

國立勤益科技大學 110 學年度日間部四年制化工與材料工程系學分計畫表

National Chin-Yi University of Technology

Curriculum Planning of 2021 Four-Year Degree in Department of Chemical and Materials Engineering

110.4.8 系課程會議及 110.4.22 系務會議審議通過

110 年 05 月 18 日院課程會議審議通過

110.05.25 校課程委員會會議及 110.06.15 教務會議審議通過

113.12.5 校課程委員會會議及 113.12.24 臨時教務會議審議修訂通過

科目	Courses	上學期 First Semester			下學期 Second Semester		
		學分 Credits	正課 Lecture	實習 Internship	學分 Credits	正課 Lecture	實習 Internship
共同必修科目(30 學分) General Required Courses (30credits hours)							
第一學年 First Year							
國文(一)	Chinese (I)	3	3	0			
大一英文(一)	Freshman English (I)	2	2	0			
英文聽講(一)	Listening and Speaking (I)	1	1	0			
歷史與文化(一)	History and Culture (I)	2	2	0			
體育(一)	Physical Education (I)	0	2	0			
全民國防教育軍事訓練(一)	All-Out Defense Education Military Training (I)	0	2	0			
勞作與社會服務教育(一)	Labor and Social Services Education (I)	0	0	1			
藝術鑑賞	Art Appreciation	1	1	0			
國文(二)	Chinese (II)				3	3	0
大一英文(二)	Freshman English (II)				2	2	0
英文聽講(二)	Listening and Speaking (II)				1	1	0
歷史與文化(二)	History and Culture (II)				2	2	0
體育(二)	Physical Education (II)				0	2	0
全民國防教育軍事訓練(二)	All-Out Defense Education Military Training (II)				0	2	0
勞作與社會服務教育(二)	Labor and Social Services Education (II)				0	0	1
音樂鑑賞	Music Appreciation				1	1	0
第二學年 Second Year							
憲法與民主	Constitution and Democracy	2	2	0			
體育(三)	Physical Education (III)	0	2	0			
博雅通識課程	Liberal Education	2	2	0			
體育(四)	Physical Education (IV)				0	2	0
博雅通識課程	Liberal Education				2	2	0
第三學年 Third Year							
博雅通識課程	Liberal Education	2	2	0			
博雅通識課程	Liberal Education				2	2	0
博雅通識課程	Liberal Education				2	2	0
第四學年 Fourth Year (無必修課程 No General Required Courses) (無必修課程)							
專業必修科目(71 學分) Department Required Courses (71credits hours)							
第一學年 First Year							
微積分(一)	Calculus (I)	3	3	0			
物理	Physics	3	3	0			
普通化學	General Chemistry	3	3	0			
△計算機程式	Computer Program	3	3	0			
化工與材料產業概論	Introduction to Chemical Engineering and Materials Industry	3	3	0			
微積分(二)	Calculus (II)				3	3	0
有機化學(一)	Organic Chemistry (I)				3	3	0
物理化學(一)	Physical Chemistry (I)				3	3	0
普通化學實驗	Experiment of General Chemistry				1	0	3
有機化學實驗	Experiments of Organic Chemistry				1	0	3
第二學年 Second Year							
工程數學(一)	Engineering Mathematics (I)	3	3	0			
●材料科學與工程概論(一)	Fundamentals of Materials Science and Engineering (I)	3	3	0			
有機化學(二)	Organic Chemistry (II)	3	3	0			
物理化學(二)	Physical Chemistry (II)	3	3	0			
物理化學實驗(一)	Experiment of Physical Chemistry (I)	1	0	3			
工程數學(二)	Engineering Mathematics (II)				3	3	0
材料科學與工程概論(二)	Fundamentals of Materials Science and Engineering (II)				3	3	0
儀器分析	Instrumental Analysis				3	3	0
質能均衡	Material and Energy Balance				3	3	0
材料工程實驗	Materials Engineering Experiment				1	0	3
物理化學實驗(二)	Experiment of Physical Chemistry (II)				1	0	3
第三學年 Third Year							
單元操作(一)	Unit Operation (I)	3	3	0			
化學工程實驗(一)	Experiment of Chemical Engineering (I)	1	0	3			
化工熱力學	Chemical Engineering Thermodynamics	3	3	0			

