國立勤益科技大學日間部四年制113學年度電機工程系學分計畫表

National Chin-Yi University of Technology

Curriculum Planning of 2024 Four-Year Degree in Department of Electrical Engineering

112.11.02.系課程會議通過
112.11.08.系務會議通過
112.11.22 院課程委員會議審議通過
112.12.07.校課程委員會議及 112.12.21.臨時教務會議審議通過
113.04.19.系課程會議及 113.04.24.系務會議修正通過
113.04.30 院課程會議審議修正通過
113.5.21.校課程委員會議及 113.6.6.臨時教務會議審議修正通過
113.12.5.校課程委員會議及 113.12.24.臨時教務會議審議修訂通過
114.12.4 校課程委員會議及 114.12.23 臨時教務會議修訂通過

科目	Courses	上學期 Fall Semester			下學期 Spring Semester		
		學分 Credit	正課 Lecture	實習 Internship	學分 Credit	正課 Lecture	實習 Internship
共同必修科目(28學分) General Required Courses (28credits hours)							
第一學年First Year							
國文(一)	Chinese (Ⅰ)	2	2	0			
大一英文(一)	Freshman English (Ⅰ)	2	2	0			
英文聽講(一)	Listening and Speaking (Ⅰ)	1	1	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			
藝術鑑賞	Art Appreciation	1	1	0			
國文(二)	Chinese (Ⅱ)				2	2	0
大一英文(二)	Freshman English (Ⅱ)				2	2	0
英文聽講(二)	English Listening and Speaking (II)				1	1	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
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			
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							
歷史與文化(一)	History and Culture (Ⅰ)	2	2	0			
博雅通識課程	Liberal Education	2	2	0			
歷史與文化(二)	History and Culture (Ⅱ)				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)							
專業必修科目(62學分) Department Required Courses(62 credits hours)							
第一學年First Year							
●微積分(一)	Calculus (Ⅰ)	3	3	0			
●電路學(一)	Electric Circuit Analysis (Ⅰ)	3	3	0			
●邏輯設計	Logic Design	3	3	0			
●微積分(二)	Calculus (Ⅱ)				3	3	0
●電路學(二)	Electric Circuit Analysis (Ⅱ)				3	3	0
●△計算機程式	Computer Programming				3	3	0
●△計算機程式實習	Computer Programming Practice				1	0	3
第二學年Second Year							
●電子學(一)	Electronics (Ⅰ)	3	3	0			
●電子實習(一)	Electronics Practice (I)	1	0	3			
●工程數學(一)	Engineering Mathematics (Ⅰ)	3	3	0			
●△微處理機及實習	Microprocessor and Practice	3	2	2			
●工業配電設計	Industrial Power Distribution Design	3	3	0			
●工業配電設計實習	Industrial Power Distribution Design Practice				1	0	3
●電子學(二)	Electronics (Ⅱ)				3	3	0
●電子實習(二)	Electronics Practice (II)				1	0	3
●工程數學(二)	Engineering Mathematics (Ⅱ)				3	3	0
●電機機械	Electric Machinery				3	3	0
●電力電子學	Power Electronics				3	3	0
第三學年Third Year							
●實務專題(一)	Project Study (I)	2	0	6			
●電機機械實習	Electric Machinery Practice	1	0	3			
●自動控制	Automatic Control	3	3	0			

●電機控制	Electric Drive Control	3	3	0			
●電力電子學實習	Power Electronics Practice	1	0	3			
●實務專題（二）	Project Study (II)				2	0	6
●電力系統	Power System				3	3	0
●電機控制實習	Electric Drive Control Practice				1	0	3
第四學年Fourth Year（無排定必修課程No Department Required Courses）							

