且不受承認外系學分數上限限制。
 - (八)其他相關規定依本系碩士班研究生修讀要點辦理。

I. Graduation requirements:

- 1.The minimal number of credit for graduation is 38 :
 - (1) 13 credits of required courses (including thesis writing 6 credits, based on the semester the thesis is presented)
 - (2) 25 credits of elective courses (including courses taken at other departments or institutes as specified by the department/institute)
2. Graduate students must enroll in Seminar (III) and (IV); provided, however, that students authorized by the Department's Graduate Affairs Committee to shorten their period of study may be exempt from Seminar (III) and (IV), subject to the fulfillment of the minimum graduation credit requirements.
3. A maximum of 3 credits from professional elective courses offered by other departments can be accepted.
4. Either "Advanced Chemical Reaction Engineering" or "Advanced Thermodynamics" can be chosen, and either "Technology of material examination" or "Nano Technology & Microstructure" can be chosen. Both selected courses must be passed in order to graduate.
5. At least one course taught entirely in English within the College of Engineering must be completed.
6. International students enrolling in English-taught courses (including online courses) offered by other departments or institutions may have these credits counted toward graduation, provided they obtain approval from their advisor and submit an advisor's consent form. Furthermore, such credits are exempt from the maximum limit on recognized out-of-department credits.

II. Remarks:

1. Credit hours of each course (or total) are marked with "credit/hour."
2. Elective courses: the courses will be offered based on practical needs.
3. For other relevant regulations, please refer to guidelines on master's studies of the department (graduate institute).