儀器分析實驗	Experiments of Instrumental Analysis	1	0	3			
單元操作(二)	Unit Operation (II)				3	3	0
化學工程實驗(二)	Experiment of Chemical Engineering (II)				1	0	3
程序工程	Process Engineering				3	3	0
化學反應工程	Chemical Reaction Engineering				3	3	0
第四學年Fourth Year (無排定必修課程No Department Required Courses)							
科目	Courses	上學期First Semester			下學期Second Semester		
		學分 Credits	正課 Lecture	實習 Internship	學分 Credits	正課 Lecture	實習 Internship
共同選修科目 General Electives Courses							
第一學年First Year(無排定共同選修課程 No General Electives Courses)							
第二學年 Second Year							
全民國防教育軍事訓練(三)	All-Out Defense Education Military Training (III)	1	2	0			
全民國防教育軍事訓練(四)	All-Out Defense Education Military Training (IV)				1	2	0
第三學年 Third Year							
體育選修	Physical Elective Course	1	2	0	1	2	0
全民國防教育軍事訓練(五)	All-Out Defense Education Military Training (V)	1	2	0			
第四學年 Fourth Year							
體育選修	Physical Elective Course	1	2	0	1	2	0
專業選修科目 Department Electives Courses							
第一學年First Year (無排定專業選修課程 No Department Electives Courses)							
第二學年 Second Year							
化工科技學程選修 Chemical Engineering Technology Program							
環境生態學	Environmental Ecology	3	3	0			
生物技術概論	Introduction to Biotechnology	3	3	0			
環境科學概論	Introduction to Environmental Science	3	3	0			
環境工程	Environmental Engineering				3	3	0
節能科技	Energy-saving Technology				3	3	0
環境微生物學	Environmental Microbiology				3	3	0
材料科技學程選修 Materials Technology Program							
奈米科技導論	Introduction to Nanotechnology	3	3	0			
光電元件與材料	Optical Devices and Materials	3	3	0			
塗料化學	Chemistry of Coating				3	3	0
高分子化學	Polymer Chemistry				3	3	0
奈米材料化學	Nano-Material Chemistry				3	3	0
其它專業選修課程 Other Elective Courses							
特用化學品	Speciality Chemicals	3	3	0			
製程安全	Process Safety	3	3	0			
品質管制	Quality Control	3	3	0			
工業安全衛生管理	Industrial Safety and Health Management				3	3	0
師徒實務專題(一)	Mentor-Apprentice Project study (I)				3	0	3
第三學年 Third Year							
化工科技學程選修 Chemical Engineering Technology Program							
空氣污染防治	Air Pollution Control Engineering	3	3	0			
半導體製程概論	Introduction to Semiconductor Processes	3	3	0			
微生物學	Microbiology	3	3	0			
生物化學	Biochemistry	3	3	0			
資源回收工程	Resource Recycling Engineering	3	3	0			
污染監測與分析	Pollution Monitoring and Analysis	3	3	0			
醱酵工程	Fermentation Engineering				3	3	0
應用電化學	Applied Electrochemistry				3	3	0
固體廢棄物處理	Treatment of Solid Waste				3	3	0
電鍍技術與實務	Electroplating technology and Applications				3	3	0
蛋白質化學	Protein Chemistry				3	3	0
材料科技學程選修 Materials Technology Program							
液晶材料	Liquid Crystalline Materials	3	3	0			
高分子物理	Polymer Physics	3	3	0			
液晶顯示技術概論	Introduction to Liquid Crystal Display				3	3	0
材料分析	Materials Analysis				3	3	0
高分子加工	Polymer Processing				3	3	0
薄膜高科技應用	Technical Application of Thin Film Material				3	3	0
其它專業選修課程 Other Electives Courses							
實務專題(一)	Project Study (I)	2	0	6			
化妝品實務	Cosmetic Practice	3	3	0			
工程倫理	Ethics in Engineering	3	3	0			
專業英文	Professional English	3	3	0			
紡織產業檢測分析實驗	Textile Industry Testing Analysis Experiment	2	1	2			
AI 人工智慧入門	Introduction to Artificial Intelligence	3	3	0			
AI 智慧控制與預測模型	Intelligent Control and Predictive Model				3	3	0
綠色材料檢測分析實驗	Green Material Testing Analysis Experiment				2	1	2
實務專題(二)	Project Study (II)				2	0	6