科目	Courses	上學期 Fall Semester			下學期 Spring 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 Elective Courses							
第一學年 First Year							
外語選修課程	Foreign language elective courses	2	2	0	2	2	0
外語菁英課程	Foreign Language Elite Courses	6	6	0	6	6	0
第二學年 Second Year							
外語選修課程	Foreign language elective courses	2	2	0	2	2	0
外語菁英課程	Foreign Language Elite Courses	6	6	0	6	6	0
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							
外語選修課程	Foreign language elective courses	2	2	0	2	2	0
外語菁英課程	Foreign Language Elite Courses	6	6	0	6	6	0
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							
外語選修課程	Foreign language elective courses	2	2	0	2	2	0
外語菁英課程	Foreign Language Elite Courses	6	6	0	6	6	0
體育選修	Physical Elective Course	1	2	0	1	2	0
專業選修科目 Department Elective Courses							
第一學年 First Year							
計算機應用領域選修 Computer Application Field Elective Courses							
●計算機概論	Introduction to Computer	3	3	0			
●數位電路晶片設計及實習	CPLD/FPGA Chip Application Design and Practical				3	2	2
機電控制領域選修 Mechanical & Electrical Control Field Elective Courses							
●△可程式控制與實驗	Programmable Logic Control and Practice	3	2	2			
●△機電概論	Mechatronics	3	3	0			
電能科技領域選修 Power & Energy Technology Field Elective Courses							
●電機概論	Introduction to Electric Machinery				3	3	0
●電腦輔助繪圖設計及實習	Computer Aided Drawing (CAD) and Practice				3	2	2
其它專業選修課程 Other Elective Courses							
●光電概論	Introduction to Optoelectronic	3	3	0			
●能源應用	Energy Application	3	3	0			
●電機工程概論與職場倫理	Introduction to Electrical Engineering and Workplace Ethics	1	1	0			
●物理(一)	Physics (Ⅰ)	3	3	0			
●物理(二)	Physics (Ⅱ)				3	3	0
第二學年 Second Year							
計算機應用領域選修 Computer Application Field Elective Courses							
●△視窗程式設計及實習	Windows Programming Design and Practice	3	2	2			
●△圖控程式設計及實習	Graphical Programming and Practice	3	2	2			
●△物件導向程式設計及實習	Object-Oriented Programming and Practice	3	2	2			
●智慧感測與計算	Intelligent Sensing Technology and Computing	3	3	0			
●信號與系統	Signals and Systems				3	3	0
●電腦網路概論	Introduction to Computer Network				3	3	0
●工程儀表與量測	Engineering Instrumentation and Measurement				3	3	0
●印刷電路設計及實習	Printed Circuit Board Design and Practice				3	2	2
●電路設計模擬及實習	Circuit Design Simulation and Practice				3	2	2
●電腦模擬與計算	Computer Simulations and Computational Models	3	3	0			
●雲端運算概論	Introduction to Cloud Computing	3	3	0			
●△Python 程式應用	Python Programming Application				3	3	0
機電控制領域選修 Mechanical & Electrical Control Field Elective Courses							
●油氣壓應用	Hydraulic and Pneumatic Application	3	3	0			
●物聯網感測系統應用及實習	IoT Sensing System Applications and Practice	3	2	2			
電能科技領域選修 Power & Energy Technology Field Elective Courses							

●消防工程設計	Fire Protection Engineering Design	3	3	0			
●電能儲存技術	Energy Storage Technologies				3	3	0
●新能源車介紹	Introduction of New Energy Vehicles				3	3	0
其它專業選修課程 Other Elective Courses							
●科技英文	English for Science and Technology	3	3	0			
●數值分析	Numerical Analysis	3	3	0			
●網路語言 I/O 應用及實習	Network Language I/O Application and Practice				3	2	2
●線性代數	Linear Algebra				3	3	0
●師徒實務專題(一)	Mentor-Apprentice Project study （Ⅰ）				3	0	3
第三學年 Third Year							
計算機應用領域選修 Computer Application Field Elective Courses							
●嵌入式系統設計及實習	Embedded System Design Practice	3	2	2			
●專業軟體應用及實習	Professional Software Application and Practice	3	2	2			
●行動加值開發實務	Development of Mobile Services Practice	3	2	2			
●△MATLAB 程式設計及實習	MATLAB Programming and Practice	3	2	2			
●△微控制器應用及實習	Microcontroller Application and Practice				3	2	2
●超大型積體電路設計及實習	Very Large Scale Integration (VLSI) Design and Practice				3	2	2
●△Android 應用程式及實習	Android Application and Practice				3	2	2
●△JAVA 程式設計及實習	JAVA Programming and Practice				3	2	2
●虛擬儀器設計及應用	Virtual Device Design and Application	3	3	0			
●△網頁設計及實習	Web Design and Practice	3	2	2			
●半導體概論	Introduction to Semiconductor				3	3	0
機電控制領域選修 Mechanical & Electrical Control Field Elective Courses							
●△人機介面設計及實習	Human Computer Interface Design and Practice	3	2	2			
●感測器應用及實習	Sensors Application and Practice	3	2	2			
●生醫工程概論	Introduction to Biomedical Engineering	3	3	0			
●RFID 應用	RFID Application	3	3	0			
●物聯網電子系統應用與設計	IoT Electronic Systems Application and Design	3	3	0			
●[AI]智慧型機器人學	Intelligent Robotics	3	3	0			
●生醫感測技術實習	Biosensing Technology and Practice				3	2	2
●無線感測網路	Wireless Sensor Network				3	3	0
●控制系統	Control System				3	3	0
●△智慧電子應用設計及實習	Intelligent Electronics Application Design and Practice				3	2	2
●機器學習應用及實習	Machine Learning Application and Practice				3	3	0
電能科技領域選修 Power & Energy Technology Field Elective Courses							
●發變電工程	Generation Transformation Engineering	3	3	0			
●燃料電池概論	Introduction to Fuel Cell	3	3	0			
●再生能源技術	Renewable Energy Technology				3	3	0
●電腦輔助電機設計及實習	Computer Aided Design and Practice of Electrical Machinery				3	2	2
●電池概論	Introduction to Batteries				3	3	0
●電化學動力技術：二次電池	Electrochemical Power Technology: Secondary Battery				3	3	0
●電力電子實務	Power Electronics Practice				3	3	0
●接地工程概論	Introduction to Grounded Engineering	3	3	0			
●電動車動力系統設計	Introduction to Electric Vehicles Powertrain Design	3	3	0			
●用電設備檢驗與維護	Electrical Equipment Inspection and Maintenance				3	3	0
其它專業選修課程 Other Elective Courses							
●網路分析	Network Analysis	3	3	0			
●綠色能源工程	Green Energy Engineering	3	3	0			
●電磁學	Basic Electromagnetics	3	3	0			
●數位通訊系統	Digital Communication System				3	3	0
●資訊網路	Information Networks				3	3	0
●物聯網概論	Introduction to Internet of Things	3	3	0			
●工程倫理	Engineering Ethics	3	3	0			
第四學年 Fourth Year							
計算機應用領域選修 Computer Application Field Elective Courses							
●雲端運算技術	Cloud Computing Technology	3	3	0			
●△數位信號處理及實習	Digital Signal Processing and Practice				3	2	2
機電控制領域選修 Mechanical & Electrical Control Field Elective Courses							

