國立勤益科技大學日間部 113 學年度 精密製造科技研究所

智慧機械與智慧製造產業博士學位學程 學分計畫表

National Chin-Yi University of Technology

Curriculum for 2024, Ph.D Program, Intelligent Machinery and Smart Manufacturing

112.10.31 所課程會議審議通過
112.11.17 所務會議審議通過
112.11.23 院課程會議審議通
112.12.07.校課程委員會議及 112.12.21.臨時教務會議審議通過
113.12.5.校課程委員會議及 113.12.24.臨時教務會議審議修訂通過

科目	Courses	上學期 First Semester		下學期 Second Semester	
		學分 Credits	學時 Hour	學分 Credits	學時 Hour
共同必修科目(16 學分) General Required Courses (16credits)					
第一學年 First Year					
實務專題研究(一)	Seminar I	1	2		
實務專題研究(二)	Seminar II			1	2
第二學年 Second Year					
實務專題研究(三)	Seminar III	1	2		
實務專題研究(四)	Seminar IV			1	2
第三學年 Third Year					
產業實務研發論文(一)	Industry practice internship (I)	3	3	3	3
第四學年 Fourth Year					
產業實務研發論文(二)	Industry practice internship (II)	3	3	3	3
核心必選修科目(3 學分) Core Required Courses (3credits)					
精密工程科技概論	Introduction of Precision Engineering Technology	3	3		
專業選修科目(20 學分) Department Required Courses (20 credits)					
第一學年 First Year					
共同選修科目 General Elective Courses					
暑期產業實習(一)	Summer Field Practice I			1	1
智慧機械組 Intelligent Machinery					
感測器原理與應用	Principle and Application of Sensors	3	3		
自動化光學量測系統	Auto-Optical Measurement System	3	3		
精密機械特論	Special Topics of Precision Machinery	3	3		
精密機械產業分析特論	Special Topic of Precision Machine Industry Analysis	3	3		
最佳化方法與應用	Optimization and Applications	3	3		
切削特論	Special Topics of Machining Technology	3	3		
電腦輔助工程技術	Computer Aided Engineering Technology	3	3		
機電整合特論	Special Topics on Mechatronic Engineering	3	3		
微機電系統	Micro-Mechatronic Systems	3	3		
電腦輔助流場分析	Computer-Aided Fluid Analysis	3	3		
切削顫振理論與抑制	Theory of Cutting Chattering Cutting flutter			3	3
高效能切削與加工監控	High Performance Cutting and Monitoring for Manufacture			3	3
自動化生產系統	Automated production system			3	3
精密製造特論	Special topics of Precision manufacturing			3	3
精密機械控制	Precision Machinery Dynamics and Control			3	3
精密機械量測	Precise Machine Measurement			3	3
創新發明與專利佈局	Innovative Invention and Patent Research			3	3
實驗設計	Experiment Design			3	3
多軸加工原理與應用	Application and Principle of Multi Axis Machining			3	3
精密加工	Precision Machining			3	3
永續能源組 Sustainable Energy					
冷凍空調系統工程	Heating, Ventilation, and Air Conditioning System	3	3		
能源工程實務	Energy and Power Engineering	3	3		
冷凍空調控制工程	Control Engineering of Refrigeration and Air-conditioning System	3	3		
燃料電池原理與應用	Fuel Cell Theory and Applications	3	3		

計算流體力學	Computational Fluid Dynamics	3	3		
高等熱傳學	Special Topics of Heat Transfer			3	3
高等流體力學	Special Topics of Fluid Mechanics			3	3
風力發電特論	Special Topics of Wind Power			3	3
空調節能技術	Energy Saving Techniques of Refrigeration and Air-Conditioning System			3	3
電子熱傳	Electronic Heat Transfer			3	3
先進材料組 Advanced Materials					
奈米科技特論	Special topics of Nano Sciences and Technology	3	3		
智慧材料	Smart Materials			3	3
高等材料科學	Special Topics of Materials Science and Engineering			3	3
複合材料特論	Special Topics of Composite Materials			3	3
精密薄膜科技	Special Topics of Thin Film Technology			3	3
第二學年 Second Year					
共同科目 General Elective Courses					
暑期產業實習(二)	Summer Field Practice II			1	1
智慧機械組 Intelligent Machinery					
控制器應用實務	Controller Application	3	3		
機械系統故障診斷	Fault Diagnosis of Mechanical System	3	3		
精密機械設計	Design for Precision Machinery	3	3		
機械振動與量測	Mechanical Vibrations and Measurements	3	3		
智慧整合感測系統	Intelligent Integration Sensing System			3	3
物聯網雲端應用實務	Application of IOT			3	3
智慧製造技術	Smart Manufacturing Technology			3	3
有限元素法特論	Special Topics of Finite Element Method			3	3
微系統製造技術	Fabrication Technologies of Micro-systems			3	3
永續能源組 Sustainable Energy					
特殊通風技術	Special Air Ventilation Technology	3	3		
綠建築物理環境控制	Physical Environment Control of Green Architecture	3	3		
煙控系統設計與分析	Design and Analysis of Smoke Management Systems			3	3
室內環境品質	Indoor Environment Quality			3	3
特殊空調設計	Special HVAC System Design			3	3
氫能技術與應用	Hydrogen Technology and Application			3	3
先進材料組 Advanced Materials					
奈米材料與化工技術	Nanomaterials and Chemical Technology	3	3		
電化學技術與應用	Electrochemical Techniques and Applications	3	3		
導電性高分子特論	Special Topics of Electro Conductive Polymers			3	3
第三學年 Third Year					
全學年產業實務實習(一)	Field Practice I	0	1	0	1
第四學年 Fourth Year					
全學年產業實務實習(二)	Field Practice II	0	1	0	1

備註 Note:

一、畢業至少應修滿 36 學分【共同必修 16 學分（產業實務研發論文 12 學分，實務專題研究 4 學分 8 學時），選修至少 20 學分】。
Students should complete at least 36 credits before graduation, includes 16 required credits (12 credits for Thesis,4 credits for Seminar, 20 elective credits (included general and advanced courses).

二、本所訂有「國立勤益科技大學精密製造科技研究所智慧機械與智慧製造產業博士學位學程修業辦法」，請依規定辦理。
Please follow the regulations of "The NCUT, Ph.D. Program, Intelligent Machinery and Smart Manufacturing on Academic Studies".

三、學生於畢業前須修過「學術研究倫理教育課程」必修 0 學分(6 小時)課程。
Before graduation, each student should complete Academic Research Ethics Education Course, which is 6 hours required course with 0 credit.

四、學生簽訂本校「產學合作培育博士級研發人才計畫合約書」者，畢業學分須修畢暑期產業實習 2 學分及全學年產業實務實習(一)與(二) 0 學分。
Students who join the project, they should complete 2 credits for Summer Field Practice and 0 credit for Field Practice I&II before graduation.

五、為因應法規變更、評鑑建議或政府計畫規定等外在因素，本所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.