應用界面化學	Application Interface Chemistry				3	3	0
科技製程與管理	Process and Management of Science				3	3	0
危害物質管理概論	Fundamentals of Hazardous Substances Management				3	3	0
校外實習(暑期)	Intern Practice (Outside-School) on Summer Session				3	0	3
第四學年 Fourth Year							
化工科技學程選修 Chemical Engineering Technology Program							
污水工程	Wastewater Engineering	3	3	0			
化工毒物學	Science of Toxic Materials in Chemical Engineering	3	3	0			
火災學	Fire Science	3	3	0			
組織工程概論	Introduction to Tissue Engineering				3	3	0
生物感測器	Protein Chemistry				3	3	0
程序控制	Process Control				3	3	0
消防法規	Fire Code				3	3	0
水處理工程與設計	Water Treatment Engineering and Design				3	3	0
材料科技學程選修 Materials Technology Program							
生醫材料	Biomedical Materials	3	3	0			
光電材料	Photoelectric Materials	3	3	0			
顯示器概論	Flat Panel Display	3	3	0			
高分子特用材料	Polymeric Specialty Materials				3	3	0
複合材料	Composite Materials				3	3	0
其它專業選修課程 Other Electives Courses							
校外實習(一)	Extracurricular Intern (I)	9	0	9			
校外實習(二)	Extracurricular Intern (II)				9	0	9
師徒實務專題(二)	Mentor-Apprentice Project study (II)	3	0	3			

備註 Note:

一、畢業至少應修滿 133 學分【必修 101 學分，選修至少 32 學分(須含本系專業選修至少 21 學分)】

Students should complete at least 133 credits before graduation, including 101 required credits, 32 elective credits (elective credits should have at least 21 credits from department elective courses).

二、本校訂有「國立勤益科技大學學生畢業門檻辦法」，請依規定辦理。

Our school has established the "National Chin-yi University of Science and Technology Student Graduation Threshold Measures", please follow the regulations.

三、博雅通識課程三大領域中，每一領域至少各修習一門課程，學分總計至少 10 學分。每門課程學分數(時)為 2 學分 2 學時或 3 學分 3 學時。

Among the 3 core areas of liberal education curriculum, students should take 10 or more credits in 3 different areas. The credit hours for each course are either 2 hours course with 2 credits or 3 hours course with 3 credits.

四、本系畢業門檻：『化工科技』與『材料科技』專業選修學程，應擇一選修至少 15 學分。

Students are required to complete the courses of at least one program at the Department(The minimal number of credit for electiveprofessional courses is 15).

五、課程名稱前有標示「●」符號者，為「職能專業課程」。

Courses with a "●" refer to a professional competence course

六、課程名稱前有標示「△」符號者，為程式設計課程。

Courses with a "△" refers to an application design course.

七、課程名稱前有標示「AI」符號者，為「人工智慧相關課程」。

Courses with an "AI" refer to an artificial intelligence related course.

八、為因應法規變更、評鑑建議或政府計畫規定等外在因素，本系保有調整學分計畫之權利。若有修訂，將於學期開始前公告，並明確說明修訂內容、影響範圍及相關配套措施，以保障學生權益。

The department reserves the right to adjust the curriculum in response to external factors such as changes in regulations, suggestions of evaluation and accreditation, or government program regulations. If there are any revisions, will be announced before the start of the semester, and the revised content, scope of impact, and related supporting measures will be clearly stated to protect the rights and interests of students.