●控制系統實務	Control System Practice	3	2	2			
●系統動態模擬	System Dynamic Simulation	3	2	2			
●連網型系統晶片嵌入式軟體	Networked SoC Embedded Software	3	3	0			
●智慧機電實務	Smart Mechatronics Practice	3	3	0			
●△機電整合及實習	Mechatronics and Practice				3	2	2
●驅動器設計技術	Drivers Design Technology				3	3	0
電能科技領域選修 Power & Energy Technology Field Elective Courses							
●電力品質	Power Quality	3	3	0			
●切換式電源轉換器設計及實習	Switching Power Supply Design and Practice	3	2	2			
●太陽光電發電系統設計及應用	Photovoltaic Power Generation Systems Design and Application	3	3	0			
●風力發電工程	Wind Power Generation Engineering	3	3	0			
●配電系統自動化	Electrical Power Distribution System Automation	3	3	0			
●最佳化電機設計及實習	Optimization Electrical Machine Design	3	2	2			
●捷運機電系統概論	Introduction to MRT Electro-Mechanical-System				3	3	0
●風力發電工程實務	Wind Power Generation Engineering Practice				3	3	0
●電機設備保護及實習	Electrical Equipment Protection and Practice				3	2	2
●電動車設計與製作	Electrical Vehicles Design and Fabrication				3	3	0
●半導體製程	Semiconductor Processes	3	3	0			
●新及再生能源發電技術	**New and Renewable Energy Power Technologies**	**3**	**3**	**0**			
其它專業選修課程 Other Elective Courses							
●[AI]人工智慧	Artificial Intelligence	3	3	0			
●工業安全衛生	Industrial Safety Hygiene	3	3	0			
●個人行銷與形象管理	Individual Marketing and Image Management	3	3	0			
●校外實習(一)	Extracurricular Intern (I)	9	0	9			
●[AI]類神經網路應用	Neural Network and Application				3	3	0
●工廠管理	Factory Management				3	3	0
●特殊空調系統	Special Air-Conditioning System				3	3	0
●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	3		

備註 Note:

一. 畢業至少應修滿 131 學分【必修 90 學分，選修至少 41 學分(其中至少需含本系專業選修及跨領域學程選修 28 學分，選修學分內必須修習三門以上(含)具有實驗(習)課之課程(3 學分/4 學時)，)】
Students should complete at least 131 credits before graduation including 90 required credits and 41 elective credits (at least 28 professional elective credits containing no less than three experimental courses (3 credits / 4 class hours) in EE.).

二. 本校訂有「國立勤益科技大學學生畢業門檻辦法」，畢業門檻條件：英文能力及自主學習，請依規定辦理。
Our school has established the "National Chin-yi University of Science and Technology Student Graduation Threshold Measures", Graduation threshold: English proficiency and independent study，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. 考取本系學生核心證照可抵免：
Students who get core certifications can apply to waive one of the following options:
一張(含以上)證照僅限抵一門具有實驗(習)課程之畢業門檻(不可抵畢業學分)，僅限抵免一次。
One (or above) certification can transfer one experimental course only one time (no transfer graduation credits).

五. 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.

六. 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.

七. 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.

八. 學生須選讀至少一門本系所訂定之跨領域學程課程，並有成績登錄。
Students need to register for at least one the course of inter-disciplinary program set by this department and have a record of grades.

智慧電網與能源			智慧物聯網		
課程選別	學年	課程名稱(學分/學時)	課程選別	學年	課程名稱(學分/學時)
必修	二上	工業配電設計 3/3	必修	二上	微處理機及實習 3/4
必修	二下	電力電子學 3/3	必修	三上	電機控制 3/3
選修	一上	能源應用 3/3	選修	一上	計算機概論 3/3
選修	**三上或三下**	發變電工程 3/3	選修	**三上或三下**	智慧型機器人學 3/3
外系選修	**一下**	監控系統設計及實習 3/4	外系選修	**二上**	Python 程式設計 3/3

外系選修	三上 或三下	智慧電能儲存技術 3/3	外系選修	三上 或三下	數位影像處理及實習 3/4

九. 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.